



Lufthansa

Key data on sustainability
within the Lufthansa Group
Issue 2011

Balance

Company | Social Responsibility | Environment | Corporate Citizenship



You will find further information on sustainability within the Lufthansa Group at:

www.lufthansa.com/responsibility

Order your copy of our Annual Report 2010 at:

www.lufthansa.com/investor-relations

The Lufthansa Group stays on course

An airport's illuminated runways and taxiways show directly what counts most in aviation: staying on course. For Lufthansa, this refers not only to responsibility in navigational, technical and operational areas, but also to the sustainable development of the company as a whole. This concern has been firmly anchored in the Group's Guidelines for many years. For this reason we continuously improve climate and environmental care, treat our employees responsibly and fairly, and actively get involved as a company in numerous social issues. The satisfaction of our customers has the highest priority in everything we do. This is how we will stay on course in the future as well.

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- 1 Source: Lufthansa Annual Report 2010.
- 2 For the reporting year 2010 the following companies are included: Lufthansa Passenger Airlines (including Lufthansa Italia and Lufthansa Regional: Lufthansa CityLine, Air Dolomiti, Eurowings, Contact Air, Augsburg Airways), Lufthansa Cargo, SWISS, Austrian Airlines and bmi. Excluding the share of third parties as Lufthansa can influence neither performance nor the equipment used (see also table "Share of third parties" on page 66).
- 3 Types of flights taken into account: all scheduled and charter flights.
- 4 See also table "Fuel consumption" on page 66.
- 5 Companies referred to as in 2, but including the services of third parties, as these contribute to the Group's results. Types of flights as in 3, but including ferry flights, as these represent costs.
- 6 *Balance*: aircraft operated by the Group; Annual Report: aircraft in the Group's possession. See also the overview "Group fleet" on page 29.
- 7 *Balance*: segments (operational perspective); Annual Report: distance (customer perspective); one distance can include several segments, e.g. in the event of stops en route.
- 8 *Balance*: on the basis of all passengers aboard; Annual Report: on the basis of all revenue passengers.



At a glance

Business performance data¹		2010	2009	Change
Revenue	million €	27,324	22,283	+22.6%
of which traffic revenue	million €	22,268	17,604	+26.5%
Operating result	million €	876	130	+573.8%
Profit/loss from operating activities	million €	1,240	271	+357.6%
Net profit/loss for the period	million €	1,131	-34	
Total assets	million €	29,320	26,392	+11.1%
Cash flow from operating activities	million €	3,075	1,991	+54.4%
Capital expenditure	million €	2,273	2,405	-5.5%
Equity ratio	percent	28.4	23.5	+4.9PP

Personnel data		2010	2009	Change
Number of employees (on 31.12., respectively)		117,019	117,521	-0.4%
of these, in Germany		65,159	64,741	+0.7%
of these, outside Germany		51,860	52,780	-1.7%
Staff costs ¹	million €	6,659	5,996	+11.1%
Revenue/employee ¹	€	233,407	198,384	+17.7%
Staff costs/revenue ¹	percent	24.4	26.9	-2.5PP
Average age	years	40.7	40.3	+0.4 Y
Part-time ratio, absolute	percent	26.8	26.9	-0.1 PP
Part-time ratio, men	percent	13.5	14.0	-0.5 PP
Part-time ratio, women	percent	43.5	42.7	+0.8 PP
Share of women in management	percent	13.3	14.7	-1.4 PP

Environmental data^{2,3}		2010	2009	Change
Resource consumption				
Fuel consumption ⁴	tonnes	8,459,255	7,680,708	+10.1%
Fuel consumption, specific, passenger transportation	l/100 pkm	4.20	4.30	-2.4%
Fuel consumption, specific, freight transport	g/tkm	231	243	-5.0%
Emissions				
Carbon dioxide emissions	tonnes	26,646,655	24,194,229	+10.1%
Carbon dioxide emissions, specific, passenger transportation	kg/100 pkm	10.58	10.84	-2.4%
Nitrogen oxide emissions	tonnes	134,744	112,645	+19.6%
Nitrogen oxide emissions, specific, passenger transportation	g/100 pkm	53.5	50.0	+7.0%
Carbon monoxide emissions	tonnes	19,640	17,376	+13.0%
Carbon monoxide emissions, specific, passenger transportation	g/100 pkm	8.6	8.5	+1.8%
Unburned hydrocarbons	tonnes	2,109	1,982	+6.4%
Unburned hydrocarbons, specific, passenger transportation	g/100 pkm	0.9	0.9	-4.1%

Transport performance data		Balance ^{2,3}	Change	Annual Report ⁵	Change
Size of fleet (on December 31, 2010) ⁶		672	-16	710	-12
Number of flights ⁷		982,459	+11.7%	1,021,266	+13.5%
Passengers carried		88,470,605	+16.2%	91,157,195	+17.9%
Freight and mail carried	tonnes	2,022,670	+18.2%	2,022,670	+18.2%
Seat kilometers offered, SKO	million pkm	228,615	+11.3%	235,837	+13.3%
Freight tonne kilometers offered, FTKO	million tkm	14,193	+3.7%	15,430	+7.4%
Tonne kilometers offered, TKO	million tkm	36,894	+8.3%	39,000	+10.0%
Passenger kilometers transported, PKT ⁸	million pkm	187,192	+12.5%	187,000	+15.2%
Freight tonne kilometers transported (incl. third-party performance), FTKT	million tkm	9,405	+16.8%	10,491	+20.5%
Tonne kilometers transported, TKT	million tkm	28,245	+14.3%	29,033	+16.4%





Dear Readers,

In this issue of *Balance* we report on all dimensions of sustainability within the Lufthansa Group. Once again, the past year provided us with numerous and very different challenges. At the beginning of the year, the effects of the worldwide financial and economic crisis still had a profound impact on the development of the market. In addition, harsh winter weather both at the beginning and at the end of the year caused extreme disruptions in flight operations in Europe and North America for several weeks. The volcano's eruption in spring in Iceland and the resulting cloud of volcanic ash caused a closure of air-space over Europe lasting for several days, which is unknown in recent history. All these events and a pilots' strike had a significant impact on Lufthansa's annual result. The fact that we were nevertheless able to achieve a positive result for the year is due both to a perceptible market recovery in the second half of the year and our determined course of applying sustainable principles, which has proven to be correct and sound in times of crisis as well. Despite all burdensome influences, we were able to conclude the financial year 2010 successfully in economic, ecological and social terms in all business segments.

Our environmental balance sheet also developed in positive ways. The specific fuel consumption of our fleet continued to decline and reached the lowest value in the history of the Group at 4.2 liters of fuel per 100 passenger kilometers. Our continuous and significant investments in modern and efficient aircraft are paying off. The Lufthansa Airbus A380 fully meets the expectations we placed on it. Its specific fuel consumption stood at 3.4 liters in 2010. Coinciding with rising demand, we were able to put our first four A380s into service last year and we will take delivery of four additional A380s in the course of this year.

Lufthansa's new management team, which assumed responsibility on January 1, has set itself high goals for 2011. My colleagues and I on the Executive Board – Stephan Gemkow, Stefan Lauer and Carsten Spohr – will keep the company on course in 2011 and continue to develop it with care. In doing so, we count on a solid financial basis and long-term value creation across the Group because these are the fundamental prerequisites for meeting our responsibility vis-à-vis customers, employees and the environment. Even though there are numerous imperishables for the development of business in 2011 – such as the volatility in the price of kerosene, extreme pressure from competition and on fares, particularly in Europe, and the air transport tax newly introduced in Germany – we believe that we are well equipped to master these challenges successfully.

Thank you for your interest in our company. I wish you an interesting read and perhaps some new insights from this issue of our Sustainability Report.

Christoph Franz

Chairman of the Executive Board and CEO
Deutsche Lufthansa AG

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About this report

The present Sustainability Report *Balance* informs stakeholders and the interested public about the activities, advances and goals of the Lufthansa Group in the areas of business, social responsibility, environment and corporate citizenship. The data presented in this report refer to the financial year 2010.

The understanding of corporate responsibility at the Lufthansa Group is based on the following five pillars:

- Economic sustainability
- Social responsibility
- Climate and environmental responsibility
- Corporate governance and compliance
- Corporate citizenship

The section “Corporate governance and compliance” is part of the chapter “Economic sustainability.”

Scope of consolidation

Reporting with regard to transport performance, fuel consumption and emissions from flight operations is based on the following scope of consolidation¹:

- Companies: Lufthansa Passenger Airlines (including Lufthansa Italia and Lufthansa Regional with Lufthansa CityLine, Air Dolomiti, Eurowings, Contact Air, Augsburg Airways), Lufthansa Cargo, Swiss International Air Lines (SWISS), British Midland (bmi, from July 2009) and Austrian Airlines (from September 2009). Excepted are third-party services, as Lufthansa has no influence either on their performance or on the aircraft operated.
- Types of service: all scheduled and charter flights.

Methodology of calculations

Kerosene in absolute terms

The calculation of kerosene consumption is based on actual flight operations (i.e. using actual load factors and flight routings), according to the so-called “gate-to-gate” principle. This includes all phases of a flight – from taxiing on the ground to flying detours and in holding patterns in the air.

Emissions in absolute terms

The calculation of emissions from flight operations is based on the actual transport performance (i.e. actual load factors) and the actual absolute quantity of kerosene consumed during the year in review. In this context, each aircraft-engine combination that exists in the fleet is considered separately, and the corresponding values are calculated by means of computer programs provided by the respective aircraft and engine manufacturers. The annual average flight profile of each subset in the fleet is then fed into these programs. This allows us to determine emissions in relation to flight altitude, distance flown, thrust and load. This approach is necessary for nitrogen oxides (NO_x), carbon monoxide (CO) and unburned hydrocarbons (UHCs) in particular. Carbon dioxide (CO₂) emissions do not require special calculation methods, as they are generated in a fixed relationship to the quantity of kerosene burned. The combustion of 1 tonne of kerosene generates 3.15 tonnes of CO₂.

Specific consumption and emission values

Calculating specific consumption and emissions entails expressing absolute values in relationship to transport performance. For example, the ratio “liters per 100 passenger kilometers” (l/100 pkm) is calculated on the basis of actual load factors, distances actually flown and the kerosene actually consumed. The distances used in the calculations are great-circle distances.

¹ Unless a different scope of consolidation is expressly named.



Evaluation and validation of data and information

Environmental management system

The data used in this report were collected by means of Lufthansa's environmental management system. This system also determines the methods for data verification and its transmission to the division Group Environmental Issues. The basis for data collection is Lufthansa's own Environmental Database.

Accuracy

The figures shown in tables and illustrations are rounded due to considerations of presentation. However, values indicating changes from the previous year always refer to precise figures. For this reason, it is possible that a specific value may remain the same from one year to the next, while a relative change is indicated.

Comparability

Due to changes in the portfolio over the past years, the figures of personnel and environment in this report are only to a limited extent comparable with those reported for the previous years. For example, Austrian Airlines and bmi were fully consolidated for the first time in the financial year 2010. There are also differences in approach compared to the Annual Report 2010 when calculating passenger numbers and the related indicators (see explanations relating to the table "At a glance" on page 2).

Publication dates of this report

Balance, the Sustainability Report of the Lufthansa Group, is published once a year in a German and an English edition. The German edition of the previous year's report was published on April 29, 2010; the English edition followed shortly after.

Additional information on the Internet

In addition to this report, Lufthansa also informs readers on the Internet about activities in the area of sustainability within the Lufthansa Group and provides additional detailed environmental data from the individual business segments as well as a Group-wide matrix of environmental goals and measures.

www.lufthansa.com/responsibility

Disclaimer in respect of forward-looking statements

The data included in this report has been collected and processed with the utmost care. Nevertheless, errors in transmission cannot be ruled out entirely.

Information published in this report with regard to the future development of the Lufthansa Group and its subsidiaries consists purely of forecasts and assessments and not of definitive historical facts. Its purpose is exclusively informational, identified by the use of such cautionary terms as "believe," "expect," "forecast," "intend," "project," "plan," "estimate," "count on," or "endeavor." These forward-looking statements are based on all discernible information, facts and expectations available at the time. They can, therefore, only claim validity up to the date of their publication.

Since forward-looking statements are by their nature subject to uncertainties and imponderable risk factors – such as changes in underlying economic conditions – and rest on assumptions that may not or divergently occur, it is possible that the Group's actual results and development may differ materially from those implied by the forecasts. Lufthansa makes a point of checking and updating the information it publishes. It cannot, however, assume any obligation to adapt forward-looking statements to accommodate events or developments that may occur at some later date. Accordingly, it neither expressly nor conclusively accepts liability, nor does it give any guarantee for the actuality, accuracy and completeness of this data and information.



The Lufthansa Group

A photograph of an airplane wing in flight against a sunset sky with clouds. The wing is on the left side of the frame, extending towards the right. The sky is a mix of blue and orange, with soft clouds. The sun is visible as a bright spot behind the wing.

Deutsche Lufthansa AG ranks as one of the leading companies worldwide in international air transport. The activities in the areas of passenger transport, air freight and services for airlines are divided into the five business segments Passenger Airline Group, Logistics, MRO (Maintenance, Repair, Overhaul), IT Services and Catering. The strategic focus is on the business segments Passenger Airline Group and Logistics, the passenger and cargo airlines of the Lufthansa Group. These position themselves as quality carriers within their segments. The Lufthansa Group comprises a total of more than 400 subsidiaries and associated companies.

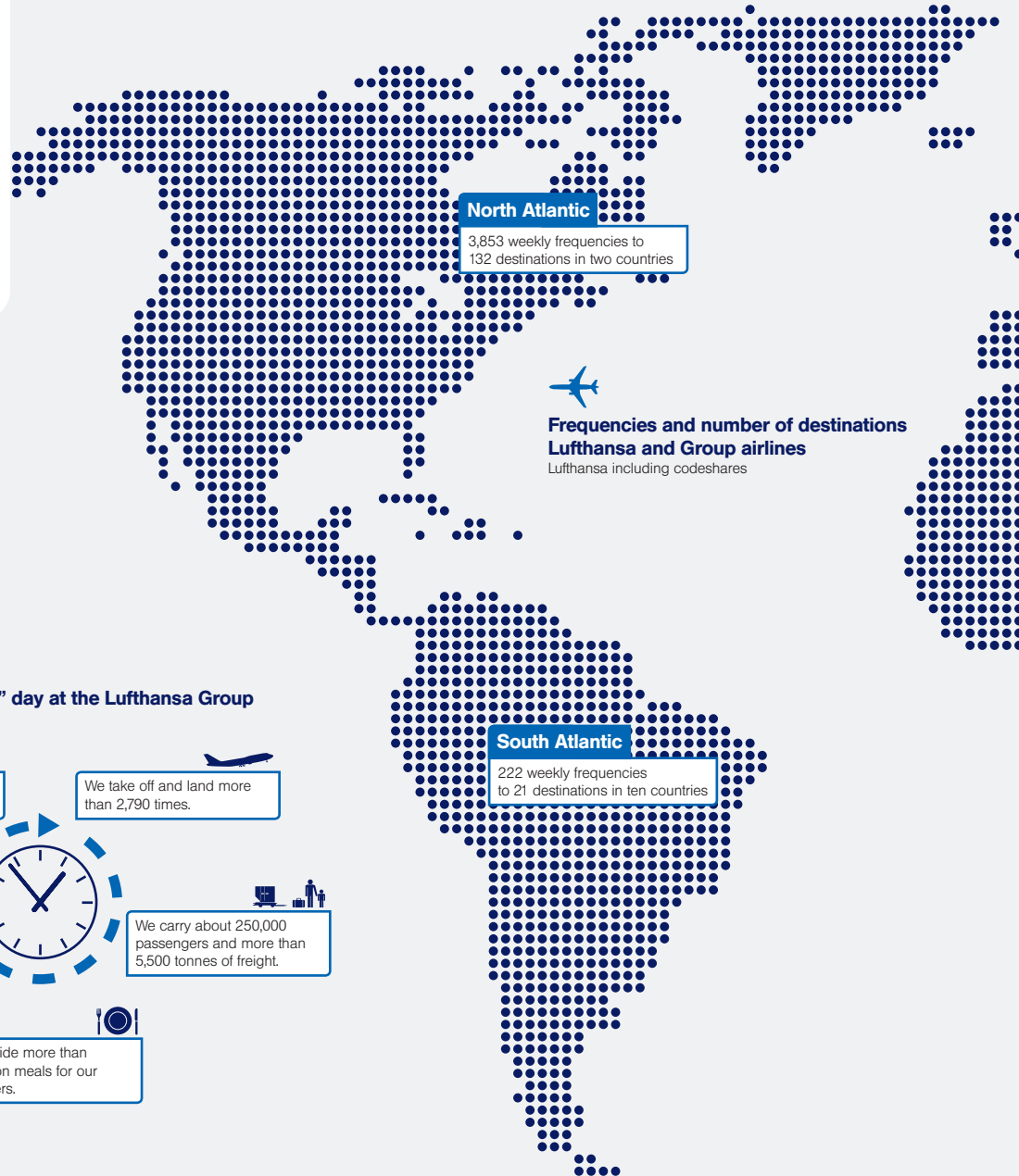
Treating the environment in a responsible manner is an integral part of the corporate culture of all Group companies. This approach manifests itself in the sparing use of resources, the commitment to climate research and the persistent efforts to improve the efficiency of infrastructures on the ground and in the air, all aimed at keeping the environmental effects of flying as small as possible.

The Lufthansa Group

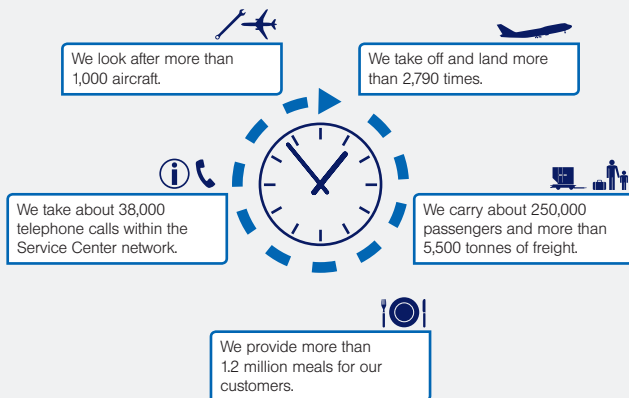
Facts and figures

At a glance

	Corporate headquarters	Cologne
	Employees	117,019
	Nationalities	149
	Group fleet	710
	Passengers	91.2 million
	Freight/mail	> 2 million t



An "entirely normal" day at the Lufthansa Group



Jobs around the world

Europe	92,393
North and Central America	12,363
South America	2,909
Asia/Pacific	7,310
Africa/Middle East	2,044

Europe

10,979 weekly frequencies to 182 destinations in 44 countries

Middle East

231 weekly frequencies to 16 destinations in 12 countries

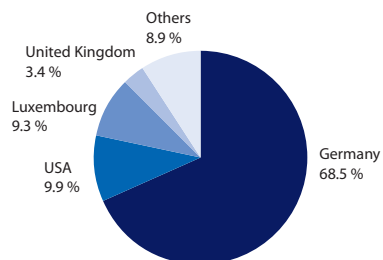
Africa

276 weekly frequencies to 47 destinations in 34 countries

Asia/Pacific

778 weekly frequencies to 61 destinations in 21 countries

Shareholder structure by nationalities



The Lufthansa Group and its five business segments



Passenger Airline Group

The Group's airlines are among the leading carriers worldwide.



Logistics

Lufthansa Cargo – ranks among the market leaders in international air freight transport.

MRO

Lufthansa Technik – the world's leading provider of technical aircraft services.

IT Services

Lufthansa Systems – one of the world's leading providers of IT services for the airline and aviation industry.

Catering

LSG Sky Chefs – the largest provider worldwide of services in airline catering and in-flight management.

* equity investments see pages 10 and 14

As per 31.12.2010

Business segment Passenger Airline Group






Passenger transport is the core business of the Lufthansa Group. The business segment Passenger Airline Group comprises Lufthansa Passenger Airlines (including Lufthansa Regional and Lufthansa Italia), SWISS, Austrian Airlines, bmi and Germanwings as well as the equity investments in Brussels Airlines, jetBlue Airways and SunExpress.

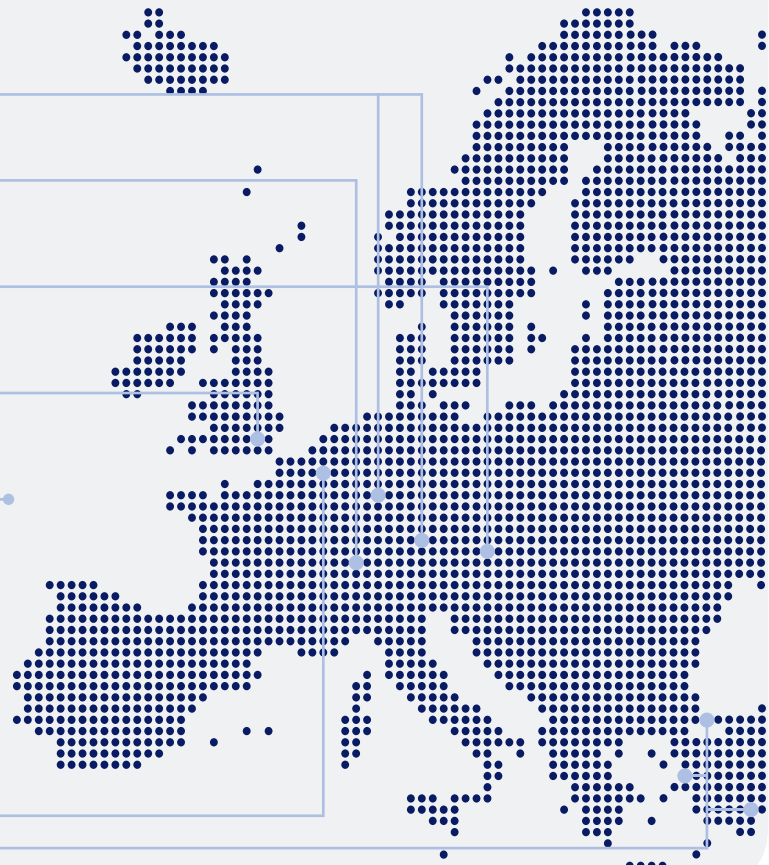
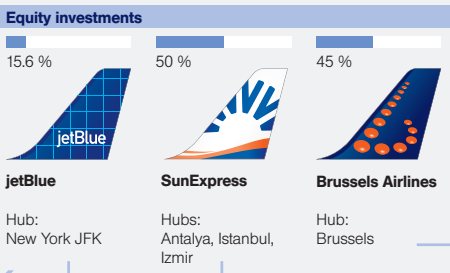
The airlines of the Lufthansa Group position themselves as quality carriers and occupy top positions in their respective segments. All companies within the Passenger Airline Group pursue the goal of profitable growth. This creates the conditions needed for investments in modern fleets, financial stability in a volatile industry and secure jobs with attractive development perspectives.

By applying sustainable economic principles, the companies also meet their responsibilities for preserving natural resources. With the introduction of the summer timetable 2011, the airlines of Lufthansa, Austrian Airlines, SWISS, bmi and Brussels Airlines serve a total of 283 destinations in 105 countries on four continents. The Group's own route network is complemented by a wide range of codeshare flights operated in cooperation with other airlines.

Number of passengers carried in 2010: 91.2 million

The passenger airlines of the Lufthansa Group and their hubs

- 
Lufthansa Passenger Airlines
 (including Lufthansa Regional and Lufthansa Italia)
 Hubs: Frankfurt, Munich
- 
SWISS
 Hub: Zurich
- 
Austrian Airlines
 Hub: Vienna
- 
bmi
 Key hub: London Heathrow
- 
Germanwings
 5 locations in Germany





The “crane in a circle”: The Lufthansa brand has always been regarded as a synonym for quality, reliability and innovation.



Lufthansa

In 2010, 58.9 million passengers traveled with Lufthansa Passenger Airlines. By offering a modern and high-quality product, a unique lounge concept and innovative services concerning all aspects of flying – such as the Lufthansa Star Chef Program, Miles & More and mobile services – Lufthansa Passenger Airlines and its full range of products enjoy the highest recognition and renown worldwide. The Lufthansa brand has always been regarded as a synonym for quality, reliability and innovation.

The key hubs of Lufthansa Passenger Airlines are in Frankfurt and Munich. In addition, there is a local hub in Düsseldorf and Europe-wide direct services.

The year 2010 brought a number of important innovations for customers of Lufthansa Passenger Airlines: the launch of services with the Airbus A380 and the related presentation of the new First Class; furthermore, the new European cabin with perceptible improvements in seating comfort and the reintroduction of Internet access on board long-haul flights (FlyNet®). Moreover, Lufthansa made preparations for a six-month trial phase to test the use of alternative fuels in regular flight operations (see “Long-term testing of bio-fuel” from page 67).

www.lufthansa.com



Lufthansa Regional comprises:


 **Lufthansa CityLine**

 **Air Dolomiti**


 **eurowings**

 **Contact Air**

Augsburg Airways 



STAR ALLIANCE™



Star Alliance

Lufthansa is a founding member of the Star Alliance – the world’s leading airline network. The alliance was founded in 1997 and currently consists of 27 airlines that serve 1,160 destinations in 181 countries. In addition, Lufthansa maintains numerous partnerships with other airlines.

www.star-alliance.com



From “branded house” to “house of brands”: Today, the Lufthansa Group comprises additional renowned airlines besides Lufthansa.



Austrian Airlines

Austrian Airlines is a dynamic, quality-oriented Group that comprises Austrian Airlines, Lauda Air and Tyrolean Airways. It has been part of the Lufthansa Group since September 3, 2009. In Austria, its home market, Austrian Airlines represents a significant part of the national air transport market. This network carrier, which assumes the role of market leader as it is the airline with the highest revenue, has made the growth area of central and eastern Europe one of its areas of specialization. With 44 destinations served, Austrian Airlines is the market leader there as well. The second area of emphasis is the Middle East. Austrian Airlines offers one of the densest networks in both regions. The central hub for all connections between east and west is Vienna, the airline’s home airport.

The passengers of this renowned airline benefit from excellent service and the proverbial Austrian hospitality. Austrian Airlines has strengthened the airline network Star Alliance since March 2000.

www.austrian.com



SWISS

Swiss International Air Lines is part of Switzerland’s 100-year tradition in civil aviation and the country’s national airline. SWISS has been a wholly-owned Lufthansa Group company since July 1, 2007. The stock corporation’s headquarters is in Basel. SWISS connects Switzerland with the world from its hub in Zurich and airports in Basel, Geneva and Lugano. The airline has been a member of the Star Alliance since April 2006.

Customers flying with SWISS enjoy personal care, the highest levels of quality, reliability and Swiss hospitality – the company’s brand values. SWISS positions itself with its leading-edge products as a quality airline and premium brand in Economy, Business and First Class alike.

In the segment of private air travel, the SWISS Group complements its portfolio with the fully consolidated holiday airline Edelweiss Air. In March 2010, SWISS celebrated the five-year anniversary of its successful cooperation with Lufthansa. 2010 was a record year for the airline: More than 14 million passengers booked a flight with SWISS.

www.swiss.com



bmi

The British Midland Group comprises the three airlines bmi International, bmi regional and bmibaby and was successfully integrated into the Lufthansa Group in 2010. The home market of the company is the United Kingdom and its headquarters is at Castle Donington in England. British Midland is the second-largest airline at London’s Heathrow Airport, accounting for 10 percent of all takeoffs and landings there. Heathrow ranks as one of the largest airports worldwide and serves as a hub for bmi. From there, bmi flies to destinations in Europe, the Middle East, central Asia and Africa. Since July 2000, bmi has been a member of the Star Alliance. Among bmi’s values are flexibility, enthusiasm, customer-orientation and British hospitality.

www.fybmi.com





Germanwings

Germanwings is a fully-owned subsidiary of Deutsche Lufthansa AG and one of the most successful airlines in the low-cost segment. This was recently confirmed by a study carried out by Profiles International, the worldwide market leader in profiling tools: The airline achieved the best evaluation in its industry and occupies the top position as Germany's most productive airline. The company was founded in 2002, has its headquarters in Cologne, and its home base is Cologne/Bonn Airport. Germanwings flies with 30 modern Airbus A319s from its five locations in Cologne/Bonn, Stuttgart, Berlin Schönefeld, Hanover and Dortmund to more than 75 destinations all over Europe.

Germanwings and Group parent Lufthansa are set to work together even more closely in distribution as well: Since January 20, 2011, so-called interlining is possible between the two airlines. Thus an outbound flight on Lufthansa can be combined with a return flight on Germanwings in a reservation made by a travel agency or a Lufthansa sales office, for example.

www.germanwings.com



Brussels Airlines (equity share of 45 percent)

Brussels Airlines is Belgium's largest airline. Since June 2009, Lufthansa has held an equity share of 45 percent in the company's parent, the holding company SN Airholding with headquarters in Brussels. Starting in 2011, Lufthansa can exercise a purchase option for the remaining 55 percent of equity. Brussels Airlines joined the Star Alliance in December 2009.

Brussels Airlines evolved from SN Brussels Airlines, the company founded in 2002 to succeed the Belgian national airline Sabena. From its hub in Brussels, the airline serves the most important European capitals and regions. Another area of emphasis in the route network of Brussels Airlines is flights to Africa.

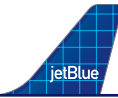
www.brusselsairlines.com



SunExpress (equity share of 50 percent)

SunExpress is a joint venture of Lufthansa and Turkish Airlines, which each hold 50 percent of equity. Founded in 1989, the airline with headquarters in Antalya has achieved an outstanding market position over the past 20 years. Today, it is the leading provider of charter services between Germany and Turkey, and one of the largest providers of scheduled services from Europe to southern Turkey. In addition, the airline plays an ever-increasing role on routes within Turkey. SunExpress accounts for 12 percent of the passenger volume at Antalya Airport where it is market leader. At Izmir Airport, the airline even handles 32 percent of international traffic, which is more than any other airline. In 2009, to mark its 20-year anniversary, the company revised its corporate identity and implemented a comprehensive relaunch concept. In 2010, the airline announced the founding of the subsidiary "SunExpress Deutschland GmbH."

www.sunexpress.com



jetBlue Airways (equity share of 15.6 percent)

jetBlue Airways is a U.S. passenger airline with headquarters in New York. It was founded in 1998 and started operations in 2000. Lufthansa holds a 15.6 percent equity share in jetBlue and is thus the first European airline to have made a significant investment in a U.S. airline. jetBlue's home base is at New York's John F. Kennedy Airport (JFK). From there, as well as from Boston, Fort Lauderdale, Los Angeles/Long Beach and Orlando, jetBlue operates the majority of its services to destinations in the United States, the Caribbean and Latin America.

www.jetblue.com

Business segment Logistics / Lufthansa Cargo AG

Lufthansa Cargo AG is the provider of logistics services within the Lufthansa Group. It ranks among the market leaders in the international air freight business and offers a worldwide network, the shortest transport times and high quality standards in many product areas, many of them highly specialized. The emphasis of Lufthansa Cargo lies in the airport-to-airport freight business. The logistics specialist operates its own fleet of 18 Boeing MD-11F freighter aircraft and holds international equity shares, for example in AeroLogic (equity share of 50 percent) and Jade Cargo International (equity share of 25 percent).



Lufthansa Cargo offers a comprehensive route network with more than 300 destinations in about 100 countries, complemented by cooperations with other cargo airlines and air-freight-related partner companies, including SWISS Cargo, Japan Airlines Cargo, Air China Cargo, LAN Cargo and DHL. Customers benefit from the highest quality standards, very short transport times and tailor-made logistics solutions. Lufthansa Cargo's product portfolio includes standard and express freight, along with special freight as a significant cornerstone. The latter includes the transport of live animals, valuable cargo, mail, hazardous goods and temperature-sensitive goods.

The main transfer point is Frankfurt Airport, while other important hubs are Munich, Leipzig-Halle and also Vienna, as the cargo business of Austrian Airlines has complemented the network since July 1, 2010, particularly in eastern Europe. There are also close ties to the Group companies SWISS, bmi and Brussels Airlines, which market their freight capacities independently. Lufthansa Cargo has its headquarters in Kelsterbach near Frankfurt.

www.lufthansa-cargo.com

Business segment MRO / Lufthansa Technik AG

Lufthansa Technik AG is the world's leading provider of technical aircraft services. The emphasis is on manufacturer-independent maintenance and overhaul of civil aircraft and the repair of engines, electrical equipment and components (Maintenance, Repair and Overhaul, MRO). Lufthansa Technik attends to about 750 customers worldwide, including above all airlines and operators of VIP jets, but also aircraft leasing companies. Within the Lufthansa Group, Lufthansa Technik is responsible for the fleet's safety, reliability and value retention. Lufthansa Technik comprises the product divisions

maintenance, aircraft overhauls, engines, components, landing gear services as well as VIP services. The MRO network comprises 30 technical maintenance operations worldwide. The company has direct and indirect participations in 54 corporations.

For the maintenance operation, Hamburg is Lufthansa Technik's most important location, comprising aircraft maintenance, completing of VIP aircraft, engine and component maintenance, the logistics center as well as development and production operations. The largest maintenance stations are in Frankfurt, Munich and Berlin; additional stations are located at all larger German airports and at 50 locations worldwide. In Asia, Lufthansa Technik has maintenance operations in four countries, such as Lufthansa Technik Philippines, Lufthansa Technik Shenzhen, Lufthansa Technik Services India and Ameco Beijing. The headquarters of Lufthansa Technik AG is in Hamburg.

www.lufthansa-technik.com



Business segment IT Services / Lufthansa Systems AG

Lufthansa Systems offers consulting and IT services for numerous industries. The company has a worldwide leadership role in the aviation industry. With its comprehensive portfolio, Lufthansa Systems covers the entire spectrum of IT services. Its services range from consulting, development and implementation of tailor-made industry solutions to operations in its own data centers. In their work the experts of Lufthansa Systems combine many years of project experience with comprehensive technology know-how, profound industry knowledge and experience in analyzing complex business processes.

Given the high level of complexity of IT projects, project management has a key role in keeping implementations within schedule and budget. For this reason Lufthansa Systems further expanded its capabilities in the area of project management in a systematic manner and consequently increased customer satisfaction.

Products and services provided by Lufthansa Systems allow companies to increase their efficiency, reduce their costs and raise their revenues

over the long-term. Worldwide, there are more than 200 airlines, but also companies in industries such as transport and logistics, manufacturing, media and publishing, energy and health care that rely on the expertise of Lufthansa Systems. The company has its headquarters in Kelsterbach near Frankfurt, and also has branch offices in Berlin, Cologne and Munich as well as locations in 14 countries.

www.LHsystems.com



Business segment Catering / LSG Sky Chefs

LSG Sky Chefs is the largest provider worldwide of airline catering and the management of all processes related to in-flight service. The Group comprises 133 companies at about 200 locations in 50 countries. In 2010, this wholly-owned Lufthansa subsidiary produced 460 million in-flight meals for more than 300 airlines worldwide – including nearly all international as well as numerous national and regional carriers, network carriers, charter companies and no-frills airlines. The Group's parent company, LSG Lufthansa Service Holding AG, has its headquarters in Neu-Isenburg near Frankfurt.

In the area of airline catering, LSG Sky Chefs offers a complete range from premium meals produced to order, all the way to cost-efficient snacks. Based on its far-reaching experience, the Group has developed tried-and-tested methods which ensure that customers always receive first-rate quality. Further criteria are culinary excellence and innovation, authentic regional cuisines from the international network and an innovative and appealing menu design. Beyond that, the company offers a broad range of in-flight products and services at the

highest level of quality and reliability. Additionally, the Group has begun to open up associated markets such as railway and school catering as well as catering in the health care and retail sectors.

www.lsgskychefs.com



Twelve questions for Christoph Franz

Christoph Franz has been Chairman of the Executive Board and CEO of Deutsche Lufthansa AG since January 1, 2011. In this *Balance* interview he describes different aspects of sustainability.



Mr. Franz, can one still fly with a clear conscience today?

Yes, definitely! Over the past 20 years we have made enormous progress with regard to eco-efficiency. For example, the specific consumption of the Lufthansa Group fleet currently stands at 4.2 liters of kerosene. In 1991, this value was still 2 liters higher. And we have set ourselves the ambitious goal to reduce the CO₂ emissions per passenger and 100 kilometers – which directly corresponds to fuel consumption – by 25 percent by 2020 when compared with the 2006 values. All IATA airlines intend to grow only in CO₂-neutral ways from 2020. To date, no other industry with global activities has set such concrete environmental goals.

By the way, the research company INFRAS recently carried out a new scientific study in cooperation with the Fraunhofer Institute for the German Air Transport Initiative. This study clearly shows that – if we take all factors into account that burden the environment – the aircraft is not only the fastest mode of transport for distances above 400 to 500 kilometers, but in sum total also the one with the lowest environmental costs.

You have taken the helm at Lufthansa at a time when the consolidation of the air transport industry is fully underway. What does this mean for the Group's commitment to sustainability?

Our commitment to sustainability includes all companies of the Lufthansa Group, also the airlines added over the past years, such as SWISS, Austrian Airlines and bmi. All are committed to sustainable business practices. That is our mission and we will not be pushed off course by “bad-weather phases.” The synergistic effects that result from consolidation are significant in all dimensions of sustainability.

Let us come back to the key term of sustainability: In the hierarchy of success factors for Lufthansa, where do you rank sustainability?

When we talk about success factors, we need to divide the term of sustainability once more. Of course, economic success is one fundamental condition for any company that also wants to be able to act responsibly in environmental and social areas. At Lufthansa, we grappled with the varied aspects of sustainability very early on. This



also includes the question of how we can meet the enormous rise in mobility needs with environmentally compatible products. To achieve this, you need a highly qualified and motivated team of employees. This is why we have always invested in training and continuing education and offer a wide range of development options. For Lufthansa, sustainability is a central characteristic for differentiation and definitely a decisive factor.

What are the key points of Lufthansa's sustainability strategy?

We take several dimensions into consideration. Let me begin with an overriding observation. It is important for us to apply ethical yardsticks when making our decisions, that we create transparency concerning our sustainability issues and that we communicate actively – and that includes areas where we want and need to get even better. As long ago as 2002 we were the first aviation group to join the UN Global Compact. We have clearly defined goals and our Corporate Responsibility Council steers the Group's overriding sustainability activities. But our commitment can only take place if we are an economically stable company. As a Group with global activities, we are subject to constant challenges of the most varying kinds. It is one of Lufthansa's characteristics that we have an economically sound company despite unstable world markets and despite the most varying legal frameworks from one continent to another. In this context, we give special importance to value-oriented corporate governance. It promotes long-term value creation.

And talking about creating value, what are your expectations concerning the project Aviation Biofuel?

There is no way around the development and testing of alternative fuels. We will not be able to

reach the environmental goals already mentioned without the use of biofuel. We have now reached the point where we can start our six-month practical test this year. That said, the expectations of the project are correspondingly high, of course, and we have central requirements: Only certified biofuels will be used, meaning fuels that are ecologically acceptable and not in competition with the food chain or the drinking water supply. The supply of such biofuels is a problem at

“For Lufthansa, sustainability is a central characteristic for differentiation and definitely a decisive factor.”

the moment. We are working on this and on setting up a functioning supply chain in cooperation with our numerous system partners. I can't wait to see the results of the test run, which is unique worldwide.

Starting in 2012, European air transport takes part in the EU emissions trading scheme. How do you assess this decision by the European Union?

Just for the record, I'd like to say that it has always been our goal to conserve fuel and thus avoid CO₂ emissions. And this will not change because kerosene is one of our largest cost items. As far as the emissions trading scheme is concerned, air transport did not exclude itself from it and then agree to participation in principle. However: As a global industry with global competition we need reasonable and fair competitive conditions. Unfortunately, this is not the case as things stand today and that is why we are very reserved concerning the purely European emissions trade, as it is currently being planned. Climate protection is a worldwide subject, not a sectoral one that can be differentiated by countries or continents. For us it is essential, therefore, to have global

solutions. It is our great concern that we will be confronted with a partial solution for Europe that does not give us any incentives to do more for the environment, but that disadvantages us massively, in turn, through financial burdens vis-à-vis non-European airlines that are obliged to buy significantly fewer or no certificates.

The public debate concerning a women's quota also causes internal discussions at Lufthansa. What is your opinion on this subject?

We believe that a quota is not the right incentive to apply in the case of this issue. Independently of that, women in management positions are a topic of the highest priority, which I have put at the top of my personal agenda as well.

Our point of departure is comparatively good. Our share of women with personnel responsibility is currently just under 40 percent and compared with the industry we are far ahead. For positions in middle and higher management this share stands above 13 percent, and here we have indubitably a need for further improvements. We are in the process of setting up appropriate programs. These are designed to make it easier for women to assume management responsibility, for example with support from family-friendly working and part-time models, creating infrastructures for child care, but also through mentoring programs that encourage women to take responsibility in a management world that is still strongly masculine. Beyond such fundamental programs, we also want to support women in targeted ways, for example by means of young managers' programs for women and initiating fast-track programs.

In the recent past there were also some relevant cases of compliance at Lufthansa. Does the Lufthansa Compliance Program have to be amended?

Compliance issues are very important for companies today. In my opinion this trend will increase in the years ahead rather than diminish. For that reason it is indispensable that we establish a culture within the company that makes it unequivocally clear that we prefer to forgo business when it violates a law or other regulations, instead of finding ourselves doing the ethical equivalent of the splits between pleasant words to the outside and the actual course of action. That is why we have established both a Group-wide compliance program as well as an ombudsman system. Our employees – board members and myself included – take part in training programs. We cooperate fully with the authorities in compliance-relevant cases. The cases you mentioned were also handled in this way. The programs we implemented are effective.

How would you complete this sentence: "Sustainability starts ..."?

... in our heads, not only in those of managers, but in the heads of all employees. And that is why we create structures, so that our employees can apply aspects of sustainability in their thinking and their actions.

In this context, do you see a special responsibility and model function for the Chairman of the Executive Board?

I can clearly respond with "yes" – no credibility without a role model.





And where does sustainability end?

I explained earlier that sustainability ends when a company is in a genuine, existential crisis situation and one can no longer afford many of the topics that are relevant long-term because one is only focused on short-term survival. For exactly that reason it is so important that we do not get into such a situation but instead we set up our structures and act in such ways that we can afford this sustainability horizon for many years. Then – and I am convinced of it – we will never reach the limits of sustainable business practice.

A question for the private citizen Christoph Franz: How do you practice environmental protection at home?

Environmental protection is part of a certain attitude toward life for me. In my private life, I use cars that are as energy-efficient as possible, for

example, and often a bicycle. When it comes to flying, I am of course convinced by our own efficient fleet. Beyond that, I think one can be highly mobile by using intelligent links between different modes of transport. And at my vacation home I consciously installed a heat pump – the very first in that place.

Corporate responsibility

Responsibility

Corporate responsibility, that is to say sustainable and responsible entrepreneurial practice, is an integral part of our corporate strategy. It means that we are committed to creating added value for our customers, employees and investors and to meeting our responsibilities toward the environment and society.

For these reasons, we continuously improve our measures to safeguard the climate and the environment, maintain responsible and fair relations with our employees, and as a company actively engage in numerous social concerns.



Our understanding of corporate responsibility

The international economy and the air transport industry, in particular, operate in a dynamic

environment that is defined by long-term megatrends and global challenges, such as population growth and the rise of megacities, increasing demand for mobility in the context of increasing globalization, climate change and processes of political transition. These underlying factors provide the background for our understanding of the five pillars of corporate responsibility and our related activities.

Principles of the UN Global Compact

The UN Global Compact is a worldwide initiative that was set up by the former UN Secretary-General Kofi Annan in 2000. The compact between companies and the United Nations has the goal of making globalization socially and environmentally compatible, and it obliges the participating companies to adhere to social and ecological minimum standards, to respect human rights and to fight against corruption. Deutsche Lufthansa AG has been a member since 2002.

Human rights

- Businesses should support and respect the protection of international human rights within their sphere of influence and
- make sure their own corporations are not indirectly linked to human rights abuses.

Labor

- Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- eliminate all forms of forced and compulsory labor;
- effectively abolish child labor; and
- eliminate any discrimination in respect of employment and occupation.

Environment

- Businesses should support a precautionary approach to environmental challenges;
- undertake initiatives to promote greater environmental responsibility; and
- encourage the development and diffusion of environmentally friendly technologies.

Anti-corruption

- Businesses should work against corruption in all forms, including extortion and bribery.

www.unglobalcompact.org

Economic sustainability

The basis of all activities at the Lufthansa Group and an important condition for responsible entrepreneurial action is the long-term increase of the company's value by means of applying sustainable business principles. Our first consideration is toward our customers and their mobility needs. They appreciate our dense, international network of destinations, our efficiency and reliability as well as personal attention and high levels of quality. To remain the first choice among competitors, we continuously work on innovation and streamlined cost structures. We take an active role in shaping the consolidation of the air transport industry and consistently strive to further improve and develop. Our business segments also make a significant contribution to reaching these goals. Against this background, we count on long-term value creation, circumspect management of opportunities and risks, consistent management of our supply chains and constructive dialogues with our stakeholder groups.

Social responsibility

Lufthansa is aware of the responsibility it has, not only for its customers, the environment and society, but to a high degree also for the people who have entrusted their capacity for work to the company. Our employees are the most important pillar within our corporate culture and thus crucial for the company's success. A broad range of continuing-education options and flexible work-time models allow them to further and maintain their professional knowledge, and to strike a balance between professional and family needs. In this way, we help maintain our employees'



motivation as well as their mental and physical health, and we strengthen a culture of lifelong learning within the company.

Climate and environmental responsibility

Our conscientious approach to handling climate and environmental issues is illustrated, for example, by our successes in lowering specific CO₂ emissions, the implementation and expansion of environmental management systems, the resource management and the measures in environmental care. The strategic goals we set in 2008 concerning environmental and climate protection are guided by the internationally acknowledged four-pillar strategy for air transport. The spectrum of objectives spans the range from a reduction of specific CO₂ emissions by 25 percent by 2020 in comparison with 2006, to measures aimed at increasing efficiency in operational areas and all the way to infrastructure improvements and ecological construction techniques.

Our ongoing fleet modernization program and the resulting introduction of new aircraft with modern and fuel-efficient engines into the fleet has the immediate effect of decoupling transport performance from CO₂ emissions. This program also entails a further optimization of specific fuel consumption, which is measured in liters per 100 passenger kilometers flown.

Corporate governance and compliance

For Lufthansa, it is a matter of course to apply sound and responsible management and control mechanisms and to adhere to laws and regulations. This means that risks in the context of corporate liability are minimized. We place great value on openness and clarity in communications and strive to maintain and expand the trust of our investors, employees and the public in general. Corporate governance and corporate compliance also comprise the areas of legal issues, taxation, data protection as well as the remuneration of members of the Executive Board and the Supervisory Board.

Corporate citizenship

As a Group with global activities, we take an active part in society in numerous ways. The focus of our commitment is on the areas of social issues, environment and nature, culture, education and sports. In the event of natural catastrophes, such as the earthquakes in Japan and Haiti or the floods in Pakistan, we can be at the disaster's location quickly and provide efficient and immediate aid by transporting vital goods.



The Corporate Responsibility Council steers all topics relevant to sustainability within the Group.

Our organization

The mobility of people and goods is the basis for economic development and societal affluence. Lufthansa would like to contribute to these while assuming responsibility for current and future generations. The principles of entrepreneurial responsibility are firmly anchored in the Lufthansa Group's strategic principles as well as in its corporate values and management principles. During the reporting year, we further developed our existing orientation and embedded all aspects concerning this topic in a structure under the heading "Responsibility." In addition to sustainability, which implies economic, ecological and social issues, this also includes our activities concerning the principles of corporate management according to sustainable guidelines (corporate governance) and social commitment (corporate citizenship).

To be able to manage all activities that are related to corporate responsibility and sustainable business practice at the Lufthansa Group even more effectively, the Sustainability Board, which had been responsible for these issues in the past, was expanded and more closely linked to the Group strategy. The resulting Corporate Responsibility Council, which continues to be interdisciplinary and companywide, is chaired by the head of Group strategy. The committee's members are the heads of the Group departments in charge of political issues, environmental issues, human resources, legal issues, communications, investor relations and controlling. The inclusion of Group Controlling additionally ensures a closer link between sustainability goals and the Group-wide control and reporting processes. To ensure that our criteria of responsibility are also followed throughout the supply chain, the Group depart-

ment Corporate Sourcing contributes to the Council's work in a consulting function. We attach great importance to the high level of relevance of all aspects of corporate responsibility – for this reason, the Council reports directly to the Group's Executive Board, which has overall responsibility.

Those responsible at the Group level agree on and coordinate projects in the area of corporate responsibility. The individual departments are in charge of the subsequent implementation. But employees are also explicitly welcome to contribute decentralized initiatives, ideas and optimum processes to CRC. Simultaneously, Lufthansa organizes and supports the cooperation and exchange of knowledge and information across the company by means of networks.

Balance is a fixed component of internal and external communications concerning the subject of "sustainability within the Lufthansa Group." Launched in 1994 as a pure environmental report, *Balance* today covers all aspects relevant to corporate responsibility at Lufthansa and its Group companies. In addition, we are currently developing an eLearning application to give all employees and managers at the Group even better access to the subject of corporate responsibility.

External evaluation of our sustainability activities

As in the preceding years, experts from outside the company and rating agencies again evaluated and assessed Lufthansa's activities concerning responsible practices in 2010. Lufthansa continues to be represented in numerous sustainability indices, such as FTSE4Good, ASPI (Advanced Sustainable Performance Indices) and ESI (Ethibel Sustainability Index).

Despite manifold efforts, Lufthansa – similar to other corporations listed on the DAX stock index – was not able for the first time since 2005 to meet the tightened conditions for membership in the Dow Jones Sustainability Index. The analysts identified potential for improvements above all in the areas of corporate citizenship, the conditions for suppliers and the entrepreneurial commitment to interest groups outside the company. By contrast, the evaluations in the areas of climate strategy, noise protection and local air quality were very positive.

The Executive Board and the Corporate Responsibility Council take external evaluations and recommendations very seriously. The areas for improvement indicated are assessed together with the experts within the company and necessary measures are then implemented.



Balance: Continuity in reporting since 1994



Stakeholder dialogue

Communications without detours

The Group attaches great importance to knowing the wishes, experiences and expectations of its stakeholder groups and to integrate these into its strategic actions. For this purpose, Lufthansa actively faces the critical questions of all stakeholders, whose interests are touched upon by the company's business activities.

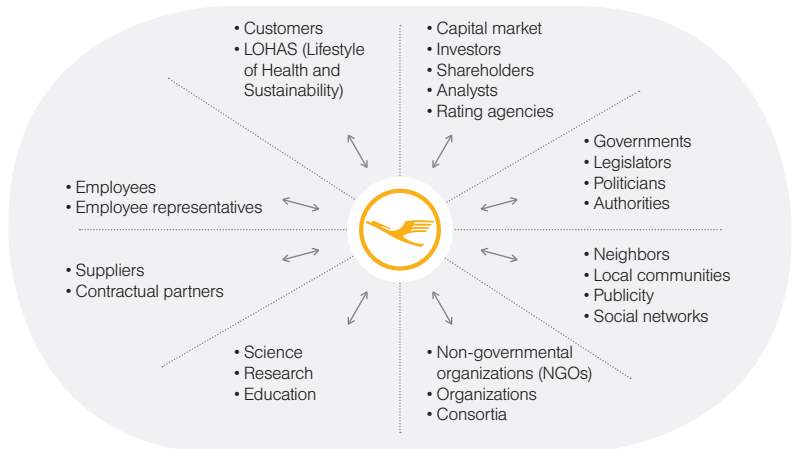
This includes continuous exchanges with shareholders and analysts, customers and suppliers, as well as employees, employee representatives and contractual partners. Moreover, the company maintains a constructive dialogue with neighbors and local communities, government representatives and city administrations, scientists and educators, media and employer associations, environmental associations and non-governmental organizations. The goal is to identify social issues and trends early on, such as opportunities and risks, and to derive from these the next steps for a sustainable future. This also includes continuous reporting in internal and external media about the Group's commitment in the area of sustainability.

Targeted customer surveys

What do customers expect from Lufthansa? How are our products and services accepted? Where are we doing well already and where can we improve? Lufthansa finds answers to these and other questions by regularly conducting customer surveys which are carried out worldwide in cooperation with renowned market research institutes. One fixed element is a number of questions concerning the Group's environmental performance and social responsibility. At the local level, so-called Customer Advisory Boards are convened when a specific event warrants it and the goal is to find out what passengers think about Lufthansa's service chain. All offers of dialogue promote customer trust and also provide important impulses for the development of tailor-made offers. In addition, the level of customer satisfaction has been measured by means of the Customer Profile Index since 2001.

Exchanges with frequent flyers

Lufthansa particularly promotes a dialogue with frequent flyers. In November 2010, the company again invited 70 frequent flyers organized in the Internet forum www.flyertalk.com to spend a day in Frankfurt. The day's program included a tour of the new Lufthansa flagship, the Airbus A380, as well as the First Class Terminal. Furthermore, the guests took part in interactive workshops to test



new product and service ideas. SWISS, bmi and Brussels Airlines also presented their respective portfolios to members of FlyerTalk and answered all questions posed.

Frequent flyers are also closely connected to selection processes concerning the introduction of new products. To find out, for example, which seat would be optimal for the new European cabins, Lufthansa organized 16 events during the reporting year that gave 300 top customers an opportunity to cast their votes, which were included in the final decision. Beyond that, Lufthansa



The Lufthansa A380 also caused spontaneous enthusiasm among the frequent flyers organized in the Internet forum www.flyertalk.com.



Technical and aeronautical competency clearly illustrated:
The Visitors' Service in Frankfurt welcomed more than 8,000 guests in 2010.

has regularly organized the Service Excellence Lounge since 2004. The goal of this moderated event is the continuous optimization of service.

**Never at a loss for an answer:
The Lufthansa Visitors' Service**

The topic-oriented guided tours organized by the Lufthansa Visitors' Service at the locations Frankfurt and Hamburg allow a glance behind the scenes of the Lufthansa Group. In 2010, a total of 18,153 visitors took advantage of this kind of dialogue. The service addresses primarily national and international top customers from companies and distribution partners as well as students, university graduates and representatives of associations and research institutions, who appreciate these opportunities for direct exchanges. Additionally, hundreds of Lufthansa employees benefited from specialized employee tours in Frankfurt to take a close look at the new Lufthansa flagship, the Airbus A380. These guided tours will be continued in 2011. In Frankfurt, 8,415 visitors participated in a total of 566 events, which in part include presentations of the environmental care activities of the Lufthansa Group. In Hamburg, 512 guided tours took place involving 9,738 visitors. Beyond the Lufthansa Visitors' Service, Austrian Airlines and SWISS also offer such services at their hubs in Vienna and Zurich.

**Close dialogue with investors
and analysts**

A significant part of the stakeholder dialogue consists of transparent, timely and detailed information to all participants of the capital market about current corporate developments, the strategy selected and structural changes. In comparison with the preceding year, Lufthansa again increased these activities in 2010. Thus, members of the

Executive Board and the department Investor Relations provided information about the Group's current and strategic developments in the context of 39 road shows and 13 investor conferences. About 450 individual and group discussions took place with institutional investors and analysts. In January 2010, the company organized a meeting with analysts for the first time to send off the New Year. This was followed up in June 2010 with the annual Investors' Day at the Lufthansa Aviation Center in Frankfurt.

In addition to the Annual Report and the three Interim Reports the capital markets receive "Investor Info," which provides regular details about the monthly traffic figures of the flying companies and other news from the Lufthansa Group. Private investors receive information through the "Shareholder information" as well as in personal discussions that take place in the context of the five private shareholder forums.

Dialogue with employees

Continuous dialogue events are an important instrument to find out more about the needs, wishes and expectations of employees. Beyond that, the company organizes numerous Town Meetings at decentralized locations that give the Executive Board and employees an opportunity for direct exchanges. To give Lufthansa employees a perspective beyond the immediate horizons of their work areas, several internal media were bundled in 2010 to form one "interdisciplinary" publication: the new magazine "Lufthansa Passage," which equally addresses ground, cabin and cockpit employees.

In 2010, health was one of the central topics in the dialogue with employees. The goal was to promote and maintain Lufthansa employees' well-being and ability to work, and the company organized a number of related events and information campaigns. And for the optimal introduction of new IT components, such as PCs or software applications, employees can participate in surveys on the subject of computer-based workstations.

Dialogue with science

Research and development are indispensable pillars of social progress. To make a contribution to the dialogue with science, Lufthansa has for many years participated in numerous research projects and worked closely with renowned scientific establishments and institutions. The emphasis of our research efforts is on climate



issues, ways to reduce emissions and noise, and the development of alternative fuels (see “Climate and environmental responsibility” from page 63). Furthermore, Lufthansa maintains an ongoing exchange with other airlines with the aim of passing on its own experiences and receiving valuable impulses from the outside.

Sustainability workshop in cooperation with Lüneburg University

Lufthansa takes advantage of numerous opportunities to develop the company long-term – and also uses cooperations with renowned universities for this purpose. In spring 2010, the Group organized a hands-on workshop in cooperation with the Leuphana University in Lüneburg on the subject of “Sustainable business practices.” It offered 22 students participating in the MBA distance-learning program the opportunity to analyze Lufthansa’s sustainability during a one-week stay at the Lufthansa Aviation Center in Frankfurt and to develop concrete suggestions concerning the practical implementation of individual programs.

For example, the future managers determined the CO₂ footprint of an airline catering product. The result showed that it would take a disproportionately large effort to establish CO₂ footprints for the entire product range of LSG Sky Chefs, which also changes continuously. Thanks to this insight, the company will in the future follow a more pragmatic approach, whereby CO₂ emissions are not calculated for individual products but as a so-called Organizational Carbon Footprint based on the CO₂ emissions of the entire company. The workshop organized by Lufthansa Cargo produced similarly encouraging results. Here, the students produced a comprehensive benchmark by comparing the CO₂ emissions and the climate neutrality of the Lufthansa subsidiary with those of other freight airlines. The results are helping Lufthansa Cargo in 2011 develop an individual CO₂ calculator for its customers. Another group of students analyzed to what extent Lufthansa would be able to integrate sustainability criteria even more deeply into the supply chain and which criteria should be applied to the selection of suppliers.

Last but not least, students were assigned to four project groups and given the task to convince a jury of experts of their work in the context of a competitive presentation. The jury included Lufthansa managers and external experts, such as the deputy managing director of the Öko-Institut Berlin, Christian Hochfeld.

Lufthansa and EBS organize an expert roundtable on sustainability

In November 2010, Lufthansa and the European Business School (EBS) invited a 25-member expert roundtable on the subject of “Sustainable development in the air transport industry” to Oestrich-Winkel. Among the participants were industry representatives as well as renowned researchers from Germany and abroad. In their presentations and workshops the experts cast a light on the opportunities and hurdles on the path toward sustainable development, among other subjects.

Lufthansa Cargo: Cargo Climate Care Conference 2011

For the second time, Lufthansa Cargo organized the Cargo Climate Care Conference. The goal of this event, which took place on March 1, 2011 in Frankfurt, was to develop innovative solutions for the long-term improvement of the logistics industry’s climate balance. More than 200 representatives from the logistics and air freight industry participated in the dialogue event on the subject of “Energy efficiency in air freight: Reality and vision.” The program included a broad range of expert lectures, on topics such as alternative fuels and energy efficiency, and the challenges of and opportunities for “green logistics.” During the conference, the Cargo Climate Care Award, which includes prize money totaling 16,000 euros, was presented. Junior researchers, customers and employees who had developed innovative ideas for more climate-friendly practices in air freight were honored with this prize.



Fully booked: More than 200 representatives of the logistics and air freight industries participated in the Cargo Climate Care Conference 2011.



Munich Airport: Regular meetings with representatives of civic action groups in the airport's vicinity establish a constructive dialogue and create positive channels for exchanges.

Political and social dialogue

Seeking dialogue with the public, managers of the Lufthansa Group again presented and discussed at trade fairs, congresses and seminars during 2010. Here is a selection of such events:

- Environmental congress "Greener Skies Ahead. 2nd International Conference on Reducing the Environmental Impact of Future Air Transport" in the context of the International Aerospace Exhibition (ILA) in Berlin.
- Parliamentarian Evening "Air Transport" of Deutsches Verkehrsforum e.V. in Berlin on the topics of climate protection, subsidies, competition and passenger rights.
- Event organized by German "Air Transport Initiative" with Federal Minister of Transport Peter Ramsauer, covering subjects such as the situation of the air transport industry after the passing of the cloud of volcanic ash, infrastructure improvements, and air traffic management.
- 66th Annual General Meeting of the IATA in Berlin – Lufthansa was the official host for the more than 1,000 delegates.

- Conversation with EU Commissioner Connie Hedegaard in Brussels on climate protection and trading emissions rights.
- Aviation congress in Berlin under the motto "Aviation location Germany – Securing mobility, shaping growth responsibly" including the participation of Federal Minister of Economics Rainer Brüderle and Federal Minister of Transport Peter Ramsauer as well as several ministers of state.

Dialogue with neighbors and municipalities

Lufthansa seeks an ongoing dialogue with representatives of state governments as well as mayors and administrations of the municipalities surrounding the hubs of the Group. For example, the government of the state of Hesse elected Lufthansa to join the Forum Airport and Region in fall 2009 (see "Active noise protection at Frankfurt Airport" on page 84). Furthermore, with support from the initiative "Freight needs the night," Lufthansa Cargo organized an expert convention under the same title on June 24, 2010 in Frankfurt. Representatives of logistics companies, industry, science and politics discussed the necessity of a reliable legal framework for Germany as a location for logistics operations.



Social media

Social networks such as Facebook, Twitter, YouTube or professionally-oriented platforms open up new paths for starting dialogues with stakeholders and optimizing communications. Within the company, Lufthansa employees have been able to use the Web 2.0 intranet platform eTeaming since June 2009 for their exchanges. In April 2010, it received the award for the "Best Internal Communications Strategy" on the occasion of the IRR Technology Web 2.0 Congress. Recently, the heading "Lufthanset Online" was added to eTeaming, aiming at providing an even more targeted flow of information and exchanges with and between employees.



The Lufthansa Group fleet

Investments in new aircraft pay off – Economically as well as ecologically

Aircraft are the Lufthansa Group's most important means of production and about half of the annual investment volume is allocated to new airplanes. The fleet strategy is guided by the development of markets and competition, customer needs as well as economic and ecological factors.

The selection criteria applied when new aircraft are acquired include price, seating and loading capacities, range, cruising speed and passenger comfort. Also important are for noise, emissions, consumption values as well as maintenance and operating costs to be as low as possible.

Aircraft incorporating the latest technology have a positive effect on all dimensions of sustainability: They secure jobs, consume less fuel, are quieter and form the basis for the Group's long-term value creation. The department Lufthansa Group Fleet Management is situated at the Group level as a central function and is responsible for all Group airlines. This department also serves as a link between the airlines and the aircraft and engine manufacturers. The consistent goal of our buyers is to purchase the right type of aircraft at the optimum point in time and at the most favorable price possible with a specification that fits.

In the framework of the largest fleet modernization program of the company's history, the Lufthansa Group put 47 new aircraft into service in the reporting year alone – and thus continued the rejuvenation of the Group fleet in a consistent manner. Firm orders have been placed for an additional 155 aircraft that will be delivered by the end of 2016. In March 2011, the Supervisory Board also approved a further order of 30 aircraft of the Airbus A320neo family for the Passenger Airline Group as well as five Boeing 777F freighter aircraft for the business segment Logistics. "The investments we make in our Group fleet are paying off. The aircraft added to the fleet are convincing, especially with regard to economic and ecological efficiency," says Nico Buchholz, Executive Vice President Lufthansa Group Fleet Management. For example, the operation of larger and more fuel-efficient types of aircraft in the regional segment allows an increase of seating capacities, while environmental effects are decreased at the same time.

On December 31, 2010, the Lufthansa Group fleet comprised a total of 710 aircraft at the airlines Lufthansa, SWISS, Austrian Airlines and bmi, the regional partners Lufthansa CityLine, Air Dolomiti and Eurowings as well as Germanwings and Lufthansa Cargo.

The Lufthansa A380 in scheduled operations

The Airbus A380, the new flagship of the Lufthansa long-haul fleet, has established new yardsticks in the areas of technology, ecological efficiency and sustainability as well as travel comfort for passengers and working conditions for crews. In 2010, Lufthansa took delivery of the first four A380s. The Lufthansa A380, which offers 526 seats, now operates scheduled flights on the routes to Tokyo, Beijing, Johannesburg, New York and San Francisco. Featuring a fuel consumption of only about 3.4 liters of kerosene per 100 passenger kilometers, the A380 marks the beginning of a new era in the industry. An additional advantage is that it is about 30 percent quieter than other wide-body aircraft.

About 25 percent of the A380's fuselage consists of advanced and more lightweight composite materials. These include GLARE, a laminate composed of aluminum layers and fiberglass-reinforced plastic, which is more lightweight and damage-tolerant than the aluminum that has



"The investments we make in our Group fleet are paying off. The aircraft added to the fleet are convincing, especially with regard to economic and ecological efficiency."

Nico Buchholz
Executive Vice President
Lufthansa Group Fleet Management



The first Lufthansa Boeing 747-8 Intercontinental in production.

been standard in aircraft construction. In addition, insulation fixed to the fuselage's outer layer shields the cabin from external engine and airflow noise, so that the aircraft is very quiet for passengers as well. Further innovations in cabin air conditioning and lighting as well as in-flight entertainment make the Lufthansa A380 unique. The fully redesigned First Class is located on the upper deck, offering eight generous seats that guarantee individuality and the highest levels of comfort. Also on the upper deck is the world's largest Business Class, offering 98 seats. And Economy Class, featuring 420 seats on the main deck with impressive dimensions of space, also offers passengers more comfort than ever before. Lufthansa plans to operate a total of 15 A380s, of which a further four are to enter service in 2011.

First Boeing 747-8 Intercontinental in final assembly

The current gap in the Group fleet between the A380 with 526 seats and the Airbus A340-600 with a little more than 300 seats is set to be closed with the Boeing 747-8 Intercontinental. In 2012, Lufthansa will be the world's first airline to put the Boeing 747-8 into service and plans to replace part of its Boeing 747-400 fleet with the Boeing 747-8. The airline has 20 aircraft of this type on order; their new General Electric engines will ensure low fuel consumption, which is expected to be around 3.5 liters of kerosene per 100 passenger kilometers. In addition, the noise footprint is 30 percent smaller than that of the predecessor model, the Boeing 747-400 (see *Balance*, Issue 2010, page 64). The final assembly of the first passenger version of this aircraft started at the end of 2010 at the Boeing factory in Everett near Seattle. The aircraft made its first successful test flight in March 2011.

56 new orders in 2010

The Lufthansa Supervisory Board approved orders for another 56 new aircraft in 2010 for the Group: Eight Airbus A330-300s, equipped with Rolls-Royce Trent 700 engines, will reinforce the long-haul fleet. The remaining 48 aircraft are earmarked for operations on continental and regional routes: 32 Airbus A319s, A320s and A321s as well as eight Embraer 195s that will be delivered to the Group companies step by step. The list price of this order is about 3.5 billion euros. Additionally, there are eight Bombardier CRJ900 NextGens on order; deliveries will be completed in the first half of 2011.

The Airbus A330-300 has been in service at the Lufthansa Group since 2004. The twin-engine wide-body aircraft seats up to 221 passengers and has a range of up to 10,000 kilometers when fully loaded. Technically, it is almost identical to the A340-300, which is equipped with four engines, and is also operated on medium-haul routes. Thrust is provided by Rolls-Royce Trent 700 engines, which were developed specifically for the A330 series and are particularly efficient and quiet.

The A319s, A320s and A321s all belong to the successful A320 aircraft family manufactured by Airbus, which is above all characterized by its economic efficiency. One of the advantages of this aircraft family is that A320 pilots can fly all types of the family. Furthermore, the aircraft's similarities save significant effort in maintenance and thus also costs. Another plus: Each of the 45 new aircraft from the A320 family that will join the fleet of Lufthansa Passenger Airlines will be equipped with a new cabin, featuring improved levels of comfort, and a new appearance, that will gradually be retrofitted on the entire existing continental fleet as well. The longest family member is the Airbus A321, which seats up to 200 passengers in Lufthansa's configuration. The A321, which is operated on short- and medium-hauls, gains points with its high fuel-efficiency per passenger and its low noise and emissions values. As with the other members of the A320 family, the A321 places as light a burden on the environment and the climate as is currently possible.

The engine manufacturer CFM International will equip the Airbus A320 aircraft ordered in 2010 with the latest version of the CFM56-5B engine, whose advantages will include an additional improvement of specific fuel consumption by about 1 percent and reduced noise emissions. The further development of the high-pressure



compressor, the combustion chamber and the high- and low-pressure turbines makes it possible to increase fuel efficiency and thus further cut consumption. At the same time, the engines meet the maximum emissions values of CAEP/6 (Committee of Aviation Environmental Protection) of the International Civil Aviation Organization (ICAO).

The aircraft of the types 190 and 195 made by the Brazilian manufacturer Embraer also fly with high economic efficiency as well as being environmentally friendly. This is illustrated by the extremely low fuel consumption of about 3.9 liters of kerosene per 100 passenger kilometers with a full payload, according to the manufacturer's data. Further pluses are low emissions and noise values.

The eight CRJ900 NextGen aircraft of the Canadian manufacturer Bombardier impress with new engine technology, more lightweight materials and fuel efficiency. These aircraft are also characterized by low emissions values and noise burdens. This type of aircraft can fly to destinations up to 2,440 kilometers away.

New aircraft for Lufthansa Passenger Airlines, SWISS and Germanwings

Of the 56 aircraft newly ordered in 2010, Lufthansa Passenger Airlines will receive three Airbus A330-300s and 20 aircraft from the Airbus

A320 family, Lufthansa Regional will receive eight Embraer 195s and eight Bombardier CRJ900 NextGens. Five Airbus A330-300s, two Airbus A321s and two Airbus A320s are slated for operations at SWISS. Germanwings will receive eight Airbus A319s.

The fleet modernization program comprises not only the acquisition of new aircraft but also the updating of older models. The best example for this approach is the planned modification of the entire Boeing 737 fleet stationed in Frankfurt, which is to be completed by the end of 2011. Lufthansa is adapting the engines of these Boeing 737-300 and 737-500 aircraft technically, so that they will fly significantly quieter (see "Lufthansa is firmly committed to noise reduction" from page 82).

Group fleet on 31.12.2010				
	(changes compared with 2009)			
	in possession ¹	age ¹	in operation ²	age ²
Lufthansa Passenger Airlines (including Lufthansa Italia)	342 (+ 25)	11.5 (- 0.3)	274 (+ 19)	13.0 (± 0)
Lufthansa CityLine	56 (- 14)	9.9 (+ 0.3)	57 (- 11)	6.9 (- 1.7)
Air Dolomiti	8 (- 6)	9.9 (+ 0.5)	17 (- 6)	7.4 (± 0)
Augsburg Airways	0 (± 0)	0.0 (± 0)	15 (± 0)	5.9 (+ 1.3)
Contact Air	0 (± 0)	0.0 (± 0)	8 (- 5)	16.9 (+ 3.6)
Eurowings	13 (- 10)	9.6 (- 3.0)	28 (- 7)	4.7 (- 3.3)
Germanwings	30 (+ 4)	5.4 (+ 0.3)	30 (+ 4)	5.4 (+ 0.3)
SWISS	90 (+ 6)	10.9 (+ 0.3)	86 (+ 10)	11.0 (+ 0.2)
Austrian Airlines	94 (- 8)	11.6 (+ 0.6)	80 (- 13)	11.6 (+ 0.6)
bmi	59 (- 8)	9.9 (+ 0.7)	59 (- 9)	9.9 (+ 0.7)
Business segment Passenger Airline Group	692 (- 11)		654 (- 18)	
Lufthansa Cargo	18 (- 1)	12.7 (+ 0.7)	18 (+ 2)	12.7 (+ 1.7)
Business segment Logistics	18		18	
Group	710 (- 12)	10.9 (± 0)	672 (- 16)	10.8 (+ 0.1)

1 Aircraft in the Group's possession
2 Aircraft operated by the Group

The operative fleet of the Lufthansa Group

Lufthansa Passenger Airlines

including Lufthansa Italia
and Lufthansa Regional



LH: 30 aircraft, 127 seats, 2,590 km range

Boeing 737-300



LH: 29 aircraft, 111 seats, 2,520 km range

Boeing 737-500



LH: 30 aircraft, 132 seats, 3,470 km range

Airbus A319-100



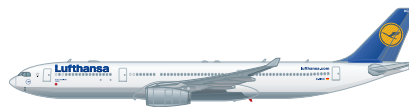
LH: 46 aircraft, 156 seats, 3,470 km range

Airbus A320-200



LH: 41 aircraft, 190 seats, 2,900/4,100 km range

Airbus A321-100/200



LH: 15 aircraft, 221 seats, 10,000 km range

Airbus A330-300



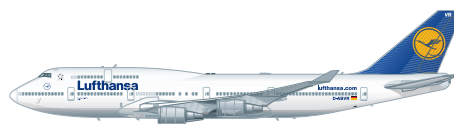
LH: 26 aircraft, 266/221 seats, 11,100/12,700 km range

Airbus A340-300



LH: 24 aircraft, 306 seats, 12,600 km range

Airbus A340-600



LH: 29 aircraft, 352 seats, 12,500 km range

Boeing 747-400



LH: 4 aircraft, 526 seats, 12,000 km range

Airbus 380-800

Legend

- 4U = Germanwings
- BD = bmi
- C3 = Contact Air
- CL = Lufthansa CityLine
- EN = Air Dolomiti
- EW = Eurowings
- IQ = Augsburg Airways
- LH = Lufthansa Passenger Airlines, Lufthansa Cargo
- LX = SWISS
- OS = Austrian Airlines

Range indicated in general with maximum number of passengers or payload, respectively.

Number of aircraft in operation on 31.12.2010

1 maximum number of seats, different versions in operation





EN: 1 aircraft, 46 seats, 900 km range

ATR42-500



EN: 11 aircraft, 64 seats, 900 km range

ATR72-200



CL: 11 aircraft, 93 seats, 2,280 km range

Avro RJ85



EW: 13 aircraft, 50 seats, 2,000 km range

CRJ200



CL: 20 aircraft, 70 seats, 2,310 km range

CRJ700



CL: 12 aircraft, 86 seats, 2,440 km range
EW: 15 aircraft, 86 seats, 2,440 km range

CRJ900



IQ: 9 aircraft, 72 seats, 1,200 km range

DHC 8-400



C3: 8 aircraft, 100 seats, 2,000 km range

Fokker 100



CL: 9 aircraft, 100 seats, 3,390 km range
IQ: 1 aircraft, 100 seats, 3,390 km range

Embraer 190



CL: 5 aircraft, 116 seats, 2,590 km range
EN: 5 aircraft, 116 seats, 2,590 km range
IQ: 5 aircraft, 116 seats, 2,590 km range

Embraer 195



LX: 20 aircraft, 97 seats, 3,000 km range

Avro RJ100



LX: 7 aircraft, 138 seats, 3,000 km range

Airbus A319-100



LX: 23 aircraft, 168 seats, 3,650 km range

Airbus A320-200

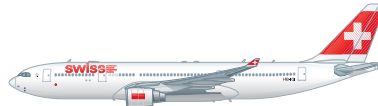
SWISS





LX: 7 aircraft, 200 seats, 3,200 km range

Airbus A321-100/200



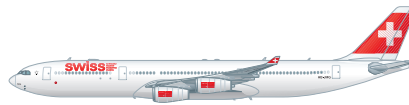
LX: 5 aircraft, 229 seats, 8,400 km range

Airbus A330-200



LX: 9 aircraft, 236 seats, 8,400 km range

Airbus A330-300



LX: 15 aircraft, 228 seats, 10,500 km range

Airbus A340-300

Austrian Airlines



OS: 14 aircraft, 72 seats, 1,630 km range

DHC 8-400



OS: 9 aircraft, 80 seats, 2,085 km range

Fokker 70



OS: 15 aircraft, 100 seats, 2,000 km range

Fokker 100



OS: 2 aircraft, 111 seats, 2,220 km range

Boeing 737-600



OS: 2 aircraft, 132 seats, 4,440 km range

Boeing 737-700



OS: 7 aircraft, 184 seats, 4,680 km range

Boeing 737-800



OS: 7 aircraft, 132 seats, 4,500 km range

Airbus A319-100



OS: 8 aircraft, 159 seats, 4,300 km range

Airbus A320-200



OS: 6 aircraft, 193 seats, 2,360/3,500 km range

Airbus A321-100/200





OS: 6 aircraft, 225 seats, 9,800 km range

Boeing 767-300



OS: 4 aircraft, 309 seats, 11,500 km range

Boeing 777-200



BD: 4 aircraft, 37 seats, 2,200 km range

Embraer RJ 135



BD: 14 aircraft, 49 seats, 2,800 km range

Embraer RJ 145



BD: 11 aircraft, 148 seats, 4,050 km range

Boeing 737-300



BD: 3 aircraft, 131 seats, 4,395 km range

Boeing 737-500



BD: 11 aircraft, 130 seats, 3,000 km range

Airbus A319-100



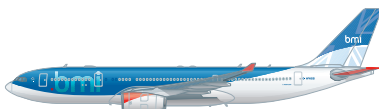
BD: 7 aircraft, 156⁺ seats, 3,500 km range

Airbus A320-200



BD: 7 aircraft, 195⁺ seats, 4,300 km range

Airbus A321-200



BD: 2 aircraft, 218⁺ seats, 9,250 km range

Airbus A330-200



4U: 30 aircraft, 144⁺ seats, 3,500 km range

Airbus A319-100



LH: 18 aircraft, 516m³/89.4t, 7,000 km range

Boeing MD-11F

bmi

Germanwings

Lufthansa Cargo



Prizes and awards

In 2010, Lufthansa again received numerous prizes and awards that honor the performance of the Group and its companies. Below is a selection of the most important tributes:

Lufthansa

- “Best Airline Worldwide” at the Business Travel Awards 2010
- “Best European Airline” at the World Airline Awards
- “Most Innovative European Airline 2010” award from airlinetrends.com
- Elected as “Most Popular Airline on Short-haul Routes” by the readers of British travel magazine Condé Nast Traveller
- “Best European Airline” on the occasion of the presentation of the “Grand Travel Award” in Oslo
- “Hungary’s Best Airline 2010” by travel magazine Az Utazó
- San Francisco International Airport / Community Roundtable Jon C. Long Fly Quiet “Most Improved Airline” award for efficient noise reduction
- Awards for the “Best Business Class on German and European Routes 2010” and for the “Best Airline Website for Business Travelers 2010” from the readers of the corporate travel magazine Business Traveller Deutschland
- Award for the on-board Internet access Lufthansa FlyNet® as “Product of the Year 2011” by Germany’s leading computer magazine “Chip”
- “Smaato Mobile Advertising Award 2010” for the Lufthansa iPhone app
- “SimpliFlying Airline Business Awards for Social Media Excellence for Airlines 2010” in the category “Best Social Media Marketing Campaign” for Lufthansa Web service MySkyStatus™
- “Innovation Prize 2010” by the Federal Association of the German Tourism Industry for Lufthansa’s premium strategy
- “AARP Innovative Employer Award 2010” from the U.S. association AARP for Lufthansa’s innovative approach to handling the effects of demographic change and supporting older employees
- Multiple top scores from the finance magazine Institutional Investor: “Best CEO,” “Best CFO,” “Best Investor Relations,” “Best IR Professional” in the transport sector
- Award as “European Manager of the Year 2010” for Wolfgang Mayrhuber (Chairman of the Executive Board and CEO of Deutsche Lufthansa AG until the end of 2010) by the association

of European business publications. Moreover, Mayrhuber also received the prestigious “Laureate Award” of the trade publication Aviation Week in the area Commercial Air Transport.

Group companies and network airlines

- Award for SWISS as “Best Business Class to North and South America” at the Business Traveller Awards 2010
- SWISS receives the “Skytrax 2010 World Airline Award” for “Staff Service Excellence” on the ground and in the air
- SWISS wins the “Global Traveler Award” of the U.S. publication Global Traveler Magazine for the best seat in First Class
- “Travel Star” award of the trade publication Travel Inside in the category best network airline on short- and medium-hauls for SWISS, followed by Lufthansa and Austrian Airlines
- Award for Lufthansa Cargo as “Best European Cargo Airline” on the occasion of the Asian Freight & Supply Chain Awards (AFSCAs) by trade publication Cargonews Asia
- Award for Lufthansa Cargo at the “Cargo Airline of the Year Awards” presented by Air Cargo Media, as “Best European Cargo Airline”
- “Aircraft Technology Engineering & Maintenance Award” for Lufthansa Technik as “Best MRO Provider in all Business Segments” – for the fourth time in a row
- “Crystal Cabin Award 2010” for the new lightweight construction trolley “Quantum” from LSG Sky Chefs as the most innovative cabin product. This trolley offers a weight savings of 40 percent when compared with conventional onboard models
- Innovation prize of German business for Lufthansa Systems. The Password Reset InterActive (PIA) system convinced the jury in the category sustainability (2011)
- Award for Lufthansa Global Tele Sales Cape Town as “Best Employer South Africa” by the international institute of Corporate Research Foundation



Economic Sustainability



“Ready for takeoff”

The air transport market is and remains a growth market. In 2010, the Lufthansa Group was able to participate successfully in rising demand with its business segments. Significant success factors in a challenging competitive environment are the innovative orientation toward quality and performance of its strong brands, in passenger and freight transport as well as in the service companies. The value-oriented approach to corporate governance has particular importance in this context. The reason is that long-term value creation and a sound financial basis are the absolute prerequisites to stay on course in the future as well.

Corporate governance

Growing in value-oriented ways

The leading indicator cash value added (CVA) and its anchoring in essential control processes ensures that the Lufthansa Group's profitable growth is significantly promoted through all employees' value-oriented thinking and acting. This approach is future-oriented, takes the requirements of our shareholders into account and is focused on a long-term increase of the company's value with regard to all stakeholders.

Economy and ecology go hand in hand when productivity increases result in the declining consumption of resources. This effect is amplified to the degree in which external, ecology-induced costs are internalized, that is to say incorporated into operating costs.



“Economic success is the basic prerequisite for sustainable business practice. The special advantage of the CVA approach in comparison with other concepts is that one indicator can capture the financial effects of the most diverse measures.”

Karl-Heinz Steinke
Senior Vice President Corporate Controlling
and Cost Management at Lufthansa

Lufthansa faces constant competition. This applies to both the markets for selling services and procuring supplies for the individual business segments, which also includes the capital market in a wider sense. As a growing company, Lufthansa depends on liquidity flowing in from external investors to finance its investments, despite its own financial strengths from its operative business. In this market, the aviation group competes with the most varying companies for the favor of investors, who can select from numerous investment options. To be attractive for equity providers means to meet their yield requirements based on risk. “It follows that economic success is only achieved in our eyes when the demands of the providers of equity capital and external funds, expressed in adequate interest or yield on their capital, are guaranteed,” explains Karl-Heinz Steinke, Senior Vice President Corporate Controlling and Cost Management at Lufthansa. “We assess these require-

ments afresh every year, based on the current developments in the financial markets and our financial liabilities.” As a result of the most recent developments, the aviation company's average capital cost (Weighted Average Cost of Capital or WACC) declined, so that it was able to adjust this cost for the financial year 2011 from 7.9 percent to 7.0 percent. The positive effect: While the other general framework of conditions remains unchanged, the value added potentially increases for capital providers.

But before one can speak definitely of value added, a hurdle consisting of three components has to be cleared. In addition to the capital providers' yield requirements, there is also the tax yield associated with the earnings generated as well as the preservation of assets. The thought behind this approach is that working capital, such as aircraft and handling installations are used up in the course of their usual life span and eventually have to be replaced. To be able to do so, Lufthansa mentally earmarks a certain amount during every year of use as provisions and invests it at interest. “This point in particular makes it clear that economic success is the basic prerequisite for sustainable business practice. The reason is that these reserves decisively determine the ability to invest in new technologies and thus also a company's ability to innovate,” emphasizes Steinke.

Assessments differentiated by business segments

An investment's risk profile has a significant influence on the investors' yield requirements. In simple terms: the higher the risk associated with an investment, the higher the demands concerning yields. Analogous to their different areas of activities, the business segments of the Lufthansa Group have different risk profiles. The companies regularly compile their risk characteristics by external comparisons and especially by management evaluations concerning specific risk categories. They include the production



risk, political risks, foreign exchange influences and also environmental risks in comparison with the average of the companies listed in the DAX. On the one hand, management evaluation creates awareness of the influence of these factors. On the other, it gives Group companies an indirect incentive to actively reduce these risks with appropriate measures as capital costs subsequently decline.

Measuring success via operative adjusting levers

Only when the actual payment flow (cash flow) clears the hurdle of interest requirements, taxes and asset preservation within a period, does the aviation company achieve a positive value added. In calculating the CVA, Lufthansa takes into account all factors that can influence value creation within the Group. The system includes central adjusting levers in the areas of revenues, expenditure and capital base, on which management can exert influence by means of its decisions. Each change of a lever's setting has an immediate effect on the operating result, the capital base and thus also on the CVA. For example, the flying companies can improve their operating results by increasing passenger numbers or applying strict cost management. The capital base can be lowered by selling fixed assets that are no longer needed or speeding up collection and thus obtaining a smaller portfolio of receivables – both options ultimately increase the CVA. "The special advantage of the CVA approach in comparison with other concepts is that one indicator can capture the financial effects of the most diverse measures," emphasizes the Senior Vice President Corporate Controlling and Cost Management.

Deeply anchored in the management system

The success of the CVA concept is also explained by the fact that value-oriented steering is deeply anchored in the Group's management system and is actively applied by the company's managers. At Lufthansa, the cash value added is integrated into a fixed circuit that is based on the four fundamental control areas of a company: setting goals, structuring incentives, assessing investments and reporting.

In the framework of setting goals, managers formulate clearly defined CVA goals for the individual business segments. These value-oriented indicators have a central importance both for the long-term company strategy and the medium- and short-term planning processes. Success-dependent remuneration policies for executives create incentives that ensure their commitment to corporate goals. In order to further strengthen the long-term element and sustainability in company management, Lufthansa redefined the variable remuneration element for members of the Executive Board in 2010: Now it comprises – as additional components – achieving a positive CVA for three consecutive years as well as a sustainability factor. Decisions about projects and investments also follow the principle of value added, whereby management compares the calculated interest earned from a measure with the cost of capital employed. The circle closes with reporting: in internal management reports, external financial reports and on the Internet, Lufthansa regularly informs about the development of the target value CVA. In this way, the Group creates transparency concerning the value added within a financial year and makes the development of performance understandable for employees and the capital market.



Working capital, such as aircraft and handling installations, are used up in the course of their usual life span and eventually have to be replaced. To be able to do so, Lufthansa mentally earmarks a certain amount during every year of use as provisions and invests it at interest.

Successful in the past

The CVA concept of Lufthansa aims at the long-term positive value added beyond the business cycle of the air transport industry – fully aware of the fact that there can be short phases of negative value contributions. Lufthansa, and with it the entire industry, had to cope with tremendous challenges over the past ten years. Air transport suffered a dramatic slump in the wake of the terrorist attacks on September 11, 2001. In subsequent years, the second Gulf war, the SARS epidemic as well as avian flu and so-called swine flu put a heavy strain on business. In 2009, the most serious economic and financial crisis in 70 years caused worldwide passenger numbers to fall by 3.5 percent, according to the International Air Transport Association (IATA). For the association, it was “the worst year that the industry has ever seen.”



Lufthansa leaves the economic crisis behind

Lufthansa left the financial and economic crisis behind in 2010. With 91.2 million passengers, the flying Group companies transported 17.9 percent more passengers than in the preceding year. Lufthansa Cargo increased its transport performance by 18.2 percent. Concurrently, the Group achieved an operating profit of 876 million euros and thus increased its result of the previous year of 130 million euros by more than fivefold. The Group's net profit increased to 1.1 billion euros, a plus of 1.2 billion euros.

This encouraging development is not only the result of an increasingly positive progression of demand in passenger and freight traffic, but also that of successful restructuring and cost-cutting programs at all company levels. The program Climb 2011 alone aims at long-term result improvements of 1 billion euros at Lufthansa Passenger Airlines by the end of 2011. In the reporting year, the Group company continued to pursue the measures approved and achieved perceptible cost reductions. Among other measures, Lufthansa started to replace smaller aircraft in regional traffic with larger, more modern and more efficient models. Another example of securing lasting higher contributions to operating results in the context of Climb 2011 is the new cabin interiors of the European fleet that feature more seat rows, but simultaneously offer passengers more comfort and legroom due to more slender backrests and ergonomically optimized seats. Furthermore, the realization of synergy potentials across the airline group is making itself increasingly felt. Thanks to offers in line with market requirements, the Group companies were able to defend their strong positions in the respective markets and partially expand them.

During this time, additional factors influenced business, such as intensifying competition, oil prices at record levels, recurring threats from terrorism, country-specific charges, strikes, harsh winter weather and the interruption of air traffic by unforeseeable weather events.

For example, the eruption of the Icelandic volcano Eyjafjallajökull in April 2010 grounded air transport in Europe for days on end. And the unusually harsh episode of winter weather in December 2010 also had a strong impact on flight operations across the entire Group. Lufthansa Passenger Airlines alone had to cancel more than 4,500 flights. These weather-related disturbances of flight operations and the associated additional costs had a negative effect on the Group's result of about 70 million euros.

Despite these adverse circumstances, Lufthansa was able to achieve a CVA of 71 million euros in 2010. Since 2000, the company has recorded a cumulative positive CVA of 2.1 billion euros. The financial scope thus generated not only gives the Group the opportunity to expand its market position, but it also creates the basis for developing new products for customers, securing jobs, and expanding and modernizing the Group fleet in environmentally compatible ways.

Well prepared for the future

As in years past, Lufthansa and the entire air transport industry are facing sizable challenges over the mid-term. Growth is generated above all in emerging countries and in Asia. Competitive pressures from low-cost airlines and carriers from outside Europe are on the increase, while European airlines simultaneously have to cope with air transport's inclusion in EU emissions trading. Since 2011, the German air transport tax has been an additional and disproportional burden on all flights from German airports and thus for all German airlines.

Furthermore, Lufthansa and all other airlines have to adapt to worldwide megatrends and challenges, which include population growth, globalization, demographic change, increasing mobility, the development toward a service-oriented society, and the expansion of the Internet. At the same time, people's needs for safety continue to increase, and climate change and resource shortages assign an ever-increasing importance to environmental protection.

With the concept of value-oriented management,





Megatrends and global challenges influence the air transport industry's future development.

Lufthansa is well positioned to master future challenges and react flexibly – as it has proved during the past decade. Result-securing programs such as Climb 2011 ensure that optimized cost structures are in place today. An additional

advantage is the ability to invest; a result of financial strength. Both factors form the basis on which the Lufthansa Group will continue to grow sustainably and profitably tomorrow as well.

Management and corporate structures

Lufthansa is a German stock company with headquarters in Cologne. The company employs the dual management structure ordinarily followed in Germany.

The Executive Board is solely responsible for steering the company, aligning it strategically and increasing its value long-term. The Supervisory Board appoints, advises and supervises the Executive Board. Deutsche Lufthansa AG fulfills two functions: It is the ultimate parent company and the largest operating company within the Group.

Shareholder structure

The Lufthansa share has been traded on German stock exchanges since 1966. It is represented in the German Share Index DAX and is part of the Prime Standard of Deutsche Börse (German Stock Exchange). Lufthansa fulfills the highest level of international transparency requirements related to this standing. The company's share capital is divided into 457.9 million registered shares, which are held by about 347,000 shareholders. According to the standards of Deutsche Börse, the free-float quota was at 100 percent for Lufthansa shares at the end of 2010. About 32.8 percent of the equity capital was held by private

investors, almost 67.2 percent was held by institutional investors. The share of German shareholders was 68.5 percent (see chart on page 9). To maintain its international traffic rights and air transport operating permit, Lufthansa must be able to prove at any time that the majority of its shares are in German possession. For further information on the Lufthansa share, see the Lufthansa Annual Report 2010 from page 36 or the online Annual Report at www.lufthansa.com/investor-relations

Corporate governance and compliance

Responsible company management in line with the rules of effective corporate governance is a substantial part of Lufthansa's identity. The efficient, transparent structures and processes implemented by the company reflect this approach splendidly.

Furthermore, Lufthansa places the greatest importance on open and clear corporate communications in order to respond to demands for information from shareholders, employees, customers and the public – thus maintaining and strengthening their trust in the Group.

Lufthansa fulfills the recommendations of the German Corporate Governance Code with few exceptions. For the declaration of conformity pursuant to the German Corporate Governance Code see the Group Management report in the Annual Report 2010 from page 42. A comprehensive compliance program, as described below, ensures lawful conduct with regard to legal requirements and prohibitions.

The Lufthansa Compliance Program

As adhering to legal and social regulations and standards is everyday practice at Lufthansa, the Group has not formulated its separate Code of Conduct. Special attention is placed on ensuring a corporate culture that demands conformity with rules and creates a framework of conditions that promotes such conformity. This is the purpose of the Lufthansa Compliance Program, which was introduced in September 2004. It is to guarantee employees from breaking the law, train them in applying and interpreting legal norms and support them with advice in their daily work.

Given the topic's importance, Lufthansa set up a Compliance Office on October 1, 2007, as part of its central legal department. It is responsible for the

implementation, further development and communication of the Lufthansa Compliance Program and is available as a central contact for questions regarding compliance. In addition, Compliance Commissioners, who are named at the various Group companies, ensure the Group-wide adherence to and the effective implementation of the Compliance Program.

The Compliance Office coordinates the investigation of circumstances relevant to compliance and in this context serves as a contact point for cartel and investigative authorities. In such cases, Lufthansa fully cooperates with the authorities.

The core components of the Lufthansa Compliance Program are its compliance guidelines. These are binding internal regulations that give employees not only strategies but also a binding framework for action which guarantee a standardized and law-abiding external conduct for Lufthansa. The Lufthansa Compliance Program currently comprises four building blocks: Competition, Capital Market, Integrity and Corporate Compliance.



2010 was a very successful year

Despite numerous extraordinary burdens, it was possible to achieve a strong result for the year – with positive contributions from all business segments. Austrian Airlines and bmi significantly reduced their losses by means of restructuring. In the first year after the crisis, the financial indicators moved a good bit closer to their targets or even reached their goals. Lufthansa was again able to add value. The rating stabilized and the outlook improved. The price of the Lufthansa share increased by 39 percent – more than twice as much as the DAX. The Lufthansa Annual Report 2010 provides detailed information about this topic.

www.lufthansa.com/investor-relations





“eLearning”

As an aviation company with global operations, Lufthansa represents fair competition, integrity and responsible business practices. Every single employee needs to be aware of this tenet, know the rules and the consequences associated with incorrect conduct. By using eLearning modules, each employee actively participates in the implementation of the Lufthansa Compliance Program.

Competition Compliance

The module Competition Compliance introduces employees to the relevant regulations of cartel legislation, so as to minimize or exclude risks for Lufthansa in this area. The Competition Compliance guideline provides a strategy for conduct in the context of business contacts with third parties as well as a binding framework of action to ensure a standardized and lawful external presence of Deutsche Lufthansa. All employees handling issues relevant to a cartel are trained in the fundamental regulations of European and national antitrust legislation by means of a Web-based training (eLearning). Special emphasis is given to those areas of antitrust law that have particular importance for everyday business practice.

Capital Market Compliance

The module Capital Market Compliance familiarizes employees with current capital market law, such as regulations relating to insider trading or ad hoc publicity. The goal is to keep both the Lufthansa Group and its employees from breaking the law. In the context of Capital Market Compliance the employees concerned are also instructed by means of Web-based training, which gives them in-depth insights into the regulations of the securities trading law. The law's individual provisions are explained in the context of daily practice and the explanations are illustrated with many examples.

Integrity Compliance

With the module Integrity Compliance, Lufthansa documents its fundamental approach of law-abiding conduct in business relationships. The obligation on the part of Lufthansa and its employees to adhere to non-corrupt and ethically correct conduct flows naturally from current law, the internal compliance guidelines and

Lufthansa's memberships in relevant national and international organizations. Examples of these are Lufthansa's commitment to the principles of the UN Global Compact, its membership in Transparency International and its obligation to respect the ICC guidelines to combat corruption in business dealings.

The Integrity Compliance guideline provides support in handling invitations, gifts and other attentions and indicates room for maneuver. Furthermore, it raises awareness for potential conflicts of interest. The Web-based training provides an overview of the legal framework, causes and facts of economic crimes. Employees are instructed by means of realistic practical examples in behavior conforming to compliance.

Corporate Compliance

The module Corporate Compliance bundles those internal regulations that are considered essential for Lufthansa from a legal perspective and makes these transparent for managers and employees.

Compliance training

Automated IT processes ensure that all employees and executive bodies at Lufthansa participate in the eLearning courses relevant for them once a year. The implementation of the eLearning process is expanded to the subsidiary companies step by step. As a complement to eLearning courses the Compliance Office regularly offers trainings involving the participants' physical presence. Compliance trainings are also an integral part of leadership seminars, management courses and other internal continuing education and training events at Lufthansa.

Ombudsman system

To allow the confidential transmission of information pertaining to possible economic crimes, Lufthansa set up an ombudsman system on December 1, 2007. As an additional preventive measure against economic crimes, it is aimed at protecting Lufthansa and its employees. Relevant information can be given by employees or by third parties to an ombudsman outside the company, either by telephone, in writing or in person. This function is fulfilled by a lawyer.

In the context of his contractual relation with Lufthansa, the ombudsman establishes with the informant a particular relationship of trust, which consists of the transmission of the information entrusted to him to Lufthansa under absolute secrecy with regard to the name and identity of the informant. In this relationship, the ombudsman is fully bound by the legal obligation of professional secrecy and also has the right to refuse evidence vis-à-vis any public investigative authorities that might become active. In addition, Lufthansa and the ombudsman have expressly agreed that the identity of an informant will not be revealed and any documents the ombudsman might have received will not be handed over, unless the informant has expressly stated his or her desire that these items be made public. The revealing of an informant's identity to Lufthansa or third parties without his or her consent is therefore ruled out.

Monitoring and reporting

The Compliance Commissioners of the Lufthansa Group get together once a quarter. Their goal is to inform about current new developments in the area of compliance and initiate the implementation of relevant measures. In addition, the relevant implementation of an effective compliance program is also evaluated with reference to the current requirements in the context of the accounting modernization law by means of self-audits and external audits.

The Supervisory Board's Audit Committee is informed twice a year by means of the Compliance Report about current developments as they relate to compliance issues and the current state of the implementation of the Compliance Program within the Group, including training rates.

Corporate sourcing

At the beginning of 2009, the Lufthansa Group launched the project Procurement Leadership to further professionalize Group-wide procurement processes. The focus is on the introduction of a strategic product-group management that is expected to allow the procurement areas to make a long-term contribution of about 300 million euros to the operating result by 2011.

The development of strategy is accompanied by intensive work on basic issues. In addition to new IT systems and various process changes, this includes a fundamental realignment of the supplier management with which Lufthansa confirms its objective of sustainability – also within its procurement organization and along the entire supply chain. As a “procurement leader,” Lufthansa not only expects that its suppliers will adhere to binding sustainability criteria in a decentralized manner via its Group companies, but the company also anchors these criteria Group-wide in all contracts and internal guidelines. Lufthansa draws its orientation in this context from interna-

tionally acknowledged conventions concerning environmental protection and employee safety, legal regulations concerning the fight against corruption, and safety guidelines pertaining to information processing. Suppliers that do not accept these contractual clauses are not admitted to Lufthansa's circle of suppliers.



Infrastructure

Mobility depends on needs-oriented infrastructure

Mobility is a basic human need and indispensable in today's society. The demand for mobility continues to rise. It is driven by population growth, the expansion of urban areas and globalized trade flows, among other factors. According to the International Air Transport Association (IATA), the number of passengers in air traffic alone is expected to rise by 800 million to 3.3 billion passengers per year between 2009 and 2014. Air freight is expected to grow by 6.4 percent per year by 2014, according to the latest prognoses.

For many years, Lufthansa has been working on handling people's growing needs for mobility as environmentally compatibly as possible – and will continue to do so in the future. This is evidenced by the continuous acquisition of fuel-efficient and quiet aircraft in the framework of the fleet modernization, among other measures. But it is just as important for the infrastructure on the ground to adapt to the coming challenges. The Group makes its contribution in this area as well, as the following examples show:

Frankfurt Airport

Frankfurt is the focal point of the dynamic economic Rhine-Main region and one of the most important international hubs in air transport. With 70,000 employees, the airport is Germany's largest place of work. In addition, Lufthansa is the most important employer in Hesse with about 36,000 employees. And the signs are pointing toward demand increasing further. The airport operator Fraport expects an additional 35 million passengers in Frankfurt per year by 2020, which makes the hub's expansion overdue. In fall 2011 the new northwest landing runway will be put into operation, which will expand the airport's capacity perceptibly. From summer 2012, the new

A-Plus pier will be available to passengers, to be used exclusively by Lufthansa. It offers space for seven wide-body aircraft, including four A380s. Simultaneously, Lufthansa can handle an additional 6 million passengers per year in this part of the terminal. Independent of the airport's expansion, it is also important to ensure flight operations at night, which are economically necessary. Should the seventh-largest air cargo hub worldwide really be cut off from the global flows of goods for six hours every day, it would lose its position as the hub of the German export industry and thousands of jobs would be at risk.

Munich Airport

At Munich Airport, the expansion of terminal capacities is also necessary so that Lufthansa and the airport operator will be able to maintain their high levels of quality standards against the background of continuously rising passenger volumes. The capacity limit of the existing Terminal 2, which is jointly operated by the airport and Lufthansa and used exclusively by Lufthansa and its partners, is 25 million passengers a year. This maximum value will be reached this year already and therefore the expansion of Terminal 2 is absolutely imperative.



Frankfurt Airport: The competitiveness of international hubs depends on needs-oriented capacities.



The satellite building in front of Terminal 2 in Munich will make the needs-oriented capacity increase a reality when the summer timetable 2015 comes into effect.

The two partners will start construction on a satellite building at the end of 2011, which will allow Lufthansa to handle an additional 11 million passengers, starting with the summer timetable 2015. The new functional elements of the existing Terminal 2 will be characterized by incorporating ecological aspects into the building. In comparison, the satellite building will emit about 40 percent less CO₂ than Terminals 1 and 2, as the former includes a walkable climate facade with refrigeration storage media that optimize the building's envelope energetically. Air conditioning will include modern displacement flow diffuser technology.

To ensure that Munich will be able to maintain its position as a premium hub of international standing over the long-term, the construction of a third runway is also necessary. Today, the existing runway system is overloaded at peak times.

Berlin Brandenburg International Airport

In Berlin, Lufthansa Technik is further expanding its commitment and building a new maintenance hangar at the future Berlin Brandenburg International Airport – in addition to the existing large maintenance hangar which will continue to be used in the years ahead. Starting in 2012, the provider of technical services will look after Lufthansa short- and medium-haul aircraft in the new hangar with three parking positions. At the same time, capacities offered to other customers can be expanded.

News in brief

Modes of transport: The analysis of air transport is convincing

In September 2010, the German Air Transport Initiative presented the results of an analysis of different modes of transport. It showed that the aircraft is the mode of transport with the lowest environmental costs for distances above 400 to 500 kilometers. The comprehensive analysis included aspects such as infrastructure costs, accident and environmental costs as well as operational costs and costs for the users' time. For the first time, light was shed in a concentrated way on comprehensive economic and ecological aspects concerning rail, road and air modes of transport. The study was carried out by the Fraunhofer Institute for System and Innovation Research and the research company INFRAS Zürich. Apart from Lufthansa, the German Air Transport Initiative includes DFS Deutsche Flugsicherung GmbH, Flughafen München GmbH and Fraport AG. The initiative's patron is the German Federal Ministry of Transport, Building and Development.

www.initiative-luftverkehr.de



New association: German air transport bundles its forces

Lufthansa is a founding member of the new Federal Association of the German Air Transport Industry (Bundesverband der Deutschen Luftverkehrswirtschaft – BDL), which has represented industry interests with a single voice since December 2010. Its goal is to increase the awareness of the importance of air transport in economic and employment policy among politicians and journalists, and to strengthen Germany overall as a location for the air transport industry. On June 1, 2011, Klaus-Peter Sieglöch will take over the presidency of the association with headquarters in Berlin from founding president Dieter Kaden.

www.bdl.aero



Social Responsibility

Fit for the future

The Lufthansa Group has more than 117,000 employees worldwide. With a broad spectrum of options for continuing education and flexible working hours, they have choices for their professional development and maintaining expert knowledge, and for making career and family compatible. Comprehensive offers concerning health care and health maintenance mean that physical fitness is also taken into account. The highly motivated and qualified team of employees from 149 different nations is thus as well prepared as possible for the future's challenges.

Personnel policy at the Lufthansa Group

HR integration – Exemplified by Austrian Airlines

The number of employees at the Lufthansa Group has more than doubled from 56,802 in 1996 to 117,019 today. Significant reasons are a continuous increase in the demand for mobility and the consolidation process in the air transport industry, in which the Lufthansa Group participates actively and with a clear strategic orientation.

Over the past few years, the acquisitions of SWISS, bmi and Austrian Airlines and the equity participations in Brussels Airlines and jetBlue have meant that renowned international airlines were integrated into the Group or tied more closely to the Lufthansa route network. Both the degrees of internationality and heterogeneity have strongly increased at the Lufthansa Group since then: While classic Group companies such as Lufthansa Technik, LSG Sky Chefs or Lufthansa Systems have traditionally represented the “yellow-blue” world of Lufthansa, the new Group airlines joined the company with their own specific identities, brands and cultures. To maintain these characteristics in parallel with the integration topics related to Group membership and to further develop them independently is a central concern for Lufthansa. This approach is also reflected in personnel management – as the example of Austrian Airlines illustrates.

Strategy of “integrated independence”

Be it SWISS, bmi or Austrian Airlines: When it comes to the integration of new companies, Lufthansa pursues an approach that is based on the principle of partnership. The basis for this approach is the strategy of “integrated independence,” which Lufthansa developed successfully in the context of linking SWISS into the Group. It is now adapted for the HR integration of Austrian

Airlines – a process that started in September 2009 and has continued beyond 2010.

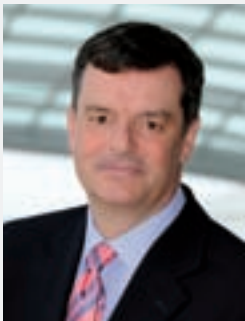
The strategy of integrated independence makes it possible to provide answers for classic integration issues quickly and efficiently – such as possible synergy potentials, customer advantages or the consequences that flow from the affiliation under corporate law. Another consideration is to maintain the positioning of the new Group members in their respective markets and to ensure decentralized decision-making paths and responsibilities.

HR integration:

As much as necessary, as little as possible

As with SWISS at the time, Lufthansa does not aim at a full HR integration into the Group in the case of Austrian Airlines. “In the foreground are our efforts to maintain the identity of the Austrian market leader in terms of personnel and corporate culture. This is why we avoid the export of German regulations and traditions, and concentrate on jointly defining the meaningful degree of integration for HR topics, ensuring comparable standards and establishing a long-term culture of dialogue for shared learning and working,” says Dr. Martin Schmitt, Senior Vice President Executive Personnel at Lufthansa.

This process is made easier by a circumspect selection procedure. As a result, the new airlines are compatible with Lufthansa from the perspective of culture and personnel policy. The Group again followed this principle in the integration of Austrian Airlines: In the framework of due diligence, the audit of the accounts that precedes an acquisition, Lufthansa also scrutinized the HR regulations at the future Group airline, examining, checking and assessing them for compatibility with the fundamental principles of the Group. Another focus was on economic aspects. Important economic areas needing attention that were identified in the process of due diligence were further examined by the Executive Board of Austrian



“In the foreground are our efforts to maintain the identity of the Austrian market leader in terms of personnel and corporate culture. We concentrate on jointly defining the meaningful degree of integration for HR topics, ensuring comparable standards and establishing a long-term culture of dialogue for shared learning and working.”

Dr. Martin Schmitt
Senior Vice President Executive Personnel at Lufthansa



Airlines and Lufthansa's members of Austrian's Supervisory Board.

Analysis of the degree of integration

The decisive conditions for a successful HR integration of Austrian Airlines into the Lufthansa Group are the structures that make up the assimilation process in the first place. This concerns not only the unequivocal assignment of responsibilities, but also a comprehensive harmonization of all IT systems and interfaces. The reason is that a standardized IT infrastructure is the prerequisite for creating sound key performance indicators (KPI) that can be used as a basis for decision-making processes, documentation and analyses. Lufthansa has already made good progress in this area. For example, a comparative KPI analysis showed that from the start, the HR area of Austrian Airlines has a high level of overlap with the indicators used by Lufthansa. This includes reporting about personnel levels, personnel structures and quarterly results, to name but a few.

Distribution of responsibilities

The arrangement of HR responsibilities is a good indication that the independence of Austrian Airlines remains intact. The responsibility for the majority of all HR topics, such as personnel policies, collective pay agreements, personnel procurement and personnel development will remain at Austrian Airlines. However, topics in the area of corporate responsibility, which affect the social responsibility of the Lufthansa Group as a whole, will be steered at the Group level.

The HR Board in particular, situated at the Group level, serves as a dedicated platform for coordinating HR topics across business segments. Since

2010, the board has included representatives from all Group airlines for the first time. Austrian Airlines is represented by the Senior Director Human Resources & Organization. The committee meets three to four times a year to define the overriding scope of development in personnel policy and to discuss possible solutions for ongoing integration processes, such as in distribution and at the stations. For instance, the Board decided in the reporting year to set up a working group to develop effective packages of measurements that supported the integration of Austrian Airlines. Furthermore, it decided to set up a task force that includes the department Corporate Communications to further optimize the exchange of information across the Lufthansa Group. "Internal communications has a key role in the context of successful network integration," says Stefan Lauer, Chief Officer Group Airlines and Corporate Human Resources of Deutsche Lufthansa AG. All activities aim at successfully implementing the concept of integrated independence. The implementation of decisions taken by the HR Board is the task of middle management on location.



"The distribution and station units of Lufthansa and Austrian Airlines have grown together to form a sound integrated system that gives both sides perceptible synergistic effects."

Richard Piller
Senior Director Human Resources & Organization
at Austrian Airlines



Lufthansa and Austrian Airlines: two independent brands – the same understanding of quality.

In addition, a meeting of the HR Management Day (HMD) takes place every six weeks. This expert forum, which coordinates policies concerning personnel, management, and pay of employees predominately working in Germany, includes the heads of HR of the Lufthansa business



Representatives of all Group airlines have been on the HR Board since 2010.

HR management platforms across business segments to coordinate personnel-relevant topics at the Lufthansa Group:

HR Board

Chairman: Chief Officer Group Airlines and Corporate Human Resources
Labor Relations Directors/Members of Executive Boards in charge of personnel within Group and HR heads of corporate functions

HMD – HR Management Day

HMD Personnel Policy
Chairman: Senior Vice President Executive Personnel
HMD Executive Personnel Policy
Chairman: Head of Corporate Executives
HMD Pay Policy Roundtable
Chairman: General Manager of the Aviation Employers' Association

HMCI – HR Management Circle International

Chairman: Director Corporate Principles Personnel Policy
HR heads of all Lufthansa companies abroad, personnel managers "International" at Lufthansa business segments and HR corporate functions concerning issues relevant abroad

HMF – HR Management Forum

Chairman: Director Corporate Principles Personnel Policy
HR heads of all Lufthansa companies and HR corporate functions

HMX – HR Management Experts

Chairman: Manager responsible for respective issue
Diverse topic-related forums that include affected Group companies; e.g. worktime, education, demographics, health-care management, personnel development, etc.

segments and selected corporate functions, the head of Corporate Executives and the chairman of the Aviation Employers' Association. As the success of integration depends on shared basic positions, the top managers of Austrian Airlines are closely connected to the dialogue and development concerning the management level. Beyond this, further platforms exist for targeted exchanges (see overview on this page), synergies in distribution and at the stations.

Towards the end of 2010, significant progress already emerged in the integration of Austrian Airlines. "The distribution and station units of Lufthansa and Austrian Airlines have grown together to form a sound integrated system that gives both sides perceptible synergistic effects," says Richard Piller, Senior Director Human Resources & Organization at Austrian Airlines. Forming mixed teams is always the task of the local company. The internal integration tasks of the jointly founded air freight company Austrian Lufthansa Cargo, founded in 2010 by Lufthansa Cargo and Austrian Airlines, are essentially completed.

Plans for the future

Even though the HR integration of Austrian Airlines into the Lufthansa Group is not yet fully implemented, the personnel experts in charge are already working on plans for the future. For example, Austrian Airlines would like not only shared network criteria for distribution and station management, but also a standardized IT platform that would allow a network of connections between the personnel procurement systems of the different Lufthansa companies. In addition, Richard Piller advocates a higher degree of flexibility within the Group: "Employees should be able to change from one employer to another at acceptable conditions." Beyond that Lufthansa is keen on further advancing the coordination of HR data and improving the information exchange among HR experts. The way ahead has already been defined for these developments.



Employment policy based on partnership

HR policy copes with an exceptional year in 2010 by means of wide-ranging measures

At Lufthansa too, the economic crisis meant that the first half of 2010 was dedicated to crisis management. Program to safeguard earnings in nearly all companies had to make use of the policy instruments available to cut staff costs and adjust human resources capacities in line with requirements.

Lufthansa has learned from crises in prior years and can draw on a wealth of experience in dealing with a variety of different scenarios. An external hiring freeze was followed by voluntary redundancy models such as unpaid leave, phased early retirement, part-time work and compromise agreements with severance payments. In some cases, measures such as reduced working hours and the non-renewal of fixed-term contracts also became necessary. The successful implementation was due not least to the constructive working relationship with the codetermination partners. The Group-wide internal placement program "JobChange" also facilitated Company restructuring in the crisis year 2010. The program opened up new prospects within the Group for many employees.

The chosen methods of adjusting staff capacities also made it possible to react directly to economic growth, which set in faster than expected. In some areas of the Group reduced working hours were brought to an end quickly.

Earnings developments at the Lufthansa Group were more dynamic than could have been foreseen and this provided the means for a special thank-you to the bulk of our pay-scale and non-pay-scale employees. Based on the good result for 2010 the Executive Board decided in December to make a one-off special payment amounting to 700 euros per full-time employee, which was paid out in January 2011.

Job opportunities at the Group

In the face of enormous fluctuations in the economic ups and downs of the air transport industry, the large internal job market of the Lufthansa Group has shown in the recent past not only the function of a guarantor for entry and advancement opportunities, but also as an equalization mechanism to cushion unavoidable social hardship. Many suitable jobs and many opportunities for advancement can be found in our IT-based systems, increasingly also in an international dimension.

While numerous operative areas are currently hiring again and creating new jobs, at the same time some areas within the Group need to be restructured, which also entails shifting jobs or job losses. To counteract this situation, Lufthansa will – after having reviewed its applicant management system – further expand its tried-and-tested job placement platform "JobChange" in Germany and place emphasis on the areas of reach and user friendliness. "JobChange" makes it possible to search even more efficiently for suitable replacement jobs for those employees within the Group whose jobs are eliminated in the context of operational restructuring processes. Searches are carried out within Germany and independently of legal obligations. The project-related success rates show that many, although not all, operations-related job losses can be compensated in this way.

Information, negotiation and employee participation in company decisions

It is a tried-and-tested company policy to settle conflicts of interest between company management and employee representations in an open and transparent manner. A fair approach to coexistence in all areas creates the necessary balance to advance the Lufthansa Group in the market.



Lufthansa is on track for growth: In 2011 the company's recruitment will also include 2,200 flight attendants.

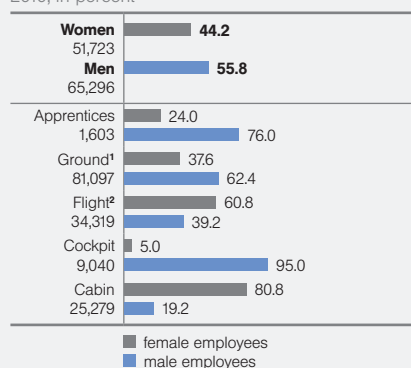
Distribution of employees within the Lufthansa Group

2010, changes in percent

	2010	2009	change
Group employees	117,019	117,521	-0.4
of which Passenger Airline Group	57,157	58,083	-1.6
of which Logistics	4,517	4,488	+0.6
of which MRO	20,159	19,796	+1.8
of which IT Services	2,935	3,027	-3.0
of which Catering	28,499	28,390	+0.4
of which Others	3,752	3,737	+0.4

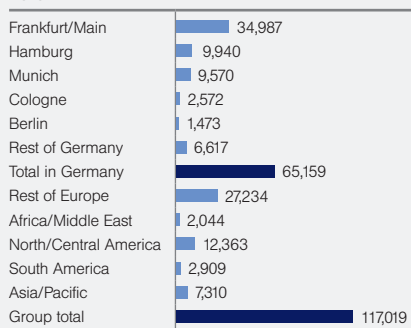
Employees by group and gender

2010, in percent



Lufthansa Group: Jobs around the world

2010



As per 31.12.2010

- 1 without apprentices
- 2 consists of cockpit and cabin

The increasing plurality of opinions and opinion leaderships – analogous to developments in society at large – is an increasing challenge for all participants. The guideline for all joint efforts is flexibility and the ability to react in the market.

Partnership in collective agreements in Germany

Lufthansa employs its staff under conditions that provide them with social and material security not only during their professional lives but also afterwards. They are established upon the collective agreements which the company negotiates with its union partners Vereinte Dienstleistungsgewerkschaft (ver.di), Vereinigung Cockpit (VC) and Unabhängige Flugbegleiter Organisation e.V. (UFO). The goal is to treat all employee groups across the Group fairly and justly – a standard that is faced with a challenging framework of conditions owing to the plurality of unions within the company.

The Lufthansa Group's pay policy in 2010 was characterized by intensive negotiation in the areas of ground, cabin and cockpit. The newly founded organization Aviation Employers' Association (Arbeitgeberverband Luftverkehr e.V. – AGVL) officially took up its work on January 1, 2010, assuming the Group-wide tasks concerning collective agreements. Since the beginning of 2010, the AGVL has replaced the previous employer organization Arbeitsrechtliche Vereinigung Hamburg as a new collective bargaining partner for the unions at the Lufthansa Group.

Following a constructive arbitration dialogue, Lufthansa and VC signed a new collective agreement for the cockpit personnel of Lufthansa Passenger Airlines, Lufthansa Cargo and Germanwings in June 2010. In the framework of the overall compromise, VC and Lufthansa as well as Germanwings agreed to necessary reforms, such as the calculation of work times and the operation of small aircraft. The collective pay agreement and the collective agreement on working conditions were prolonged unchanged until March 31, 2011 and December 31, 2012, respectively. Concerning the interpretation and application of the Group collective agreement, which defines conditions of employment and career options, the result of the agreement negotiations includes sound solutions that take into account the interests of both sides.



In July 2010, a separate collective pay settlement was reached between the AGVL and union ver.di for the employees working on the ground at Deutsche Lufthansa AG. The overall package also includes the prolongation of the validity of the collective pay agreements without adaptation of salaries until December 31, 2011. Furthermore, unions and management also took the increased burdens on employees from shift work into account by means of a new collective agreement of age-related part-time work.

In January 2011, Lufthansa and UFO agreed in an arbitration procedure to a new pay settlement for the approximately 16,000 flight attendants. The agreement provides for the prolongation of the collective pay agreement without adaptation of salaries until December 31, 2011. As a countermove, a collective agreement on working conditions was accepted, which currently can be terminated for the first time on February 28, 2014. It defines a package of measures aimed at further improving working conditions. For example, the number of possible changes in duty rosters is reduced to give cabin employees more certainty in planning their schedules and thus improving their work-life balance. Another example is the agreed extension of resting periods during layovers on long-haul rotations entailing particular strain.

Active pay and social policies also abroad

Internationalization and globalization offer comprehensive opportunities for the business and personnel processes across the Group. As a company with international operations, Lufthansa's pay and social policies are guided by the respective general conditions in individual countries. The focus is on the long-term definition of the conditions of employment, which depend on employee needs, operational requirements and the local labor market. These conditions include rules on pay regulations, working conditions, and care systems. As a member of the UN Global Compact (see on page 20), Lufthansa documents its support of the freedom of association and the right to collective bargaining for all employees worldwide. Employees are free to organize themselves according to legal conditions and thus participate in shaping their working conditions in any country where Lufthansa companies are active.

Human rights according to the UN Charter of 1948

With its memberships in the UN Global Compact (since 2002), in the International Chamber of Commerce (since 1955), in Transparency International (since 1999), in Deutsches Netzwerk Wirtschaftsethik (since 1998) and in institutions that work for individual aspects of human rights, Lufthansa explicitly affirms adherence to respective norms and thus also to human rights. Lufthansa's home country, Germany, signed the adherence to the ILO norms in 1951, thereby making these regulations – which are self-evident for our Group – binding for Lufthansa as well.

In countries where the acceptance of human rights does not appear self-evident, Lufthansa tries to set accents that contribute to a positive development in the respective countries by exercising exemplary conduct vis-à-vis its own employees. While the realization of the human rights formulated in the UN Charter is a task of national and thus country-specific norms, Lufthansa contributes to the following rights by treating its employees in an exemplary fashion:

- the rights to freedom of association and to collective bargaining
- the right to social security
- the rights to work, to free choice of occupation, to just and favorable working conditions,
- to equal pay for equal work, to legal justice, and to form trade unions
- the right to rest and leisure, including periodic holidays with pay
- the right to a standard of living that helps maintain health
- the right to education and to free choice of type of education

Working, holiday and remuneration conditions are defined for the most part collectively and always transparently by adhering to all national and legal requirements. Corporate leadership and employee orientation are reflected in the company's excellent worldwide reputation as an employer. Thus, the Group helps its employees to lead a life in the sense of the norms defined by the UN Charter concerning employment relationships.

Diversity

Appreciation creates value

Today, companies striving for innovation, wanting to open up new customer groups and markets, and coping with the challenges from demographic change and lack of qualified personnel, need one thing above all: diversity.

This means the diversity of competencies, ways of thinking and working, cultures and lifestyles that are embodied by the people within an organization. Pursuing the goal to better understand diversity and take advantage of its potential for the benefit of employees and the company, Lufthansa set up its own organizational unit "Change Management and Diversity" in 2001. This department is part of the area Group personnel policy, whose head is a member of the Corporate Responsibility Council and who also pursues diversity-related topics in this committee.

At a glance:

Of 117,019 employees, of which ...
... 44.2 % are women
... 37.8 % are women with staff responsibility
... 13.3 % are women in management positions
... 5 % are pilots,

... 55.7 % work in Germany.
Worldwide, 149 nationalities are represented in the Lufthansa Group. The average age is 40.7 years.

As per 31.12.2010

Striking a balance between employee and company interests

The Group-wide diversity strategy follows the principle "appreciation creates value" and aims at establishing a lasting equilibrium between the company's economic interests and the employees' legitimate social interests. "In essence this means valuing the individual differences in employees as resources that increase not only the individual's creativity, motivation and willingness to perform, but that also benefit the company's strengths of innovation and competitiveness," emphasizes Monika Rühl, Director Change Management and Diversity at Lufthansa. The Group has created the conditions for this approach by offering, among other options, numerous working time formats that make it easier for mothers and fathers to make career and family compatible, or that make it easier for employees to care for family members in need. Further building blocks are comprehensive offers for training and continuing education, attractive programs in health care and health maintenance as well as appropriate participation in the company's economic success. The areas of emphasis of diversity management can vary from one business area to another and at individual Group companies. While Lufthansa Passenger Airlines focuses on the subject of internationality and intercultural competencies, Lufthansa Technik pays attention to the coexistence of different generations and women in technical jobs.



International workforce: The Lufthansa Group employs people from 149 nations.

Group-wide diversity activities are communicated by internal and external media, including the employee newspaper "Lufthansseat," the sustainability report *Balance*, press releases and internal seminars and series in continuing education, such as the program "Further with Education." Furthermore, every year managers give numerous presentations at congresses and conferences that address topics of diversity.



Focus topic: Women in management positions

The share of women in management positions declined in the reporting year compared with the preceding year from 14.7 to 13.3 percent, a development that is a statistical effect resulting from taking into account consolidated companies including the Group partners. In absolute terms, the number of women in management positions increased from 123 to 140. The share of women with staff responsibility stood at 37.8 percent in the reporting year (2009: 41.5 percent). Here again, consolidation effects are the cause.

In 2011, promoting women at all levels and especially at the management level is among the top issues for the Executive Board. Lufthansa's companywide Talent Management has been set up and expanded, aiming at efficient and comprehensive structures. In 2010, the lineup of managers was evaluated in detail as market and general conditions had changed. Strengths and weaknesses were assessed and measures identified with a view to considering the further development of Lufthansa's Talent Management in its entirety. These measures are being implemented in 2011. Special attention is given to the development and promotion of women in management positions.

Job placement following the principle of best aptitude

While Lufthansa strives to increase the share of women among managers, the Group has decided against a quota solution for job placements. Potential applicants will continue to be selected primarily following the principle of best aptitude. Nevertheless, to be able to identify female candidates at an early stage and give them support, Lufthansa also counts on regular analyses of the women's share among university graduates, direct hires, employees showing potential and holding responsible positions as well as supervisors and pilots. The measures already implemented and the additional measures partially started are designed to create a fundamental change of awareness among men and women at all levels of hierarchy. A further goal is to further optimize the compatibility of career and family, and the professional development of women.

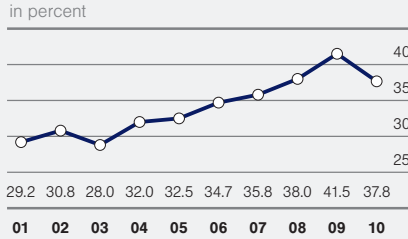


Moving away from stereotypes: Lufthansa Technik aims to persuade young women to take up apprenticeships in technical professions by running original advertisements.

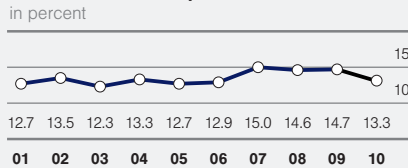
Fighting against stereotypes

It is a persistent stereotype that girls want to be flight attendants and boys want to be mechanics, which is due primarily to a lack of information. It is the goal of a wide-ranging campaign – launched by Lufthansa Technik in December 2010 – to dismantle such reservations and interest more young women in a technical profession. “We want to address girls specifically so that we can take advantage of applicants' full potential in the future,” says Martin Brandes, Head of Vocational Training at Lufthansa Technical Training (LTT), a subsidiary of Lufthansa Technik. As the demand for qualified employees is increasing, no company can afford long-term to ignore the performance potential of female employees. For this reason, Lufthansa has participated for many years in the Germany-wide Girls' Day, which gives female pupils from the fifth grade hands-on insights into technical, skilled trades, engineering and scientific professions. The profession of pilot is also not yet sufficiently anchored in the scenarios of professional choice among girls and young women. Therefore, Girls' Day also offers opportunities to take a glance behind the scenes and discover that career and family can coexist in this field, too.

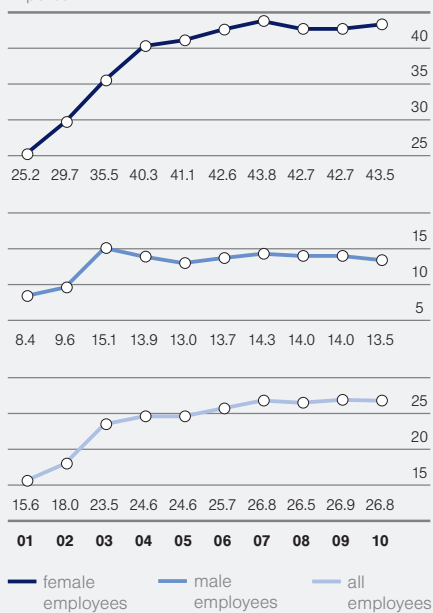
Share of women with staff responsibility at the Lufthansa Group¹



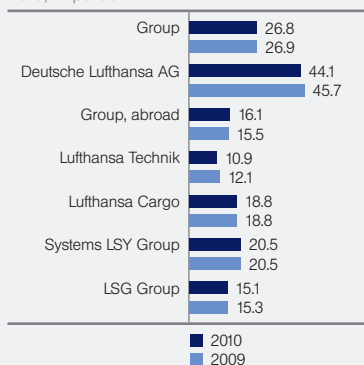
Share of women in management positions at the Lufthansa Group¹



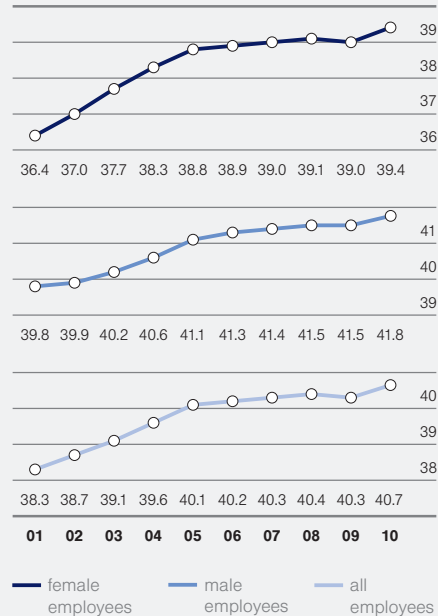
Part-time employment at the Lufthansa Group



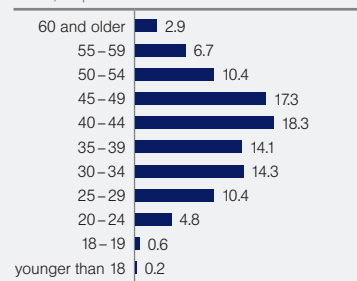
Part-time work by Group companies



Average age at the Lufthansa Group²



Age structure at the Lufthansa Group²



1 Deutsche Lufthansa AG, In-Flight Management Solutions GmbH, Jettainer GmbH, LSG Lufthansa Service Europa/Afrika GmbH, LSG Lufthansa Service Holding AG, LSG Sky Chefs Catering Logistics GmbH, LSG Sky Chefs Deutschland GmbH, LSG Food & Nonfood Handel GmbH, Lufthansa Cargo AG, Lufthansa Cargo Charter Agency GmbH, Lufthansa Flight Training GmbH, Lufthansa Process Management GmbH, Lufthansa Systems Aeronautics GmbH, Lufthansa Systems Airline Services GmbH, Lufthansa Systems AG, Lufthansa Systems Americas Inc., Lufthansa Systems Berlin GmbH, Lufthansa Business Solutions GmbH, Lufthansa Systems Infracore GmbH, Lufthansa Systems Passenger Services GmbH, Lufthansa Technik AG, Lufthansa Technik Logistik GmbH, Lufthansa Technik Maintenance International GmbH, Lufthansa Training & Conference Center GmbH, Lufthansa World Shop GmbH, Air Dolomiti S.p.A. Linee Aeree Regionali Europee, Austrian Airlines AG, British Midland Airways Ltd., Eurowings Luftverkehrs AG, Germanwings GmbH, LSG Lufthansa Service Catering- u. Dienstleistungsgesellschaft mbH, LSG Sky Chefs Lounge GmbH, Lufthansa CityLine GmbH, Lufthansa Technik Philippines Inc., Lufthansa Systems AS GmbH, Lufthansa Italia S.p.A., Lufthansa Technik AERO Alzey GmbH, Swiss International Air Lines AG

2 Scope of consolidation partially without LSG outside Germany, Lufthansa Technik Philippines, Shannon Aerospace Ltd., Lufthansa Technik Malta Ltd., Lufthansa Technik Airmotive Ltd., Lufthansa Technik Budapest Ltd., Hawker Pacific Aerospace Ltd. US, Hawker Pacific Aerospace Ltd. GB, BizJet Intern. Sales & Support Inc., AirLiance Materials LLC, Lufthansa Technik North America Holding Corp., Lufthansa Malta Holding Ltd., Lufthansa Malta Aircraft-Leasing Ltd., Lufthansa Malta Finance p.l.c.



Learning from role models: Cross-mentoring for female managers

In 1998, Lufthansa initiated an intracompany cross-mentoring program, aimed at accompanying and supporting female managers in their professional progress. In this context, a female Lufthansa employee with staff responsibility and a male or female mentor at a higher hierarchy level from a large corporation, such as Bosch, Deutsche Bank or Merck, form a tandem for a limited period of time, usually one year. In turn, Lufthansa manager with mentoring experience advise junior managers from other companies participating in this program. The pivotal element of mentoring is regular discussions between mentor and mentee about the next professional steps, the implementation of concrete goals and networking between the companies. At the start, midpoint and end of a mentoring project, participants have opportunities during accompanying events to compare their experiences with the program and to give feedback to the project team. In 2010, a total of 112 mentors and mentees took part in the cross-mentoring program.

Fit for things foreign: “KultuRraum” expands intercultural competence

Since May 2010, pursers and flight attendants have had the option to refresh or expand their knowledge of cultures that they visit in the context of their work. Lufthansa set up the so-called “KultuRraum” (literally: area of culture) at Frankfurt Airport for this purpose. There, experts in intercultural competence, regional flight attendants and colleagues from the distribution function are available under the mottos “Go Japan,” “Go China,” “Go Korea” and “Go India” to give detailed information about the needs and expectations of customers from the respective countries. Those interested also have the option to reacquaint them-



Intercultural competence is especially important for a global service company. For this reason, Lufthansa regularly informs its employees about different areas of culture in its international route network.

elves with the worldwide meanings of gestures, uncover possible unconscious prejudices in an association test or participate in a quiz on critical intercultural situations. In addition, all employees have the option to inform themselves about different areas of culture by means of an online learning program. Numerous seminars and language courses complement the offers in the area of intercultural competence.



“My year as a mentee was instructive and interesting. My mentor took excellent account of my situation and we gave each other the opportunity to expand our respective visions. Not only was I able to gain some insights into the world of banking, but in conversations with employees of the other company I could also exchange experiences, opinions and approaches, compare corporate cultures and expand my professional network.”

Sandra Dahl
Legal Consultant Labour Relations Lufthansa Group
and participant of the Cross-Mentoring Program



The President of the AARP, W. Lee Hammond, presents Dr. Martin Schmitt with the "International Innovative Employer Award 2010."

Focus topic: Management of demographic change

Demographic change is not only the cause for rising average personnel ages, but it also makes the search for qualified and junior employees more difficult. To limit the effects of this development and secure future personnel needs, Lufthansa again made its comprehensive demography management one of its areas of emphasis in 2010. It is based on 12 action areas, such as employability, knowledge and experience management, and cooperation between generations.

In November 2010, the American Association of Retired Persons (AARP) presented the "International Innovative Employer Award 2010" to Lufthansa for its innovative way of handling the effects of demographic change. The organization, which represents

the interests of about 40 million people over 50 years of age in the United States, praised in particular the company's efficient health-care programs, its target-oriented personnel development and the long-term support of diversity among employees. The AARP also gave a positive assessment of the continuing education program oriented by the principle of lifelong learning and flexible worktime options.

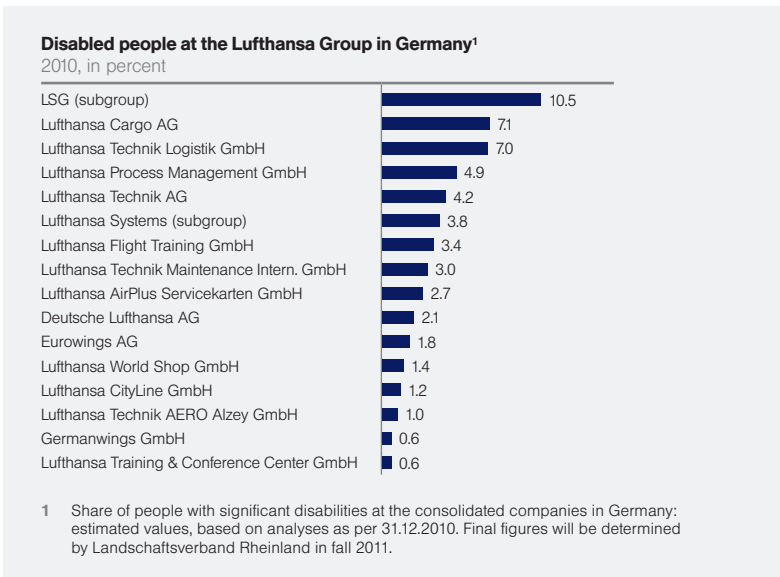
In 2010, the average age of Lufthansa Group employees was 40.7 years. Therefore, one accent of demography management was placed on maintaining long-term employability. In particular, Lufthansa promotes lifelong learning by employees of all ages and makes the necessary infrastructure available. The company also offers a broad range of options that allow its employees age-related qualifications and the further development of their competencies. Furthermore, employees and the company benefit equally from health care and options to secure work performance (also see chapter "Employee safety and health protection" from page 58).

A disability does not have to be a hindrance

In 2010, 3.5 percent of Lufthansa employees in Germany had some type of disability. For the company it is an important goal of personnel policy to integrate people with disabilities in a professional context. Consistently with the Group's diversity concept, the emphasis is not on a person's physical or mental deficits, but on the optimum support for existing strengths and potentials. One important condition for the success of this approach is individually adapted workstations that offer optimum conditions of realizing potentials and that allow work results that fully match those of colleagues without disability.

Information campaign Health Management and Severe Disability

In September 2010, Lufthansa launched the information campaign Health Management and Severe Disability, which aims to raise awareness of the numerous facets of this topic among employees. The focus was on events in Frankfurt, Berlin, Düsseldorf, Munich and Hamburg featuring panel discussions concerning the internal ramifications of severely disabled status for people affected and their supervisors. Another area of emphasis was a "marketplace" for exchanging information.



Corporate training and continuing education

Qualifications generate quality

Lufthansa has offered a wide spectrum of options in training and continuing education for many years. In 2010, the aviation company employed 1,128 apprentices in 24 trainee professions in Germany. This spectrum includes not only traditional options such as Specialist for Air Transport Service or Chef, but also newly emerged professions such as Specialist for Forwarding and Logistics Services.

Furthermore, dual courses of study – the combination of training within the company and university studies – are becoming increasingly important. At Lufthansa, 353 young people took part in 18 courses of study during the reporting year. Additionally, the Group qualified 3,115 new employees for the cabin, while 240 new flight-training students started their pilot's training. Lufthansa is planning to hire another 4,000 people in 2011.

Lufthansa School of Business

The Lufthansa School of Business (LHSB), which was founded in 1998, is Germany's first corporate university. Under the motto "There's no better way to learn" it provides the needs-oriented interdisciplinary continuing education of managers and employees from the entire Lufthansa Group. The LHSB offers long-term qualifications programs across the boundaries of individual Group companies as well as dialogue and network platforms. These activities are supported by the Lufthansa Training and Conference Center (LTCC) in Seeheim and closely coordinated with the education activities of the Group airlines. All measures are based on the competencies models "Aviation Leadership Compass" and "Aviation Competence Compass" which are used Group-wide. The compasses make it possible to develop the abilities of employees and managers in line with work-related needs and to fill jobs across the boundaries of business segments and Group airlines. It's a successful approach: In the reporting year, employees from within the company filled 95 percent of all available management positions. Among the LHSB's areas of emphasis in 2010 were the optimization of interdisciplinary trainings within the Group and the continued creation of increasingly digital learning worlds in the form of Web-based trainings. The Group's total budget for internal training and education was 102 million euros in 2010.

Cooperation with universities

Lufthansa also places great value on close cooperation with universities and universities of applied sciences. The company is present at educational fairs in the context of university marketing, participates in workshops, provides speakers and organizes visits. For example, in the context of the "Experience Lufthansa" day, every year selected students take advantage of the opportunity to get to know the aviation group better. Furthermore, in 2010 Lufthansa and the Aviation Management Institute of the EBS Business School organized the international student competition "Lufthansa Case Challenge" for the first time. It gave student teams the task to work with issues from the Lufthansa Group. "Everyone involved benefits. The students gain insights into the work practice, while Lufthansa gains impulses from the international academic community and hones its profile as an innovative company," explains Christoph Fay, Head of HR Marketing and Talent Sourcing at Lufthansa. About 130 international teams from widely different disciplines submitted their future-oriented concepts on the subject of social media. The six best teams were invited to present their ideas at the final before a jury at the LTCC in Seeheim. In 2011, the second Lufthansa Case Challenge will be dedicated to the subject of sustainability.



"The students gain insights into the work practice, while Lufthansa gains impulses from the international academic community and hones its profile as an innovative company."

Christoph Fay
Head of HR Marketing and Talent Sourcing
at Lufthansa



Lufthansa – An attractive employer and very much in demand

Lufthansa has been among Germany's favorite employers for many years. Regular top positions in the most important employer rankings prove that the investments in the development and continuing education of the Group's employees and managers are paying off. This is also reflected by the number of applications received: A total of 115,000 candidates submitted their applications for 2,000 job vacancies posted in 2010. There is also great interest in the Group's job and career portal, www.Be-Lufthansa.com. In the reporting year alone, this Web site attracted more than 138,000 visitors per month. Additionally, Be-Lufthansa has had its own Facebook presence since April 2010, which has evolved into one of the most popular career portals of German companies in this social network, counting more than 12,000 fans.

Employee safety and health protection

Healthy employees – Lufthansa counts on prevention, not treatment

For companies the topic of health has ethical as well as economic dimensions. Lufthansa is very much aware of the responsibility for its employees and therefore runs comprehensive measures to maintain employee health and safety protection.

The goal is to promote the individual employee's ability to work and consistently guard against health risks.

Medical Service

The Medical Service, headed by Professor Uwe Stüben and offered by the Group in Germany, is an important element in Lufthansa's health concept. At the locations of Frankfurt, Hamburg and Munich it provides care for employees in the areas of occupational, aviation and tropical medical care. It is also responsible for job safety in cooperation with Group occupational safety and the company's social counseling service. The health managers of the Group companies maintain ongoing contacts to exchange knowledge about general and specific health issues.

In focus:

Preventive health care and health support

Just as different as the people who fly with Lufthansa every day are the variety of strains from tasks performed by employees working on board and on the ground. This variability places great demands on Lufthansa's health management. The Group supports its employees with a broad range of preventive health care and health support services. They include back-training courses, nonsmoking programs, advice on stress and preventing addictions, counseling on age-appropriate working practices, screening to prevent chronic illness, and inoculations, as well as tailor-made services such as the voluntary "Health Training" introduced in 2009. The Group closely cooperates in many areas with health



insurance companies. Participation in these health management services is voluntary. To raise employees' awareness of the importance of health management and to provide information about related options, articles are regularly published on the intranet and in the employee newspaper "Lufthanseat."

In addition, the Working Group Health of Cabin Personnel meets four times a year. It includes representatives of the Medical Service, occupational service, social counseling service, personnel management cabin and health management cabin. The goal is to enable broad-based exchanges concerning all health-related topics and ensure a flow of information across department boundaries.

The question how employees working in the cabin can protect themselves effectively against colds and flu was the topic of the campaign week "Healthy through the winter – This way colds and flu have no chance," which the health management cabin organized from November 1-5, 2010 in Frankfurt. The focus of attention was on nutritional advice on how to strengthen the body's resistance.

Health week at the Lufthansa Aviation Center

Valuable impulses for a healthy lifestyle were again provided in 2010 by regular health days and weeks, which the Group and its subsidiary companies offered with varying areas of emphasis. For example, from June 14-18, 2010, the corporate area offered the second edition of a health week at the Lufthansa Aviation Center in Frankfurt. Every day was dedicated to a different topic, with the spectrum ranging from balanced nutrition and stress management to diabetes counseling and skin cancer screening, and from ergonomic advice to exercise. "The mix of competent advice, interactive offers and qualified presentations was well received by the employees. This was clearly displayed by the fact that more employees participated than in the previous year," explained Monika Rühl, Director Change Management and Diversity at Lufthansa and the event's organizer.

Action days "food-life balance" at Lufthansa Technik

Nutrition and exercise have an enormous influence on health. Nevertheless, it is difficult for many people to eat more healthily, to exercise more and to reduce their weight. The employees of Lufthansa Technik received practical support

on this path from March 23-26, 2010 in the context of the action days "food-life balance" in Hamburg. This campaign took place in cooperation with Techniker Krankenkasse (technicians' health insurance), the Medical Service, the Lufthansa Sports Association and Lufthansa subsidiary LZ-Catering, which operates the cafeteria of the technical services provider. A related goal was to strengthen the employees' awareness of their own responsibility.

Foods low in fat and sugar, whole-grain products as well as a lot of fresh fruit and vegetables have always played a central role in LZ-Catering's nutritional concept "Food Balance." Products that promote healthy nutrition are therefore marked with the Food Balance logo at German cafeteria locations. Beyond that, the cafeterias in Cologne and Norderstedt are already two of the employee cafeterias run by LZ-Catering that were awarded the JOB&FIT certificate of the Deutsche Gesellschaft für Ernährung e. V. (German Association of Nutrition, DGE). The award is given to company restaurants that feature nutritionally balanced offers, prepare dishes with care and inform about healthy nutrition. JOB&FIT is part of INFORM, the national action plan of Germany's Federal Government.



Employees take a lively interest in the offers available during the Health Week 2010 at the Lufthansa Aviation Center in Frankfurt.



A strong team: In 2010, 1,313 runners from the ranks of Lufthansa employees participated in the JP Morgan Corporate Challenge in Frankfurt – more than ever before.

Social counseling

Employees' professional and private lives are highly varied. Often, personal problems are a burden for those affected and can at times have negative effects on a person's qualitative and quantitative work performance, or that of work groups and the work atmosphere. Employees of the Lufthansa Group, who are confronted with professional or private challenges, have had the option to ask for help at the social counseling service since the mid-1980s. This service maintains a presence in Frankfurt, Hamburg, Cologne and Munich.

The professional psychosocial counseling service has its roots in personnel work from which it has expanded. Apart from support services aimed at reestablishing the capacity to work, today's focus is on preventive measures and promoting the social competencies of employees at all levels of hierarchy. The preventive measures can lead to structures that reduce the probability of illness. Together with the intervention services of social counseling they generate an important contribution to success for the respective company – also with regard to the economic dimension. Furthermore, social counseling experts also offer training for managers on topics such as stress, conflict and addiction management.

In 2010, the Group's social counseling service developed guidelines in cooperation with the specialists of the Medical Service, entitled "Psychic health – When behavior becomes unusual!" Its goal is to improve the perception of psychic illnesses and provide an adequate framework for handling them (especially in the case of managers with responsibility for their staff) as well as related conspicuous behaviors at the place of work in the Group. The guidelines impart basic

knowledge about the most frequent psychic illnesses and preventive options, give support for taking action and show which (internal) expert company representatives with an obligation to provide caring support can be contacted in such situations. Its implementation was accompanied by a number of communications events.

Sports promote living in balance

Studies prove that company sports improve the working atmosphere, strengthen the team spirit, balance the stress of everyday work and thus promote individuals' ability to perform as well as their employability. Plenty of opportunities for sports are provided by the currently 13 Lufthansa sports associations at 11 locations and the campaign "Lufthanseaten laufen" (Lufthansa employees run), which was launched in 2009. The latter has evolved into a success story: In 2010, more Lufthansa employees than ever participated in Europe's largest inter-company run, the JP Morgan Corporate Challenge in Frankfurt. With 1,313 runners Lufthansa again provided the second strongest team. Moreover, about 350 Lufthansa employees, that is almost 10 percent of the total field, were at the starting line on March 19, 2010 for the Frankfurt Half Marathon, which Lufthansa has supported since 2009 as main sponsor and name-giver.

Corporate reinsertion management

Nobody is safe from being unable to work over a longer period of time due to illness. Employees who are ill for more than six weeks during a 12-month period benefit from corporate reinsertion management. It facilitates their return to their previous workplace or the search for a new, appropriate job.



Employee safety: Organization and tasks

In order to offer employees safe workplaces and maintain and increase their employability, Lufthansa continually develops measures concerning employee safety. The coordination of all activities related to safe job environments is the responsibility of Group employee safety, which cooperates closely with physicians, social counselors and those responsible at the Group companies. Emphasis is placed on identifying and assessing hazards as well as measures designed to continuously reduce the number of accidents. A further task is to identify risks of occupational diseases and other work-related health hazards at an early stage and ward them off.

At the location in Hamburg, the maintenance workshops are the focus of employee safety, while in Frankfurt it is the areas of flight operations and administration. The experts for employee safety – most of them are safety engineers – also receive support from their colleagues in Berlin and Munich to guarantee optimum care for all Lufthansa employees. All job-safety measures are adapted individually to local requirements. In addition, corporate employee safety offers counseling on health promotion, safety trainings, instruction for employees in the noise laboratory as well as support for expanding and updating health-related information on the intranet. Currently, more than 700 Lufthansa employees act as volunteer safety commissioners. Whenever employees observe technical or organizational shortcomings, the safety commissioners act as the first place of contact. If needed, they contact a supervisor or a specialist for employee safety.

Passenger Medical Care department looks after customers

Lufthansa operates a safety concept for passengers that is unique in the industry. Its basis is the new department Passenger Medical Care, which the company set up in summer 2009 in Frankfurt. At the center of this service, which is under the aegis of the Medical Service, is the Medical Operation Center (MOC), which assumes the medical responsibility for the transport of passengers suffering from illness. In 2010, the MOC coordinated up to 700 assignments per month. More than 20 medical specialists look after the travel conditions of patients in sitting and lying positions as well as oxygen supply for passengers with cardiovascular diseases. Furthermore, Lufthansa provides a Patient Transport Compartment if needed; an enclosed cabin that serves as a state-of-the-art



Bundled under one roof: The new Medical Operation Center coordinates the transportation of sick passengers at Lufthansa.

intensive care unit. It was used about 100 times in 2010 alone. “With this capability we react to increasing demand for medical clarification,” says Dr. Jürgen Graf, head of the department Passenger Medical Care at Lufthansa. “It sometimes happens on long-haul flights especially that passengers get into emergency situations.”

Indispensable pillars in Lufthansa’s concept are crew training, the medical onboard equipment, telemedicine and the Physician Onboard Program, which was set up in 2006. It allows physicians to register so that the crew knows in which seat a medical doctor is seated on a given flight. Of course, the MOC’s physicians also organize the transport home of crew members who fell ill or were injured. Employees working abroad also have access to a worldwide network of contract physicians, which was founded more than 40 years ago. Its members meet every four years to exchange scientific information.

Facts 2010 and outlook 2011 (selection)

Area	Facts 2010	Outlook 2011
Training / qualifications for first-time employees	<ul style="list-style-type: none"> At the end of 2010, 1,603 young people were employed in training programs. 778 new apprentices and students in dual courses of study were hired in the same year. Furthermore, Lufthansa hired and trained about 3,580 service professionals in 2010, who work primarily as flight attendants and in passenger service. The number of new hires could be increased significantly especially in the administrative and general technical segments. In 2010, Lufthansa Flight Training GmbH in Bremen hired 240 new future pilots. Thus the total number of trainee pilots is at a similarly high level as in the year before. 	<ul style="list-style-type: none"> Intensive, need-oriented training will continue to play a central role in securing qualified junior employees for Lufthansa. Changes in the education systems – such as setting up bachelor degree courses as a standard at many universities – will increasingly be taken into account. Lufthansa's training and education portfolio is thus undergoing permanent change.
Continuing education	<ul style="list-style-type: none"> The efforts for the continuing education of the Service Professionals Cabin increased significantly in 2010. The use of eLearning, blended learning and mobile learning was further developed by Lufthansa in a strategic and Group-wide manner. 	<ul style="list-style-type: none"> Lufthansa will continue to support the qualifications being obtained by employees alongside work in the framework of the Bologna Process, which places the emphasis on lifelong learning.
Employability	<ul style="list-style-type: none"> To ensure the company's sustainable and long-term success, employees need to be supported and trained according to the requirements of the job market. This also includes the promotion of internationalizing the employees as well as the permanent further development of soft and hard skills. Diverse tools and learning programs were introduced in this respect, which significantly increase employees' foreign-language and intercultural competencies. A separate section for expanding intercultural competencies has been created on the Lufthansa intranet, where employees can access information about country-specific conditions at the most important destinations served by Lufthansa. Translation assistants and electronic dictionaries complement the total package. Additionally, the Lufthansa School of Business offers intercultural and foreign-language trainings for all employees. 	<ul style="list-style-type: none"> In 2011, the Lufthansa School of Business will place the focus of its qualifications programs on the modern work world. This includes subjects such as "The use of new media," "Business etiquette and modern manners," "Effective learning at a later age," but also "Success factor resiliency: The strength of people who bounce back." This variety of topics supports the employee's employability and proves that Lufthansa meets the obligations of its role as a socially responsible employer.
Employee health and safety protection	<ul style="list-style-type: none"> In 2010, the Medical Service regularly performed a large number of various services for all Group employees: medicals for flying personnel, examinations in the context of hirings, screenings for ground personnel, inspections and meetings covering employee safety, inoculations, outpatient services, and others. Extraordinary activities in 2010: measurement of pollutants and risk assessment in Moscow during forest fires in the region, to exclude possible risks for crews and passengers. Corporate health protection is the responsibility of the Group companies. They organize their own highly varied activities for their employees, such as information stands, campaigns and trainings that take the employees' special needs into account. In 2010, employee safety was further developed, in part by offering WBTS (Web-based trainings) in the area of employee safety and health protection. 	<ul style="list-style-type: none"> To continue and expand health management
Demographic change	<ul style="list-style-type: none"> Health measures intensified decentrally More participants' days in measures leading to professional qualifications Decentralized implementation of measures to meet challenges 	<ul style="list-style-type: none"> Include widened scope of consolidation Define and implement measures concerning demographic change in the management landscape
Diversity	<ul style="list-style-type: none"> Share of women in management positions increased in absolute terms, but declined in relative terms (portfolio effects) Detailed analysis of causes (qualitatively and quantitatively) of women in management positions carried out Catalogue of measures concerning women in management positions developed Cooperation among Group airlines intensified 	<ul style="list-style-type: none"> Implement measures to increase the share of women in management positions Expand work-life infrastructure Promote increased degree of internationalization
Dialogue with employees	<ul style="list-style-type: none"> Town-hall meetings and retreats Cockpit dialogue Service dialogue (exchange events for onboard and ground employees) Events for employees paid independently from collective agreements eTeaming as internal online platform expanded for closer exchanges and discussions Communications room for station employees (m.i.n.d. lounge) as a place for knowledge/information and dialogue 	<ul style="list-style-type: none"> Continuation of employee dialogues Introduction of a new dialogue event "Airline Dialogue" for employees and managers from all functional groups
Dialogue with social partners	<ul style="list-style-type: none"> Distribution conflicts induced by competition solved in a successful and balanced manner by means of constructive arbitration dialogues Accompanied and guaranteed smooth process of elections of employee representatives for ground personnel. Promotion of employability and qualification of the new employee representatives Start of the dialogue on the need for operational changes 	<ul style="list-style-type: none"> Continuation of the dialogue with social partners Disarm distribution conflicts induced by competition by means of intensive dialogue and constructive suggestions of solutions Ensure smooth elections of employee representatives in Germany. Promote employability and qualification of the new employee representatives Shape necessities of change in operational areas jointly and in a socially balanced manner



Climate and Environmental Responsibility



A firm eye on the environment

By implementing a wide range of measures, Lufthansa and its Group companies continuously work on increasing their ecological efficiency in flight operations over the long-term. Apart from billion-euro investments in a state-of-the-art low-emissions fleet, this also includes the implementation of the latest technologies in aircraft maintenance. In addition, all processes with an influence on weight are examined with the greatest care.

And this commitment pays off: Following its historic best value in 2009, the specific fuel consumption of the Group's fleet again declined in 2010 by another 2.4 percent to 4.2 liters of kerosene per passenger and 100 kilometers. The focus of the company's environmental strategy remains on long-term reductions in different areas: pollutant and noise emissions as well as energy consumption.

Kerosene and emissions

Specific kerosene consumption has never been so low

The specific kerosene consumption of the Lufthansa Group's fleet fell to an average of 4.2 liters of fuel per 100 passenger kilometers in 2010, the lowest figure in the company's history. Compared with the previous year, this is a reduction of a further 2.4 percent.

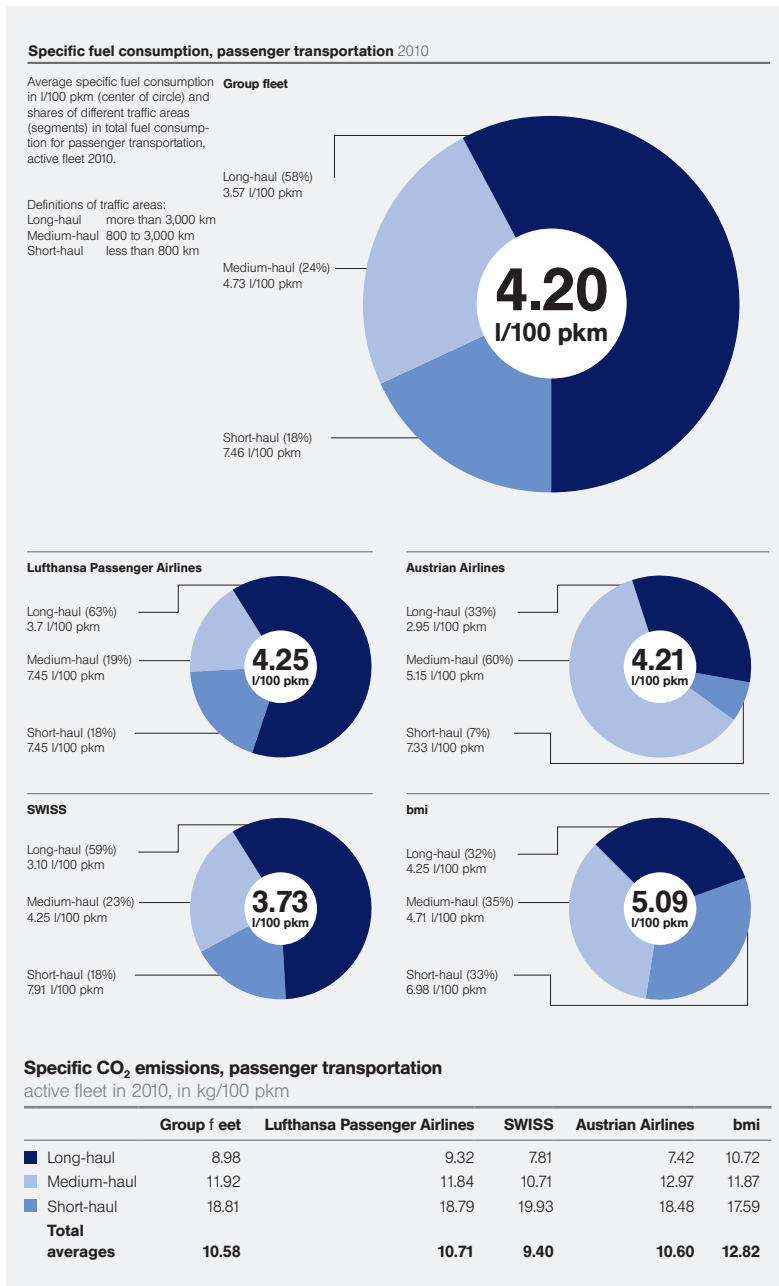
Concurrently, the specific CO₂ emissions also declined in 2010 by 2.4 percent to 10.58 kilos per 100 passenger kilometers.

During its first year of operations, the Airbus A380, the Lufthansa Group's new flagship, consumed 3.41 liters of fuel per 100 passenger kilometers on average. Among the Group companies, Lufthansa Passenger Airlines and SWISS in particular were able to reduce their specific fuel consumption in the course of the reporting year. Reasons for these improvements include the continuous modernization of the fleet, weight reductions, technical advances, higher levels of utilization, flying at variable speeds and optimized flight routings.

The absolute kerosene consumption of all regular flights operated by the Group, meaning scheduled and charter flights, increased by 10.1 percent to 8.46 million tonnes in 2010. This significant increase is due, on the one hand, to the fact that for the reporting year Lufthansa fully included the two new acquisitions Austrian Airlines and bmi in the scope of consolidation for the first time. On the other hand, overall demand for the Group's transport performance increased accordingly. In the area of passenger transport, over the past 20 years Lufthansa has been able to decouple these increases in transport performance from environmental effects in a lasting manner: While the transport performance increased by 302 percent since 1991, fuel consumption and CO₂ emissions rose only by 170 percent (see graph on right).

Fuel dumps: Safety comes first

To ensure the safety of passengers and crews, fuel dumps under exceptional circumstances cannot be avoided. Given the high levels of technical aircraft maintenance, they occur exceedingly rarely at the Lufthansa Group. Yet no airline in the world is entirely free of them. When pilots are forced to make an unscheduled landing for technical or medical reasons, they first need to empty the fuel tanks until the aircraft's maximum permissible landing weight is reached. Fuel dumps affect only long-haul flights, as short- and medium-haul aircraft are able to land fully loaded and with full tanks.

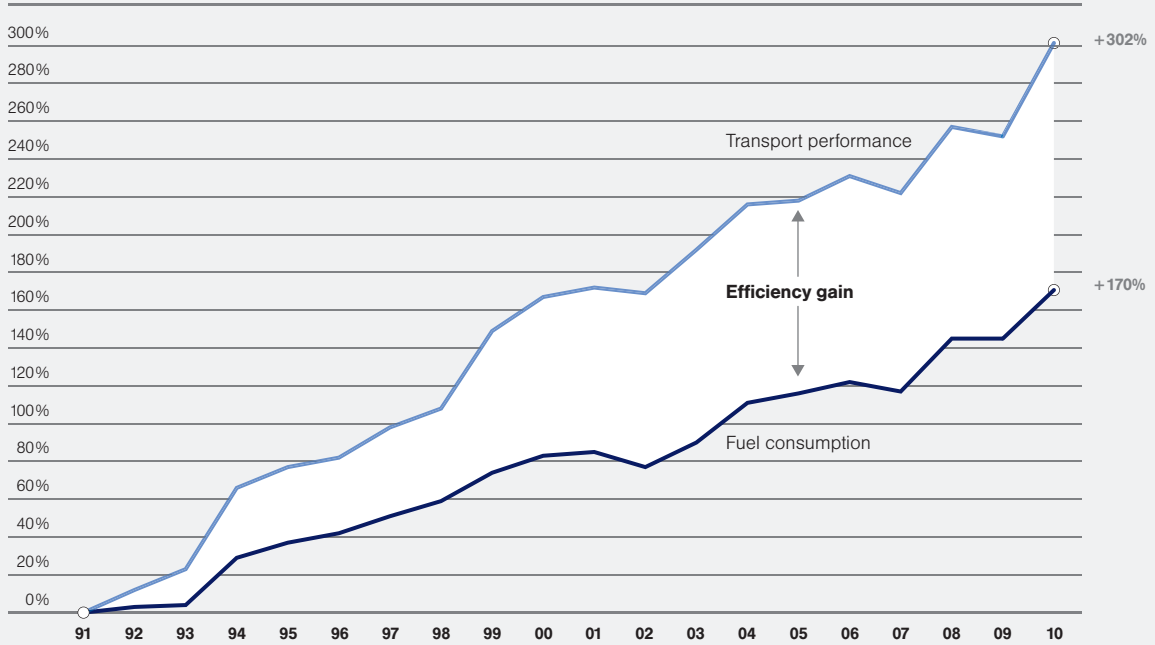




The Lufthansa Airbus A380 fully meets all expectations: During the reporting year, its specific fuel consumption was 3.41 liters per 100 passenger kilometers.

Decoupling of transport performance and fuel consumption

Change compared to 1991 in percent, values for the fleet of the Lufthansa Group



Fuel dumps

2010

changes compared to 2009

Events, total	22	- 5
Quantity, total	605 tonnes	- 15.5%
Medical reasons	6	- 11
Technical reasons	16	+ 7
Other reasons	0	- 1

Specific fuel consumption, passenger transportation

changes in percent

	2010	2009	change
Group fleet	4.20	4.30	- 2.4
Lufthansa Passenger Airlines	4.25	4.38	- 3.0
SWISS	3.73	3.88	- 3.9
Austrian Airlines	4.21	4.14	+ 1.5
bmi	5.09	4.70	+ 8.4

Fuel consumption¹
2010 (in tonnes)

	passengers	freight	total	share
Scheduled flights^{2,3}				
Lufthansa	4,535,845	1,731,801	6,267,646	(72.5%)
SWISS	864,878	330,829	1,195,707	(13.8%)
Austrian Airlines	591,725	93,062	684,787	(7.9%)
bmi	295,433	15,682	311,115	(3.6%)
			8,459,255	(97.8%)
Third parties ⁴	139,250	30,336	169,586	(2.0%)
Other flights⁵			14,498	(0.2%)
All flights			8,643,339	(100.0%)

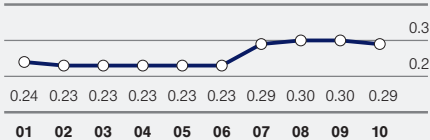
Emissions^{3,6}
2010 (in tonnes)

	passengers	± 2009	freight	± 2009	total	± 2009
CO₂	19,806,828	(+9.8%)	6,839,827	(+11.0%)	26,646,655	(+10.1%)
NO_x	100,152	(+20.4%)	34,592	(+17.5%)	134,744	(+19.6%)
CO	16,176	(+14.6%)	3,461	(+6.3%)	19,640	(+13.0%)
UHC	1,635	(+7.9%)	473	(+1.5%)	2,109	(+6.4%)

Share of third parties⁴
2010

Flights	3.3%
Passengers	2.4%
Tonne kilometers transported, TKT⁷	1.3%
Fuel consumption	2.0%
Carbon dioxide emissions	2.0%

Specific fuel consumption, freight transportation⁸
in liters/tonne kilometer



Actual fuel consumption in tonnes from flight operations, based on all flight events. Recorded are consumption values from gate to gate, i.e. including taxiing on the ground and holding patterns and detours in the air. Scheduled flights, charter flights.

The following companies are included for the reporting year 2010: Lufthansa Passenger Airlines (including Lufthansa Italia and Lufthansa Regional: Lufthansa CityLine, Air Dolomiti, Eurowings, Contact Air, Augsburg Airways), Lufthansa Cargo, SWISS, Austrian Airlines and bmi. Excluding the services of third parties, as it is not possible to influence their performance or the flight equipment they operate.

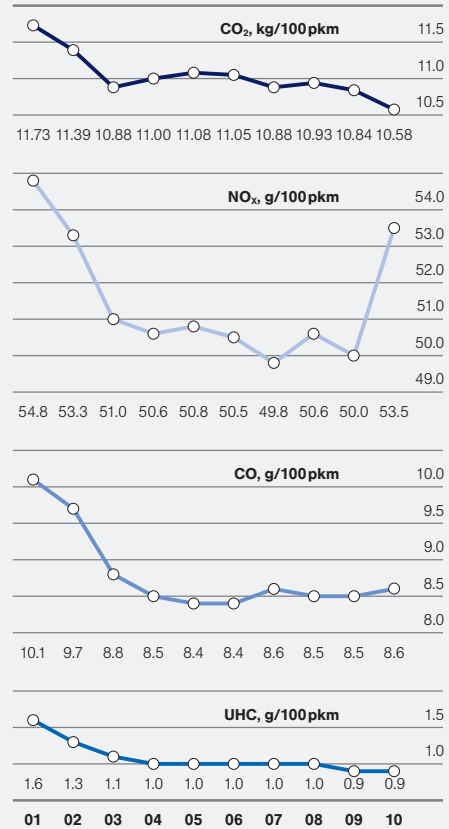
Includes flights operated by airlines that do not belong to the Group, which carry out services on Lufthansa's behalf at short notice, e.g. in the event of capacity bottlenecks.

Ferry flights, special flights, training flights, test flights, aborted flights. Absolute emissions in tonnes resulting from flight operations (all scheduled and charter flights). Recorded are emission values from gate to gate, i.e. including taxiing on the ground and holding patterns and detours in the air (see "About this report → Methodology of calculations" on page 5)

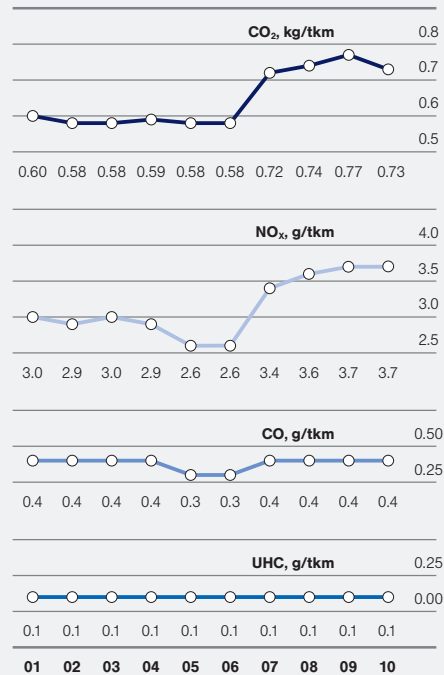
Excludes road feeder service and partial capacity chartered by Lufthansa Cargo, as no fuel consumption and emissions values are available for this performance.

On the basis of freight tonne kilometers (FTKT), transported on both cargo and passenger aircraft.

Specific emissions, passenger transportation
in kilograms, grams/100 passenger kilometers



Specific emissions, freight transportation⁸
in kilograms, grams/tonne kilometer



Long-term testing of biofuel – Lufthansa secures tomorrow’s mobility by conducting research and development work today

Worldwide mobility needs are on the increase, but fossil fuel resources are finite. This conflict demands new strategies for sustainable mobility and new approaches in the area of fuel. Little is known, for example, about the effectiveness and properties of biofuels under the conditions of routine operations. For this reason Lufthansa is carrying out pioneer work and will be the first airline worldwide to use biofuel for six months on regular flights.



The primary goal of this long-term test is to gain experience with a view to large-scale use later on, which will also create entirely new challenges for logistics on the ground. By making this commitment, Lufthansa gives direction to the research on using alternative fuels in aviation.

Biofuels play a very important role for the future of aviation. It is a fact that biosynthetic fuels will replace their fossil predecessors in air transport over the long-term because the industry – unlike all other modes of transport – is only able to use internal combustion engines for the foreseeable future and therefore must find practicable alternatives to fossil fuels. This task is interlinked with the aviation industry’s commitment to climate protection: Until 2020, an annual improvement of 1.5 percent in fuel efficiency will slow down the industry’s CO₂ emissions. And by 2050 the member airlines of the International Air Transport Association (IATA) aim at cutting CO₂ emissions from fossil fuels by half when compared with the levels of 2005. “We can meet these enormous challenges only by applying a comprehensive package of measures, which includes the use of biofuels,” says Joachim Buse, Vice President Aviation Biofuel at Lufthansa. In addition to the industry’s goals, the Lufthansa Group has set itself the goal of adding a share of synthetically produced fuel to conventional kerosene in accordance with current availability until 2020. In this context, the company places great value on sustainable production methods.

Towards an environmentally friendly future with Pure Sky®

“Pure Sky®” is the name under which Lufthansa bundles all of the company’s activities concerning the future use of alternative fuels. It is managed by the Aviation Biofuel Department that was set up in 2009. Guiding this commitment is part of the Group’s strategy, which is reported directly to the Executive Board and thus has the highest level of priority. The prerequisite for the use of biofuels is their availability, economic feasibility as well as positive effects

on the environment, such as a reduction of CO₂ emissions. “The goal of our work is to develop a perspective for the technical feasibility, to demonstrate the economic and ecological sense of biofuels and to ensure supply security for Lufthansa,” says Buse. The other airlines within the Lufthansa Group are closely integrated into this initiative by means of regular exchanges.

The burnFAIR project: Everyday operations with biofuel

Lufthansa will be the first airline worldwide to test biofuel in normal flight operations. In the context of the research project burnFAIR, an Airbus A321 will fly regularly between Hamburg and Frankfurt over a period of six months, using fuel that contains a 50-percent share of biosynthetic kerosene in one engine. The main goal of this long-term test is to gain experience and generate measurement data over a longer period of time. At the same time, the effects of biofuels on the environment and on maintenance and engine life expectancy can be studied. And a positive side-effect is that Lufthansa is expected to avoid about 1,500 tonnes of CO₂ emissions. “This long-term test is pioneer work because so far airlines have tested biofuels only on individual test flights,” explains Buse. The total cost of the

- Duration: 6 months
- Type of aircraft: Airbus A321
- Share of biofuel: 50 percent, on one engine
- Total investment: 6.6 million euros
- Each liter of biofuel is produced to sustainable standards.

burnFAIR project will be about 6.6 million euros for Lufthansa.

The German Aerospace Center (DLR) is Lufthansa's project partner for burnFAIR. Among other tasks, DLR scientists are responsible for measuring exhaust gases directly at the engine and analyzing all insights together with Lufthansa's experts. Germany's Federal Government supports burnFAIR as well as the higher-ranking project FAIR (Future Aircraft Research) with about 2.5 million euros each through the aviation research program LUFO. Within the framework of burnFAIR, the Technical Universities in Hamburg-Harburg and Munich, Bauhaus Luftfahrt in Munich, Airbus Operations GmbH, EADS in Munich, the engine manufacturer MTU Aero Engines and Hamburg Airport are studying the tolerability of biofuels. This is complemented

many years of experience in the production of biofuels. The fuel used by Lufthansa is based on pure biomass (Biomass to Liquid, BTL).

The raw materials for biosynthetic kerosene include rapeseed oil, palm oil and animal fats, and long-term oil-rich energy plants such as Jatropha, Camelina or algae. For the production of fuel to be used on burnFAIR flights, Neste Oil uses Jatropha oil from Indonesia and rapeseed oil, while animal fats, the third component, come directly from Finland. From Lufthansa's perspective, Jatropha is the best basis for biofuel. "But there's not enough of it at the moment," explains Buse. "For this reason, we will very likely not be able to buy the quantity of Jatropha oil needed for the 1,400 test flights. We will compensate for the discrepancy with certifiably sustainable palm oil in order to be able to carry out these flights in the first place. This is a temporary solution that we consider acceptable, given the excellent potential."



"Biofuel can only make sense for Lufthansa if the entire test process results in a positive CO₂ balance sheet, meaning a CO₂ reduction. This long-term test is pioneer work because so far airlines have tested biofuels only on individual test flights."

Joachim Buse
Vice President Aviation Biofuel at Lufthansa

Protecting the rain forest is an important concern for Lufthansa. For this reason, the company is a member of the Sustainable Alternative Fuel Users Group (SAFUG) and thus also a member of the Roundtable for Sustainable Biofuels (RSB). This latter places strict criteria on the environmental compatibility of generating biomass to prevent adverse effects on agriculture and nature conservation. Among the RSB's members are WWF International, the International Union for the Conservation of Nature (IUCN), the Öko-Institut and the Gold Standard Foundation. "No rain forest is cleared for the biofuel used by Lufthansa. And there is also no competition with food and animal feed production," emphasizes Buse.

by comprehensive research topics concerning the analysis and assessment of production paths for different fuels. Here, the participating experts will select the most promising fuel types.

Certifiably sustainable fuel

According to the current state of research, synthetic fuel from biomass is the best alternative for tomorrow's environmentally friendly and sustainable fuel supply. In the course of the long-term test, Lufthansa will use about 800 tonnes of biofuel that comes exclusively from raw materials grown with sustainable methods, whose certification can be followed back to the respective growing areas. This biofuel is not different from conventional jet A-1 fuel. In purchasing this fuel, Lufthansa pays great attention to an environmentally friendly production and delivery system: The licensed suppliers must prove the sustainability of their processes and raw materials. The producer of the biosynthetic kerosene is the Finnish mineral oil company Neste Oil, which has

A positive effect on the environment is another condition for the planned long-term test in normal flight operations. "Biofuel can only make sense for Lufthansa if the entire test process results in a positive CO₂ balance sheet, meaning a CO₂ reduction. This is our own yardstick and it is the yardstick applied by others," adds the head of the Aviation Biofuel Project.

Logistics and infrastructure are in place

Besides sourcing a sufficient quantity of biofuel, the logistics needed for the test run proved to be a challenge during the preparation phase. Thus, for logistical reasons, the Airbus A321 is only fueled in Hamburg. Lufthansa leases an aboveground tank at Hamburg's port that is specifically equipped for storing aviation fuel. At Hamburg Airport, two apron tanker trucks are used to refuel the aircraft, which



is first fueled with jet A-1 and then with a blend of jet A-1 and HVO Biokerosene (Hydrotreated Vegetable Oil). To run this test, Lufthansa also has to modify numerous internal processes as its aircraft are usually not deployed exclusively on one route, but on rotations that include a number of destinations. Simultaneously, Lufthansa is completing important preliminary steps to set up a sustainable supply chain. Licensed fuel suppliers have to prove the environmental compatibility of their processes, among other criteria.

Four pillars for climate protection

The use of biosynthetic kerosene is one element of the proven four pillar strategy of the aviation industry, designed to reduce the industry's overall emissions and protect the Earth's climate. This concept comprises innovations in aircraft and engine technology, which includes alternative fuels. In addition, the concept includes operational measures (such as optimal flight routes and speeds) and economic tools, such as global emissions trading. However, the largest savings potential is provided by an improved infrastructure, especially in the guise of the planned implementation of a unified European airspace (Single European Sky or SES) as Europe's largest climate protection program. Only a combination of different measures will allow the aviation industry to reach its ambitious environmental goals. The use of biofuel in scheduled operations is the consistent continuation of the sustainability strategy that Lufthansa has been pursuing successfully for many years.



Energy plants containing oil, such as Jatropha, are raw materials for biosynthetic kerosene.

Lufthansa is preparing for emissions trading

Climate protection continues to enjoy a high level of priority in the aviation industry. The industry has set itself ambitious goals concerning the worldwide reduction of CO₂ emissions and developed a far-reaching four pillar strategy to achieve these goals. On January 1, 2012, air transport will also be included in the EU's emissions trading. As a result, airlines must present CO₂ certificates for all flights taking off and landing within the European Union. Compared to the globally-oriented four pillar strategy, the EU's emissions trading is only a regional regulatory approach with significant competitive disadvantages and cost-intensive effects for European airlines.

At Lufthansa, the preparations for participating in emissions trading are already far advanced, despite difficult general conditions, highly complex issues and numerous unanswered questions. For example, a unified EU standard is missing, which increases the bureaucratic efforts for all parties concerned. According to current information, 16 companies within the Lufthansa Group alone will participate in emissions trading, having to report to seven national authorities using different formats and applying different requirements.

Lufthansa and the entire aviation industry contend that effective climate protection cannot be achieved by means of isolated regional measures, but only through global solutions. Therefore, a sensibly designed emissions trading system should include all countries and airlines so that competitive neutrality is ensured.

Fuel efficiency at the Lufthansa Group – Saving fuel efficiently and long-term

Fuel efficiency is the prime example illustrating that in aviation economic and ecological goals do not have to be contradictory: As an airline reduces its fuel consumption, it saves money and simultaneously lessens the burden on the environment.

The thrifty use of fuel was one of the key topics of the companywide initiative “Upgrade to Industry Leadership” (see *Balance*, Issue 2010, pages 51-52), which was concluded successfully in mid-February 2010. Among the key results is the development of a system of indicators, or ratios. The goal is to be able to analyze the efficiency of implemented conservation activities in a more detailed way and uncover further savings potentials. Lufthansa experts have identified more than 20 indicators related to fuel consumption. These ratios cover different areas such as flight operations, weight or technical aspects.

All Group airlines pursue fuel conservation measures independently and maintain regular exchanges on the subject. Different areas within the individual airlines, such as product management or flight operations, cooperate with those responsible for fuel management. But there is also close cooperation between Group companies, for example with regard to testing lightweight containers by Lufthansa Cargo, optimizing flight planning in cooperation with Lufthansa Systems or implementing technical measures by Lufthansa Technik. In addition, all employees are called upon to apply their knowledge. Active communications, internal eLearning games concerning fuel efficiency, a number of exchange platforms and Lufthansa’s ideas management ensure that the suggestions of all employees are heard and that awareness of the issue of fuel conservation is raised in daily flight operations.



Lightweight

The new lightweight trolley Quantum was developed by LSG Sky Chefs and offers a weight saving of up to 40 percent compared with conventional models. A jury of international aviation experts gave it the “Crystal Cabin Award” in the category “Most Innovative Cabin Product.” Following highly positive test results, the Quantum trolley is to be deployed on Lufthansa’s entire long-haul fleet.

Comprehensive approach of the project Fuel Efficiency

Lufthansa Passenger Airlines took the importance of this subject into account when it initiated the project Fuel Efficiency in October 2009. Its goal is to reduce fuel consumption in flight operations by means of appropriate measures, so as to cut back one of the highest cost factors over the long-term. To this end, more than 100 internal subprojects have been launched. The measures implemented over the past years have helped to conserve fuel long-term and to limit CO₂ emissions correspondingly.

Perceptible conservation effects could be achieved by optimized flight procedures, efficient airspace management, more optimized processes on the ground, reduced aircraft weight and technical improvements, for example. In addition, a punctual departure and an efficiently calculated flight plan contribute to a flight’s profitability. There is no single most effective method to save fuel, though. The optimum approach is the meticulous coordination of all partners involved in a flight’s operation – in other words, a comprehensive approach.

The following examples illustrate the diversity of these subprojects:

Weight reductions are a big lever to help conserve fuel. New, more lightweight onboard trolleys from LSG Sky Chefs help to reduce fuel consumption significantly. Large quantities of fuel can also be conserved as a result of modernizing cabin interiors. This is the case for the European fleet, where new cabin interiors were installed, or the installation of more lightweight seats on the Boeing 747-400s.

Among the technical improvements is the modification of the Trent 700 engines on the Airbus A330 fleet (for further examples see the overview “Fuel Efficiency” on pages 72 and 73).





The seats in the new European cabins impress with the combination of reduced weight and improved seating comfort.

The influence of airspace structure

An inefficient airspace structure leads to significant increases in fuel burn. Close cooperation between politics, air traffic control and airlines is needed in this area. To help improve the structure of European airspace over the long-term, Lufthansa supports the European project “Single European Sky” with a dedicated department (see “Air traffic management – Towards a unified European airspace” from page 74). By cooperating with air traffic control, partial improvements can be achieved short-term, such as route shortcuts or flying at higher altitudes. A joint project by Deutsche Lufthansa AG, DFS Deutsche Flugsicherung and the German Forces means that the so-called Temporary Restricted Areas are opened for civil aviation when not used by the military, and flying detours can thus be avoided. Furthermore, Eurocontrol, the air traffic control authority responsible for upper airspace over western Europe, granted route shortcuts that entailed significant fuel savings for Lufthansa Passenger Airlines in 2010.

Conserving fuel is a permanent task. Especially with regard to the planned inclusion of air transport in the EU emissions trade and the volatility of oil prices, airlines do not have any other option but to focus on fuel efficiency in flight operations. This is the only way for the company to remain viable over the long-term and to be successful in competition.

Saving kerosene with Lufthansa Systems

In its role as one of the leading service providers of the aviation industry, Lufthansa Systems also develops innovative IT solutions that help airlines conserve kerosene.

Load planning

NetLine/Load by Lufthansa Systems allows airlines to optimize their load planning. The automatic calculation of the center of gravity allows airlines to reduce fuel consumption by up to 0.5 percent, which implies a saving of 5 million liters of kerosene per year for a medium-sized airline. With more than 3,500 flights handled per day, NetLine/Load is one of the leading weight-and-balance solutions worldwide.

Flight-route planning

The flight-route planning solution Lido/Flight by Lufthansa Systems allows airlines to calculate the optimum route among numerous options for each flight. For example, an aircraft en route from Frankfurt to Los Angeles can thus conserve 4 tonnes of kerosene and lessen the environmental burden by 12 tonnes of CO₂. Additional savings can be realized because Lido/Flight does not use standard values for calculating fuel requirements, but the exact consumption values of the individual aircraft. In this way, pilots avoid unnecessary fuel reserves, the transport of which increases overall consumption.

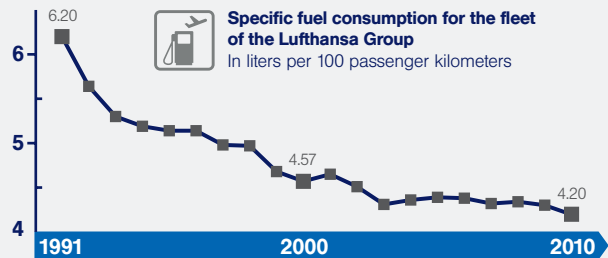
Planning and control

Information technology can also make a contribution to sustainability through an airline’s planning and control, as high seat-load factors lead to lower fuel consumption per passenger kilometer. This is possible thanks to IT solutions that allow airlines targeted overbookings because they have precise data for making booking prognoses available, for example. The Integrated Commercial Platform (ICP) by Lufthansa Systems interlinks all core processes of network management, from market analysis, long- and mid-term flight planning, timetable and codeshare management to yield management and pricing.

Fuel Efficiency – More than 100 measures in five areas

The project Fuel Efficiency develops measures designed to reduce kerosene consumption – and thus also CO₂ emissions.

The scope ranges from engineering solutions, weight reductions and modifications in ground handling and network configurations, to political structural projects and procedures in flight operations. Some measures have already been adopted as routine procedure, while others are being evaluated or introduced. Below are selected projects from the five areas:



1. Political structural projects

Temporarily closed airspace

This is a joint project between Bundeswehr (German armed forces), DFS Deutsche Flugsicherung (German Air Traffic Control) and Lufthansa. Its goal is to open airspace that is currently closed to transiting flights for use by civil traffic outside of military operating hours. Significant detours can be avoided in this way.



2. Flight operation / air traffic management / air traffic control

Route shortcuts

In 2010, route shortcuts of 4.9 nautical miles on average per Lufthansa flight could be realized in airspace controlled by Eurocontrol. This reduces fuel consumption.

Random Routes East Trial – Federal Aviation Authority (FAA)

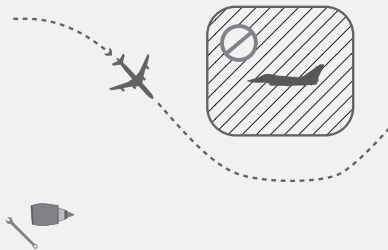
In U.S. airspace on the East Coast, flying-time reductions of up to two minutes are to be realized by means of “random routes.” This affects up to ten daily Lufthansa flights. Currently, the FAA is testing this procedure with support from Lufthansa.

Without detours over the U.K.

Direct routings in U.K. airspace are possible before 5.30 UTC, which shorten flying times by up to three minutes. This corresponds to fuel savings of up to 400 kilos per flight. The project is based on cooperation between NATS, Eurocontrol, IAA and the Center Maastricht.

Optimization of standard routes

Putting to use the expertise and technical solutions of the navigation software Lido OC, developed by Lufthansa Systems, helps to optimize standard routes “preset” for flight operations.



3. Technical performance

Cycle engine wash

This engine wash procedure developed by Lufthansa Technik means that cleaned engines are subjected to less thermal stress, which extends their life span and lowers maintenance costs. In addition, cleaned engines work more efficiently from a thermodynamic perspective.

Modification of Trent 700 engines

Lufthansa expects that modifying the Rolls-Royce Trent 700 engines (Airbus A330 fleet) will reduce fuel consumption by about 1 percent.



4. Network / ground

Optimization of block times

Adapting standard block times to consumption-optimized block times on six of the 11 most fuel-intensive routes helps achieve significant fuel savings.





5. Reduction of aircraft weight

Only 1 kilo less weight on all aircraft of Lufthansa Passenger Airlines saves 25 tonnes of fuel per year.



Four pillars for climate protection

1. Technological progress	2. Improved infrastructure	3. Operational measures	4. Economic measures
<ul style="list-style-type: none"> • Innovation in aircraft and engine technologies • Alternative fuels 	<ul style="list-style-type: none"> • Improved use of airspace • Airport infrastructures adapted to needs 	<ul style="list-style-type: none"> • More efficient aircraft sizes • Optimal flight routes and speeds • Optimized processes on the ground 	<ul style="list-style-type: none"> • Global emissions trading to complement the other three pillars
<ul style="list-style-type: none"> • Fleet modernization (see from page 27) • Operation of state-of-the-art engines, optimization of engines in the existing fleet (see from page 82) • Project Fuel Efficiency • Research on alternative fuels in the framework of the project Aviation Biofuel (see from page 67) 	<ul style="list-style-type: none"> • Project Fuel Efficiency • Commitment to the project SESAR (see from page 74) • Optimization of flight routings • Political structural projects • Investments in needs-oriented infrastructure 	<ul style="list-style-type: none"> • Project Fuel Efficiency • Flying at variable speeds • Maintenance: Efficient engine washes • Optimization of aircraft utilization (loads) 	<ul style="list-style-type: none"> • Voluntary compensation of CO₂ emissions (optional for customers) • Preparation for emissions trading (see on page 69)

Our measures (selection of examples)

Lufthansa works continuously on optimizing operations-related measures on the ground and in the air, and to make processes even more efficient in order to reduce fuel consumption and thus CO₂ emissions over the long-term. A four pillar model for climate protection was developed in cooperation with other airlines. This agenda covers the entire scope of feasible measures. It is the responsibility of politics to coordinate air traffic management in ways that avoid holding patterns in the air. This also includes the needs-oriented expansion of airports.

Air traffic management – Towards a unified European airspace

The Single European Sky is the largest climate protection project in European aviation. According to the Intergovernmental Panel on Climate Change (IPCC), its implementation means a reduction in CO₂ emissions of up to 12 percent. To reach this goal by 2020, the EU Commission and the European air traffic control authority Eurocontrol launched the Single European Sky ATM Research Program (SESAR).

This pan-European initiative is working on standardizing, harmonizing and synchronizing the services offered in the framework of European Air Traffic Management (ATM). Among other points, SESAR includes the introduction of new technologies and procedures in air traffic control that will allow the organization of rising volumes of air traffic in more secure, economic and environmentally friendly ways. During the development phase, the most important European authority is the SESAR Joint Undertaking (SJU), with which Lufthansa closely cooperates as an Airspace User. In addition, Lufthansa is a member of the SESAR Airline Group, a forum in which many European airlines coordinate their activities with the aim of ensuring the success of Single European Sky (SES).

In the framework of the SJU, all players active in air traffic have joined forces for the first time in the history of European aviation: civil and military air traffic control institutions, national and international legislative organizations, the aircraft industry, airlines, aircraft operators and users as well as additional partners on the ground and in the air. This public-private partnership administers aid funds of 2.1 billion euros, provided in equal part by the European Union, Eurocontrol and the participating corporations with the aim of sharing the development costs of SESAR.

More capacity, lower emissions

It is one of SESAR's goals to increase the capacity of European airspace by 73 percent by 2020 and even to triple it over the long-term, while increasing safety continuously. At the same time, the cost of air traffic control is to be halved from the current level of 800 euros per flight on average to 400 euros by 2020. Of course, the environment also benefits from SESAR: According to the SJU, average flight duration can be reduced by between 8 and 14 minutes on average, which reduces fuel consumption by between 300 and 500 kilos and CO₂ emissions by between 948 and 1,575 kilos. "The Lufthansa Group alone can conserve between 600,000 and 700,000 liters of kerosene per day in this way," says Manfred Mohr, Head of project SESAR at Lufthansa.

SESAR is organized in three sections: definition, development, and implementation. During the definition phase, which was completed in 2008, the participants developed a European master plan for air traffic management. The development phase, which will continue until 2016 under the responsibility of the SJU, comprises all activities necessary to prepare the implementation of the previously defined master plan. This includes detailed action plans and the necessary legislative measures. Furthermore, the participants are developing new systems and standards. They have to work through 21 task packages with currently more than 300 individual projects, of which about 250 have already been launched. For the implementation phase (2011 to 2020), the project partners have committed to coordinating, managing and applying in daily operations the measures previously agreed upon. "Above all, people everywhere in the EU will benefit from SESAR. There will be less greenhouse gases, less aircraft noise and fewer delays. At the same time, safety levels, which are currently at extremely high levels, will again be improved," summarizes Raymund Obst, pilot and manager at the project office SESAR at Lufthansa.

Participating in more than 80 projects

The airlines of the Lufthansa Group are participating in more than 80 of the 300 projects. Experts from Lufthansa, SWISS, Austrian Airlines, Brussels Airlines, bmi, Germanwings and Lufthansa Cargo



"Lufthansa sees its participation in SESAR as an opportunity to make a contribution to protecting our environment. The goal is a type of air transport that allows passengers to travel quickly and easily, while leaving the smallest ecological footprint possible."

Manfred Mohr
Head of project SESAR at Lufthansa



contribute their professional knowledge from the most diverse areas, such as flight route planning and operations centers for air and ground, but also fleet management, information technology and finance. These experts participate in workshops, accompany simulations, assess documentation and evaluate proposals, for example. In this way, they support projects in areas such as aircraft systems, operational changes in the air (four-dimensional flight path, 4D trajectory) and on the ground (the operative flight coordination center, for example), information management as well as “umbrella topics” with a higher level of importance.

One example of this way of working is the active participation of Lufthansa experts in improving ground-based approach procedures (Ground-Based Augmentation System, GBAS). Several individual projects in the areas of aircraft systems, airport as well as ground and cockpit processes share the goal of reducing the number of deviated landings. They also aim at permitting smooth processes even during fog conditions due to a high level of precision in positional data. Among other aspects, Lufthansa participates in developing the necessary onboard systems and solutions for high-frequency and regional airports. The experts also contribute their know-how from other projects, such as satellite-based approach procedures or optimized braking, which permits taxiing off the runway with greater precision and reaching the correct parking position more quickly. “Lufthansa sees its participation in SESAR as an opportunity to make a contribution to protecting our environment. The goal is a type of air transport that allows passengers to travel quickly and easily, while leaving the smallest ecological footprint possible,” emphasizes Mohr.

AIRE – Concrete climate protection

An important part of SESAR in the area of sustainability is AIRE (Atlantic Interoperability Initiative to Reduce Emissions), the transatlantic program to reduce emissions from air traffic, in which a total of 40 airlines, airports, air traffic control authorities and industrial corporations participate. The SJU, which is responsible for the European side of AIRE, has selected 18 projects worthy of support for this climate protection initiative. The Lufthansa Group participates in four of these projects.

This includes a joint project aimed at reducing emissions, involving Germanwings, Lufthansa and DFS Deutsche Flugsicherung concerning new approach procedures at Cologne/Bonn Airport. Due to their geographic proximity, the airports in Cologne and Düsseldorf share the same airspace, which also

accommodates departing traffic from Frankfurt. Currently, air traffic controllers guide Cologne’s traffic flows below those of Düsseldorf’s, which causes increased fuel burn due to low altitudes. Under the new procedures the traffic flows to the two cities on the Rhine both share higher altitudes for longer, which conserves fuel and reduces CO₂ emissions. For Germanwings in particular, initial analyses show a savings potential of about 200 kilos of kerosene per flight at its home airport in Cologne. Further tests are to follow in summer 2011.

In Switzerland, SWISS has joined forces with Flughafen Zürich AG and the air traffic control authority Skyguide to launch the project Greener Wave. Its goal is to better manage above all the first bank of flight arrivals in the early morning hours by implementing a range of operative measures. Among these is the assignment of defined time slots for an aircraft’s approach, which helps to shorten holding patterns and thus reduce CO₂ and noise emissions. At Vienna Airport, Austrian Airlines and Austro Control are working on a solution that will help shorten the aircraft’s taxiing phases and thus avoid related CO₂ emissions. And at Brussels Airport, Brussels Airlines, Belgocontrol and the airport operator are preparing measures that will allow landing aircraft to use the Continuous Descent Approach (CDA) for longer, an approach procedure characterized by particularly low noise and pollutant emissions due to reduced engine performance.

FABEC – One of SES’s cornerstones

A milestone on the path towards SES was set by Germany and its five neighbors France, Belgium, Luxembourg, the Netherlands and Switzerland in December 2010: They agreed to create a joint airspace, the Functional Airspace Block Europe Central (FABEC), which is an important cornerstone of the overall SES project. The FABEC program is implemented by civil and military partners in the six countries: Representatives of the transport and defense ministries as well as the civil and military air traffic control organizations, including the control center in Maastricht, operated by Eurocontrol. Lufthansa accompanied the development process in a consulting function. With FABEC, one of the busiest airspaces worldwide is receiving standardized air traffic control. About 240 airports – including the important hubs in Amsterdam, Frankfurt and Paris – are located in an area measuring 1.7 million square meters in surface. Every year, more than 5.5 million flight movements are recorded here, which corresponds to more than half of all air traffic in Europe. In line with EU law, the six signatory countries have agreed to implement the joint airspace by December 2012.

Environmental management

Lufthansa realigns Group-wide Environmental Forum

One of the goals that Lufthansa set itself in its strategic Environmental Guidelines is to expand the environmental management at the Group level and within the Group companies, and to give it further importance. The company made an important step in this direction in 2010 by realigning the internal, Group-wide Environmental Forum.

At Lufthansa, the corporate departments and all companies with environmental relevance have their own environmental department, an environmental commissioner or a contact partner for these issues. The Group-wide goals, strategies and measures concerning the environment are coordinated by the department Group Environmental Issues. All environmental experts meet twice a year at the Environmental Forum to discuss activities and experiences, and to develop new projects.

Concentrated environmental competency

As the number of companies under the roof of the Lufthansa Group has increased, the tasks of the Environmental Forum have become ever more complex. The company takes this development into account by realigning the Forum, a move supported by the Executive Board. "The Group's concentrated environmental competency is represented at the Environmental Forum, which we will use more actively in the future. This is why since 2010 we have addressed selected topics in workgroups with the goal of developing possible solutions for the entire company from within the Group companies," says Dr. Karlheinz Haag, Vice President Group Environmental Issues at Lufthansa, explaining the Forum's new structure. One workgroup is currently developing a set of important indicators based on standard definitions that are

to make environmental factors within the Group measurable and thus also comparable. A second team is compiling experiences at different companies relating to the introduction of environmental management systems in order to summarize them in a handbook or guideline that all company areas can use in the future for their own guidance.

Simultaneously, the Environmental Forum now acts as a platform interlinking topics of relevance to the Group with activities in individual companies. "As the Lufthansa Group has become more complex, it is especially important to ensure that processes and coordination run both from top to bottom and from bottom to top. This allows us to speak with one voice despite diversification," says Haag. Beyond that, the environmental experts also regularly exchange information outside the established structures. One such option is the competency network "Environmental Forum" on the internal Web 2.0 platform eTeaming.

Emphasis on climate protection

The unequivocal area of emphasis in Lufthansa's Environmental Guidelines is the issue of how international air transport can meet the challenges of climate change. In response, the industry has developed a clear concept, the four pillar strategy and CO₂-neutral growth from 2020, which now need to be implemented. Other important topics are the reduction of aircraft noise and an efficient use of resources on the ground. To ensure that Lufthansa reaches its environmental goals, the Group's environmental experts supported and implemented numerous measures in this area. In 2010, the spectrum ranged from more lightweight seats for the European fleet to the preparations for long-term testing of biofuel on scheduled flights.



"The Group's concentrated environmental competency is represented at the Environmental Forum, which we will use more actively in the future. This is why – since 2010 – we have addressed selected topics in workgroups with the goal of developing possible solutions for the entire company from within the Group companies."

Dr. Karlheinz Haag
Vice President Group Environmental Issues at Lufthansa



News from the Group companies

The following examples provide information about the most important environmental management activities at selected Group companies:

Lufthansa Passenger Airlines

- In the framework of the internal project Fuel Efficiency, Lufthansa Passenger Airlines is working on reducing its fuel consumption over the long-term by means of targeted measures (see from page 70).
- Experts at Lufthansa Passenger Airlines are helping to create a unified European airspace, the Single European Sky (SES). Its implementation may reduce CO₂ emissions from European air traffic by up to 12 percent (see from page 74).
- A six-month trial designed to test alternative fuels in routine operations is being prepared.

Lufthansa CityLine

- In April 2010, Lufthansa CityLine again successfully achieved ISO 14001 and EMAS recertification.
- In 2010, the employees in the two areas of administration and maintenance completed a computer-based training (CBT) on environmental protection. The goal of this campaign was to raise awareness among employees for the need to handle the environment with care. Furthermore, the "Environmental Weeks" and the campaign "Cycle to Work" were well received by employees.
- One of the areas of emphasis in 2011 is to reduce the aircraft hangar's energy consumption and to optimize the administrative building's climate control. Lufthansa CityLine is currently evaluating if an external energy consultant needs to be called in.

SWISS

- In 2010, SWISS launched an eLearning on the subject of the environment. The learning program, which comprises six modules, is aimed at all SWISS employees and highlights problem areas and solutions as they apply to the interaction between aviation and the environment. The goal is to anchor the subject of environmental protection even more profoundly in the corporate culture.



The environment is on board: SWISS regularly informs its passengers about the airline's environmental activities.

- The intradepartmental environmental project team analyzed more than 30 environmental projects SWISS-wide. Some examples of results are a reduction of paper consumption in ground handling, the introduction of lighter-weight crew cases and the implementation of regular environmental communication in the in-flight magazine.

Austrian Airlines

- In 2007, Austrian Airlines launched its own environmental management. The airline has participated in the EcoBusinessPlan Vienna since 2006 and thus had significant parts of an environmental management system at its disposal, such as an ongoing environmental program.
- In the mid-term, Austrian Airlines is to have a certified environmental management system.
- Austrian Airlines regularly publishes its own environmental report.

bmi

- One expert supports the two subjects of environment and safety in coordination with Group-wide subjects, and reports directly to the CEO.



Lufthansa Cargo successfully certified all German stations according to ISO 14001.

Lufthansa Cargo

- In 2010, Lufthansa Cargo expanded the certification of its environmental management system according to ISO 14001 to all German stations, after its operations in Frankfurt and Leipzig had received this international seal of quality in previous years. The external experts did not observe any deviations from the standard.
- At the employee party 2010, guests could learn more about the topics of energy, fuel efficiency and mobility at three stands. The biggest attraction was an electric car and employees also had an opportunity to test electric standup scooters.
- In 2010, Lufthansa Cargo continued to expand eFreight, its international system for paperless air freight transport. It is now available at all German stations. About 150 experts participated in the first German eFreight Conference, organized by the company.



Lufthansa Technik is the first MRO company to hold an integrated, process-oriented certification in the areas of quality, environment, aviation law, employee safety and international standards.

Lufthansa Technik

- Lufthansa Technik has set itself the goal to reduce its CO₂ emissions by 30 percent by 2012 compared with 2006. By the end of 2010 the company had achieved 23 percent of this target value.
- In 2010, Lufthansa Technik's operations in Sofia were certified according to ISO 14001 and the job safety specification OHSAS 18001. Thus, eight important subsidiary companies were certified by the end of November 2010. All overhaul locations are to be certified by 2013.
- Lufthansa Technik has forbidden the use of solvents and paint removers containing chlorine, and replaced them with environmentally friendly substances. Moreover, the company recycles more than 70 percent of its waste materials.

LSG Sky Chefs

- LSG Sky Chefs published its first independent environmental report in 2010, which provides comprehensive information about the company's environmental management.
- In the course of 2011 LSG Sky Chefs will identify environmental aspects of its activities and services at six representative locations that have significant effects on the environment. The data gathered will be used to further improve the existing six environmental programs. They will also be the basis for the future scope of the internal environmental management systems.

LZ-Catering

- The wholly-owned Lufthansa subsidiary LZ-Catering is working on expanding its environmental management and making it an integral part of corporate policy. The company's goal is to achieve certification according to ISO 14001 in 2012.
- In 2011 in Hamburg, LZ-Catering will participate in the Ökoprofit-Projekt, a support program for environmental protection carried out by companies. The company is set to implement a series of measures in the framework of this program, such as the optimization of all its pressure systems.
- In 2011, LZ-Catering is aiming to increase the share of products from sustainable sources by 10 percent, compared with the previous year, and to prepare one-third of its seafood products from certified organic fish and from fish certified by the Marine Stewardship Council (MSC) standard.



Lufthansa Global Tele Sales (GTS)

- The wholly-owned subsidiary Lufthansa GTS introduced an environmental management system that was certified according to the European eco-audit regulation EMAS in September 2010. GTS is the first company in the service center industry in Europe to hold this validation.
- In 2010, GTS published a comprehensive environmental declaration that informs about the company's strategies, goals and measures. Thus, GTS is planning to use more Green IT and develop sustainability guidelines for suppliers.



Trailblazer: Lufthansa Global Tele Sales is the first company in the European service center industry to be certified according to EMAS.

Energy and resource management

Alternative propulsion technologies tested in vehicles on the ground

For some time now, Lufthansa has been evaluating a number of projects regarding the use of alternative propulsion technologies based on electricity and natural gas in Earth-bound vehicles. The focus is how aircraft handling and maintenance can be designed to save as many resources as possible.

The following examples from daily practice provide an overview of the activities in this area at selected Group companies.

Electric vehicles have been tested in daily operations at Lufthansa Technik

Since November 2010, Lufthansa Technik has been testing the use of two electrically powered vehicles in its maintenance operations in Düsseldorf and Frankfurt. This seven-month practical test, which is supported by the German Federal Ministry of Transport, Building and Development, is to show above all if these electric vehicles can meet the necessary requirements of reliability, availability and constant load in the highly demanding working environment of aircraft maintenance. Each vehicle is equipped with a modern lithium-ion battery that gives it a range of up to 120 kilometers and can be recharged in a maximum of four hours thanks to its 400-Volt charging technology. The focus of the investigation is the recording and analysis of detailed measurement data. This data is to provide information about average driving distances and times, durations of

parking intervals and charging cycles, breakdown statistics as well as possible changes in electricity requirements when the heating is turned on or a laptop is plugged in, for example. If the test



Bernd Utesch (Mainova), Dr. Thomas Stüger (member of the Executive Board of Lufthansa Technik), Gaby Schock (municipal utility company Düsseldorf) and Harald Weinand (Environmental Department at Lufthansa Technik) during the presentation of the new electrically-powered cars being tested by Lufthansa Technik.



Comprehensive test run at Frankfurt Airport, using a Leos tow truck reconfigured as a TaxiBot test vehicle.

yields a positive result Lufthansa Technik wants to switch its entire vehicle fleet associated with aircraft maintenance to electric vehicles step by step. Both test cars, which are produced by CitySax in the German state of Saxony, are equipped with powerful three-phase-current engines that are particularly suited for covering short distances. The energy consumption is 20 kilowatts per 100 kilometers, which is equivalent to a fuel consumption of about 1.5 liters.

Trial operation of electrically-driven tow trucks at Lufthansa LEOS

Whether an electric tow truck can maneuver aircraft out of their parking positions to the point from which they taxi under their own power (push-back) is a question that Lufthansa LEOS investigated from July to December 2010 on the apron of Düsseldorf Airport. The company, which is a wholly-owned Lufthansa Technik subsidiary and is specialized in providing ground handling at large German airports, used an electric tow truck designed specifically for this purpose by French manufacturer TLD. "It is astonishing to see that normal working procedures also function without an internal combustion engine and the related exhaust gases," says Armin Stadler, Head of Operative Services at Lufthansa LEOS. But the TPX 100 E offers more than the potential of cutting fuel consumption and thus the related CO₂ emissions on the ground. It also works perceptibly quieter than diesel-driven tow trucks, does not produce any smells, and is easy to operate, low on maintenance and cost-efficient. The range of the electric tow truck depends on the distances that the environmentally friendly vehicle has to cover on the apron. On average, the electric charge suffices for 12 to 16 push-backs.

Testing the TaxiBot system

Another innovative alternative to operational towing is a technology called TaxiBot, currently being developed by Lufthansa LEOS in cooperation with Israel Aerospace Industries (IAI). TaxiBot is a diesel-electric aircraft tow truck that allows aircraft to taxi from gate to runway with their engines not yet running (dispatch towing). This method not only saves significant quantities of fuel, but it also considerably reduces CO₂ and noise emissions at airport sites. TaxiBot is controlled by the pilots in the cockpit. An initial, comprehensive test run with a LEOS tow truck converted into a TaxiBot experimental vehicle in December 2010 at the Frankfurt hub was promising – and not only from an ecological perspective. It demonstrated that the Boeing 747 used for the test could be steered even more accurately by means of TaxiBot than if it had taxied under its own power. In addition, the new technology does not require any modification of the aircraft. The first prototypes of the new aircraft tow trucks are expected to be available in early 2012.

Natural-gas powered lift truck at LSG Sky Chefs

Further examples for trial operations involving environmentally friendly propulsion technologies come from LSG Sky Chefs. In September 2010, the catering specialists of the Lufthansa Group tested an electrically-powered small car, equipped with a battery giving it a range of 120 kilometers, at Frankfurt Airport. In February 2011, the Lufthansa subsidiary started a three-month test of a lift truck powered by natural gas at its Munich location. This truck is used in the areas of catering and transport and has a range of about 300 kilometers. A conclusive evaluation of the test results is not yet available.

Lufthansa Systems consumes 5 percent less electricity

The data center operated by Lufthansa Systems in Kelsterbach is one of the most modern in Europe. From 2008 to 2010 the company was able to reduce electricity consumption by 5 percent, while the server performance increased. This reduction corresponds to a lowering of CO₂ emissions by 140 tonnes. A comprehensive modernization project, which the IT service provider successfully concluded in 2010, made a significant contribution to increasing energy efficiency. The goal was to replace the server and storage systems and to modernize the networks and interruption-free electricity supply.





Lufthansa Systems' data center: A comprehensive modernization project resulted in a significant increase of energy efficiency.

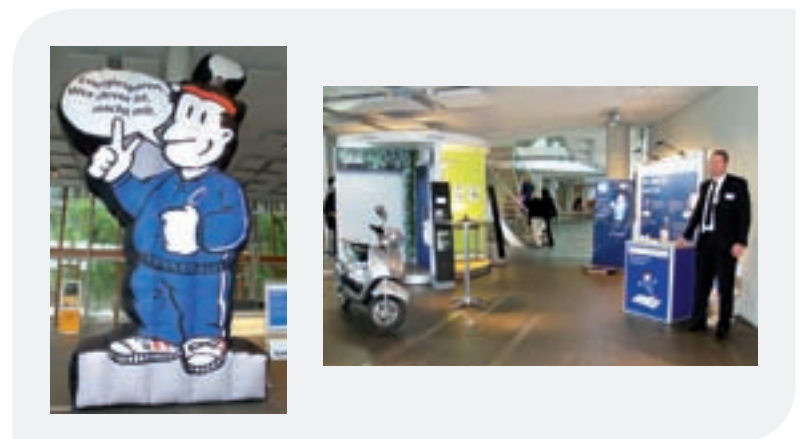
Apart from the use of energy-efficient servers, Lufthansa Systems implemented further measures to lower the energy consumption at its data center in Kelsterbach. One area where action was taken was air conditioning because the safe operation of IT systems requires a constant room temperature, independent of external temperatures. After having modernized ventilation, Lufthansa Systems has therefore begun to install modern high-performance cooling units that offer optimum cooling at the lowest energy consumption possible. Furthermore, the company uses heat recycling to heat offices with the data center's warm waste air.

Group-wide Energy Forum

Lufthansa established the Energy Forum in 2004 with the goal of creating a network linking all employees responsible for infrastructure across the company. This annual event serves as a basis for the exchange of experiences and opinions, and also acts as an information exchange for current developments in the energy industry.

Campaign week on energy efficiency in Frankfurt

In 2010, the focus was also placed on raising awareness among the Group's employees of the need to use energy resources even more consciously. Among the related activities was the Campaign "Energy Saving. All the smart ones join in." which the Group organized with the energy provider Mainova from August 16-20, 2010 at the Lufthansa Aviation Center (LAC) in Frankfurt. The initiative's goal was to lower the employees' individual energy consumptions and the related CO₂ emissions over the long-term by means of conscious behavior – both in the office and at home. The campaign week was part of Mainova's Climate Partner Program, which received an award from BUND/Friends of the Earth Germany, and was accompanied by internal communications. Among the campaign's central elements was an information area with display walls and videos related to the topic, a folder with energy-saving tips, and a daily energy quiz on the intranet in which about 2,500 Lufthansa employees participated. The quiz's attractive main prize was an electric scooter.



Campaign week on energy efficiency at the Lufthansa Aviation Center.

Noise emissions

Lufthansa is firmly committed to noise reduction

Lufthansa continues its uncompromising commitment to reducing noise emissions generated by flying. The airline counts on the latest technology for new aircraft and their engines, and on continuously optimizing the aircraft in its existing fleet. A prime example of this approach is the latest investment in further perceptible noise-protection measures at Frankfurt Airport.

By the end of 2011, the engines of the entire Frankfurt-based Boeing 737 fleet will be fitted with a new type of silencer, which will reduce noise emissions during departure and approach by up to 2.4 decibels – a modification with an exceedingly high level of effectiveness.

This voluntary effort is part of the “First Package of Measures for Active Noise Protection” at Frankfurt Airport, presented in June 2010 by the Forum Airport and Region (FFR). At the same time, this fleet modification also marks a success for the long-term research and development work that Lufthansa and its partners carry out in their systematic search for practicable solutions in noise reduction. In the future, Lufthansa will operate about one fifth of its aircraft movements in Frankfurt with Boeing 737-300s and 737-500s.

New panels prevent sound propagation

“In cooperation with the German Aerospace Center (DLR) and experts from Lufthansa Technik we thoroughly examined the properties of the silencers located directly in front of the fan on a number of engines. This is also how we found the potential of achieving a significant noise reduction by exchanging the silencers on the Boeing 737’s engines,” reports Dr. Gerd Saueressig, Manager Group Environmental Issues at Lufthansa. On this type of aircraft, each inlet

of every CFM56-3 engine is equipped with 12 acoustic panels. Replacing these with new Hard Wall Forward Acoustic Panels (HWFAP) leads to significantly lower noise emissions because currently a large part of the sound energy is redirected to the outside at the joints of the old silencers because their sound resistance differs from the rest of the panel’s surface. By contrast, the new HWFAP silencers form a homogeneous hard-wall surface with uniform sound resistance, which suppresses this effect.

The positive result: A modified Boeing 737-300 or 737-500 will take off and land more quietly. “As it has its effect both during landings and takeoffs, this new noise-protection measure can be regarded as exceedingly effective,” says Saueressig. According to aircraft manufacturer Boeing, the noise levels at the certification measuring points defined by the International Civil Aviation Organization (ICAO) decline significantly: During takeoff (still close to the ground) by about -0.5 EPN-dB; during departure by about -1.5 EPN-dB; and during approach by about -2.4 EPN-dB.

Noise research for quieter flying

Aircraft manufacturers solve this problem in new aircraft by producing the acoustic panels from one seamless piece, without joints. At Lufthansa, both the Airbus A380 and the ordered Boeing 747-8 Intercontinental are already equipped with such panels. By operating state-of-the-art aircraft, the aviation industry is able to fulfill step by step the ambitious targets of the Advisory Council for Aeronautics Research in Europe (ACARE). In its vision 2020, this European advisory body for aviation and astronautics has formulated goals for European aviation research that include cutting by half the perceived noise emissions from aircraft. ACARE includes representatives of EU member countries, the European Commission, manufacturers, airlines, airports as well as research institutions. Its main goal is to develop and implement a strategic research agenda.



“According to initial estimates, operations of the Airbus A380 and the Boeing 747-8 Intercontinental can reduce the number of people shown as ‘highly affected’ in the Frankfurt Aircraft Noise Index by 10 percent.”

Dr. Gerd Saueressig
Manager Group Environmental Issues at Lufthansa





The Airbus A380 is about 30 percent quieter than comparable predecessor models.

The systematic analysis of noise sources is a fundamental condition for the development of efficient noise reduction measures – this applies both to sound generation and comparisons between the importance of different sources of noise. Lufthansa has cooperated with the German Aerospace Center (DLR) in the framework of the research network “Quiet Traffic” since 1999. The goal is to carry out basic research and development work concerning the identification of noise sources on aircraft and elaborate noise reduction measures based on these results.

In the context of several projects, such as FREQUENZ and LAnAb, the research partners realized five flyover measurements under Lufthansa’s guidance between 2001 and 2008, involving different types of aircraft – three times with an Airbus A319 and once each with a Boeing MD-11F and a Boeing 747-400. The researchers analyzed individual sources of noise on the aircraft by systematically varying flying speed, engine performance as well as the positions of flaps and landing gear. Targeted measurements with a comprehensive microphone system allowed the experts to track noise sources in flight and to survey them. These measurements were complemented by analyses performed at an engine testbed, involving the latest microphone measuring technology. The resulting data also serve to improve the DLR’s computer-based aircraft noise simulation program SIMUL.

To further develop SIMUL, which so far has been based on data relating to the Airbus A320, it is necessary to expand the database to other types of aircraft. While the DLR and Lufthansa have realized measurements on the Boeing 747-400,

the data analysis and integration of the results into SIMUL have yet to be carried out because a related project in the aviation research program of Germany’s Federal Government, for which an application has been made, has not been approved until now. An expanded version of SIMUL could allow researchers to investigate and assess noise sources and measures more in depth with the goal of identifying the most efficient solutions – not least under the consideration of costs.

A lighter noise burden through fleet renewal

However, airlines achieve the greatest advances in noise reduction by operating modern aircraft. In the framework of the largest fleet modernization program in its history, Lufthansa is planning to acquire another 155 aircraft by 2016 that are more efficient and above all quieter (see “Investments in new aircraft pay off economically as well as ecologically” from page 27). For example, the Airbus A380, the new flagship of the Lufthansa fleet, is about 30 percent quieter than comparable predecessor models. The same is true for the Boeing 747-8 Intercontinental, which Lufthansa will put into service in 2012. It is also about 30 percent quieter than its currently still active predecessor, the Boeing 747-400. “According to initial estimates, operations of the Airbus A380 and the Boeing 747-8 Intercontinental can reduce the number of people shown as ‘highly affected’ in the Frankfurt Aircraft Noise Index by 10 percent,” emphasizes Saueressig.

As part of this fleet modernization, the Lufthansa Group ordered Airbus A320 and A321 aircraft during the reporting year, of which engine manufacturer CFM International will equip the A320s with its latest engine, the CFM56-5B. Thus the aircraft’s noise emissions will again be reduced.

The list price for the engine order is about 300 million U.S. dollars. The aircraft will be integrated gradually into the Lufthansa fleet from 2013.

Noise levels on short- and medium-haul routes also decline with each new aircraft generation, as is proven by the new CSeries produced by Canadian manufacturer Bombardier, for example. Starting in 2014, SWISS will replace 20 Avro RJ100s with 30 CSeries aircraft flying on regional routes. A CSeries aircraft is 10 to 15 decibels quieter on average than an Avro RJ100, which the human perception of noise will experience as a reduction of about one-half. According to the manufacturer's data, the CSeries is to remain below the limits of the ICAO's so-called Chapter-4 by a significant 20 dB(A).

Furthermore, Lufthansa counts on new E-190 and E-195 aircraft from the Brazilian manufacturer Embraer, which also gain points by featuring low noise levels. And since 2006, the state-of-the-art CRJ900, manufactured by Bombardier, has been reinforcing the Group's regional fleet. Outside an airport site, a CRJ900 taking off is usually no louder than a passenger car passing by in traffic. In 2010, Lufthansa ordered eight Embraer 195s and eight CRJ900 NextGens for operations at Lufthansa Regional.

Active noise protection at Frankfurt Airport

The "First Package of Measures for Active Noise Protection," presented in June 2010 by the Forum Airport and Region (FFR), comprises seven projects. These will allow a reduction of the number of people highly affected by aircraft noise in the airport's vicinity by 16 percent during the day and even by 40 percent during the night. The FFR's expert committee, in whose work Lufthansa has a significant share, evaluated all projects with support from Lufthansa pilots with regard to feasibility and noise effect. These measures are:

1. A significant contribution to lessening the noise burden by exchanging the silencers in the engines of Lufthansa's Boeing 737 fleet, described in the article above. This project is to be completed by October 2011, when Frankfurt Airport's new landing runway is to go into operation.
2. A speed limit is to be introduced for takeoffs for the first 11 kilometers on certain departure routes. The effect: The engines' available thrust is applied at higher altitudes, so that less noise reaches the ground.
3. By better using the "tailwind component," those periods when aircraft fly over the built-up areas immediately to the west of the airport at particularly low altitudes due to prevailing winds will be reduced.
4. The so-called Segmented Approach ensures that aircraft fly further to the south and thus around densely populated areas during the night.
5. During the night hours, when traffic is light, aircraft are consciously concentrated on specific runways and departure routes. A regular change of runways implies genuine and calculable pauses in noise emissions.
6. A different control system applied by DFS Deutsche Flugsicherung is to increase the share of landings using the Continuous Descent Approach (CDA). This type of approach requires lower engine thrusts and is therefore quieter and more fuel-efficient.
7. After the inauguration of the new runway, the approach angle is to be increased from 3 to 3.2 degrees under certain meteorological conditions, which implies overall higher altitudes during approach and thus a reduction of noise.

In January 2011, test operations with the noise-reducing flight procedures contained in the "First Package of Measures for Active Noise Protection" began. For example, Lufthansa Cargo is testing the Segmented Approach during night hours. The goal of this trial run is to gather experience and verify actual noise measurements from routine operations against forecast reductions of noise emissions.

The state government of Hesse founded the FFR in 2008 as a venue where the aviation industry, municipalities, state government, associations and interest groups can discuss issues concerning the expansion and operation of Frankfurt Airport. An important component of the FFR is the "Expert Committee Active Noise Protection," which develops and evaluates procedures to reduce noise.



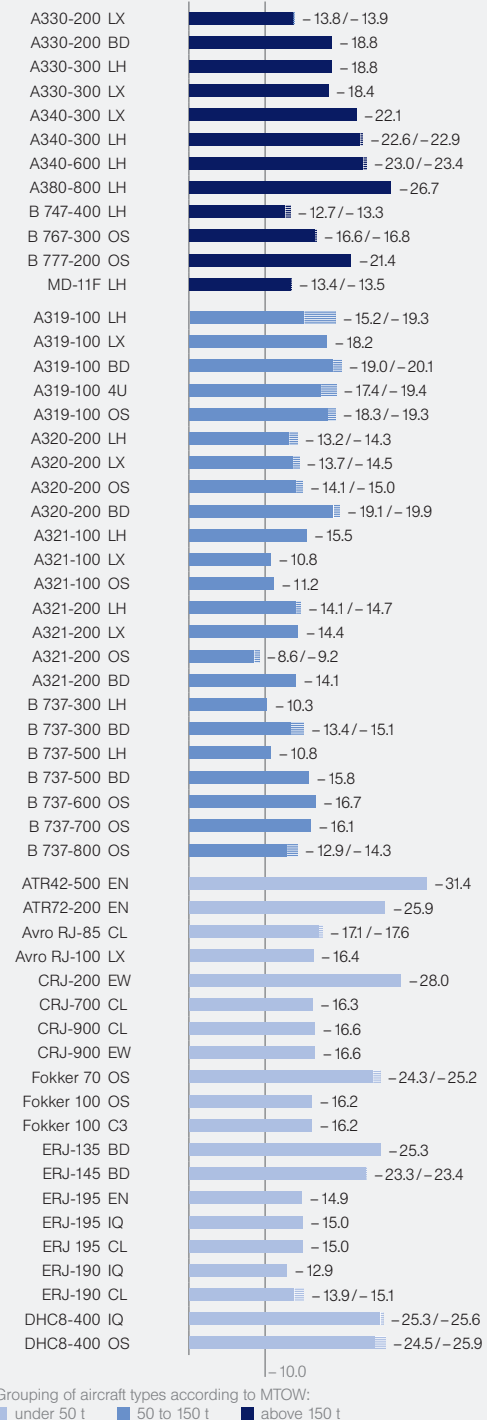
Margins below the noise limit of ICAO chapter-3¹

The bar chart indicates the sum of the differences between the measured value and the threshold value at the three measuring points by type of aircraft (cumulated margin). Where necessary, the values based on the reduced maximum takeoff weight prevailing in flight operations are indicated. To allow a more transparent depiction, an improved method of analysis was developed for the previous issue of *Balance*, which includes the individual noise certificate data of all Group aircraft for the first time. Different versions of an aircraft model and its engines by year of construction are thus better taken into account. While the conservative approach used until reporting year 2008 meant that only the values of the sub-fleet with the lowest cumulated margin were reported to describe an aircraft fleet, the new analytical method used since reporting year 2009 means that the value ranges from the lowest to the highest cumulated margin are now indicated for many fleets. In addition, many aircraft were recertified in reporting year 2010 according to the new, more stringent ICAO Chapter-4 standard. The new noise certificates also take into account any modifications to aircraft or engines that have been made in the meantime, thereby leading to modified noise data and cumulated margins in certain cases. In addition, numerous additions and withdrawals in individual fleets lead to changes in the value ranges reported.

- 4U = Germanwings
- BD = bmi
- C3 = Contact Air
- CL = Lufthansa CityLine
- EN = Air Dolomiti
- EW = Eurowings
- IQ = Augsburg Airways
- LH = Lufthansa Passenger Airlines, Lufthansa Cargo
- LX = SWISS
- OS = Austrian Airlines

¹ New ICAO Chapter-4 limit, which has been effective for new aircraft since 2006: - 10.0 EPN-dB when compared to Chapter-3

Lufthansa Group fleet (active fleet on 31.12.2010)
in EPNdB



Grouping of aircraft types according to MTOW:
■ under 50 t ■ 50 to 150 t ■ above 150 t

This division ordinarily corresponds to a grouping of regional, continental and intercontinental aircraft.

Research projects

Climate research on scheduled flights

Global climate change is one of the greatest challenges for humankind. Therefore, reliable prognoses about the future development of the earth's climate are of fundamental importance. Lufthansa makes a significant contribution to observing the state of the Earth's atmosphere and is the only airline worldwide to have been committed to climate research for almost two decades.

Regular measuring flights, for example, produce the required basis of data to validate and continuously improve climate models. This approach is the foundation for evaluating the effects of air transport on the environment in a factual manner and for implementing effective environmental care.

In the area of climate research, Lufthansa works closely with renowned scientific institutions in Belgium, England, France, the Netherlands, Sweden, Switzerland and Germany. Among the joint projects are MOZAIC, CARIBIC and IAGOS (for more information see www.lufthansa.com/responsibility). These cooperations aim at developing instruments, for example, that allow daily and global measurements of climate-relevant trace gases. Lufthansa gathers the necessary data and air samples on specially modified aircraft that operate scheduled services.

CARIBIC container on special mission "volcanic ash"

CARIBIC is an example of a project designed to research the fundamentals of the Earth's atmosphere. The measurement container deployed for this project is considered the best equipped worldwide in climate research. Since December 2004, this fully automated laboratory has taken one research trip per month on average aboard a

Lufthansa Airbus A340-600. However, in spring 2010 the eruption of the volcano Eyjafjallajökull in Iceland meant a special mission for the CARIBIC measurement container: Three measuring flights took place on April 20, May 16 and 19 to determine the ash concentration in the cloud over Europe resulting from the volcanic eruption.

Lufthansa and the research partners participating in the project received permission for these flights within two days. "This kind of short-term commitment was only possible because the Airbus is already modified for climate research and Lufthansa has been conducting such work for many years. We were the only airline to be able to make our own measurements to determine the concentration of volcanic ash. Thus Lufthansa has proven its pioneering role in climate research once more," emphasizes Dr. Andreas Waibel, Manager Group Environmental Issues at Lufthansa.

During the three research flights, the measuring instruments took air samples for precise analyses that determined the size and number of ash particles, among other tasks. They also gathered general data on the atmosphere. During these flights, only relatively low concentrations of ash particles up to 2 micrometers diameter could be detected. The majority of measuring values was situated between 20 and 125 micrograms per cubic meter of air. By comparison, the EU limit for fine particulate at ground level is 50 micrograms per cubic meter of air. With these measurements the researchers could demonstrate that the ash cloud had become highly diluted by being mixed with other air masses, as had been expected. A subsequent borescopic examination of the engines by Lufthansa Technik did not give any indication of possible damage from the ash cloud.

The participating research partners have made their findings available to experts working on models of atmospheric propagation. In this way, the insights gained in spring 2010 will contribute to improving future forecasts concerning clouds of ash in the wake of volcanic eruptions or forest fires.



The CARIBIC measurement container is being loaded aboard the Lufthansa A340-600 "Leverkusen."



A young girl with dark hair tied in a braid with a red bow, wearing a red and orange school uniform, is focused on writing in a notebook. She is sitting at a desk in a classroom, with other students and desks visible in the background. The scene is brightly lit, suggesting a sunny day.

Corporate Citizenship

Responsible practice worldwide

As an internationally operating aviation company that takes responsibility at home and in the world for social issues, the Group has supported selected projects in the areas of social concern, environment and nature, culture and education as well as sports. Beyond that, many employees work as volunteers in projects and initiatives. In this context, Lufthansa creates a framework of favorable conditions and recommendations for corporate volunteering.

In the interest of the highest possible level of transparency and long-term effects, Lufthansa applies stringent quality standards to its social commitment. The pivotal point of all activities is defined by the company's core competencies: transporting people and goods as well as providing technical and economic know-how. Given the numerous natural catastrophes in 2010, these competencies were above all applied to emergency humanitarian aid.

Social commitment

Humanitarian emergency aid: Lufthansa demonstrates its solidarity with the victims of natural catastrophes

As an aviation company with worldwide activities, Lufthansa has provided comprehensive humanitarian emergency aid in the aftermath of natural disasters for many years. This aid helps to secure the survival of people in danger both quickly and efficiently.

The Group again provided transport capacities in 2010, this time to get aid supplies to help deal with the earthquake catastrophe in Haiti. "Lufthansa immediately contacted the crisis team of the federal government to offer support," said Wolfgang Mayrhofer, who was the Lufthansa Group's Chairman of the Executive Board and CEO until December 2010.

Transport of 200 tonnes of aid supplies free of charge

Just a few days after the disaster, Lufthansa Cargo sent an MD-11F freighter aircraft to Haiti on behalf of the Technical Relief Organization (THW). On board were 80 tonnes of aid supplies, above all food, medication and technical equipment. One month later, the cargo airline sent another MD-11F to Haiti at cost price to ship 65 tonnes of aid supplies to the disaster area on behalf of the Metro Group – including tents, satellite telephones, diesel generators and hygiene articles. Lufthansa Cargo transported about 200 tonnes of aid supplies in the framework of emergency aid for Haiti. In addition, the Lufthansa subsidiary granted release for numerous employees who supported the teams of the Technical Relief Organization (THW) on the scene. Emergency aid supplies were shipped to Miami as quickly as possible

on board Lufthansa Passenger Airlines aircraft as well. From there, the U.S. military transported the supplies to the capital of Port-au-Prince via an air bridge.

Management and employees join forces

In response to the impact of the earthquake the Executive Board called for a donation campaign, as it did after the tsunami in southeast Asia. Employees donated work time and money valued in total at 220,000 euros, which Lufthansa doubled to 440,000 euros.

Reconstruction of six "small schools"

The total sum was transferred to a donation account that the HelpAlliance set up specifically for Haiti. The money allows the employee organization to provide long-term support for reconstruction in Haiti – especially with regard to destroyed educational facilities. An example is the HelpAlliance's cooperation with the neighborhood initiative "small schools," which Salesians of Don Boscos set up in the 1950s. The goal is to reconstruct six of these small schools by summer 2011 and to ensure financing for teacher salaries, school books, pencils, notebooks and school meals. The HelpAlliance was also able to secure financing in cooperation with the Catholic order for 300 "schools in a bag."



Fast and unbureaucratic: Three special Lufthansa Cargo flights transported a total of about 200 tonnes of aid supplies in the framework of emergency relief for Haiti.

Flood disaster in Pakistan

In the same way, Lufthansa provided emergency aid after the deluge-like inundations in Pakistan, which flooded large parts of this country in August 2010. In the face of this new natural catastrophe, Lufthansa employees' willingness to help was enormous: donations quickly reached 100,000 euros, which management again doubled and transferred to the HelpAlliance's dedicated account for Pakistan. In addition, the HelpAlliance provided a base amount of 10,000 euros as an immediate measure. As there was above all a dearth of clean potable water, the employee organization made possible the purchase of 600,000 water purification tablets, which a special Lufthansa Cargo flight trans-



ported to Islamabad. "Thus, six million liters of drinking water could be purified," explained Rita Diop, First Chairwoman of the HelpAlliance.

To ensure that the water purification tablets really reached people in need, a Lufthansa Cargo general agent took delivery of the shipment, personally forwarded and distributed it in emergency camps. "Each and every cent donated by Lufthansa employees therefore also reached people in Pakistan," said Carsten Hernig, Regional Director South Asia and Middle East at Lufthansa Cargo. Also on board the Lufthansa Cargo freighter were an additional 50 tonnes of aid supplies, such as medical supplies for the United Nations Population Fund. Furthermore, on another special flight to Karachi the logistics company transported 23 tonnes of a sugar-salt mix on behalf of UNICEF free of charge, to be used as a specific treatment for children suffering from diarrhea. Given the critical situation, the HelpAlliance closely cooperated with the German general consulate in Karachi to provide 200 tents for a refugee camp in the south of the country, for example.

In the meantime, thanks to Lufthansa Cargo's good connections in Pakistan, long-term aid measures have been launched. These concentrate above all on giving about 500 families in 15 villages a new basis for their livelihoods, so that in the future they will be able to ensure their economic existence themselves.

Hurricane in El Salvador

The victims of hurricane Ida also depended on a sign of hope after the storm left a trail of devastation in El Salvador in November 2009. Aiming at helping to reconstruct some of the totally destroyed houses in this Central American country, the HelpAlliance and employees of Lufthansa Systems collected more than 16,000 euros in 2010 for the victims of the tropical storm. The money benefited the aid organization Un Techo para mi País (UTPMP, literally "A Roof for my Country"), using it to build 15 new houses in the region of La Paz. Hands-on support also came from employees of the IT service company, who nailed boards, fitted and installed doors and windows. "These families were happy to finally have their own solid roofs over their heads," said Franz Simon, Service Manager at Lufthansa Systems TACA.



Carsten Hernig, Regional Director South Asia and Middle East at Lufthansa Cargo, coordinates the HelpAlliance's aid project in Pakistan.

Earthquake, tsunami and reactor catastrophe in Japan

On March 23, 2011, Lufthansa Cargo operated a special flight to Tokyo free of charge and in cooperation with the EU Commission to provide swift support for the Japanese population affected by the severe earthquake. On board the MD-11F freighter were above all blankets, which were urgently needed in the north of Japan, where cold winter weather prevailed. The aid supplies were donated by the governments of Denmark, the Netherlands and Lithuania. "It is a matter of course for Lufthansa Cargo to provide swift and unbureaucratic help in the face of a humanitarian catastrophe of such proportions," said Karl Ulrich Garnadt, Chairman and CEO of Lufthansa Cargo AG.

The employee aid organization HelpAlliance also demonstrated its solidarity with the people of Japan and called upon all Group employees for donations – as it did after the earthquake in Haiti and the flood catastrophe in Pakistan. As the HelpAlliance is not an emergency aid organization in the strict sense, its support will concentrate on reconstruction after the donation campaign is completed. Decisions about the use of donated funds will be made as soon as it is clear where long-term help can be provided most effectively.

HelpAlliance: Hand in hand for education, nutrition and health



The “HelpAlliance – Employees lend a helping hand” is a humanitarian organization that has grown over time and provided help for self-help for more than ten years. The registered charity, which is politically and denominationally independent, was founded by Lufthansa employees in 1999 and supports social aid, especially in Africa, Asia and Latin America.

The focus is primarily on business start-ups, educational facilities, orphanages, street-kid projects and bush hospitals, which the employees accompany personally and voluntarily during their time off or during their vacations. Lufthansa has supported the commitment of the HelpAlliance to its best ability ever since it was founded: by granting full-time and part-time releases, providing office space at Frankfurt Airport complete with the IT and telecommunications infrastructure required. Additionally, the Group provides logistical and communications support.

The range of projects supported by the HelpAlliance is broad and is divided in long-term, short-term results-oriented projects as well as activities in the framework of Emergency Aid, such as in the wake of the tsunami in southeast Asia, the earthquake in Haiti and the flooding in Pakistan. The number of projects that the cooperative initiative has launched, coordinated and supported since its foundation reached 70 at the end of 2010, with a total budget volume of almost 5.5 million euros. This success has been made possible by 13 full-time members, 1,514 Supporting Members and a worldwide network of volunteer helpers inside and outside the Lufthansa Group.

Cornerstone for a better life

Poverty, violence and the lack of educational opportunities are the order of the day in large parts of Africa. To provide a long-lasting signal of hope,

the HelpAlliance has been committed to this part of the world from the first day of its existence. At the end of 2010, the number of projects supported in Africa stood at 19 – more than on any other continent. In some cases, support has been given for more than ten years. In 2010, the HelpAlliance made a total budget of 404,000 euros available to support projects in Africa. This money is well invested. “Many success stories big and small show that it is worthwhile not to write off the people in Africa,” affirms Rita Diop, First Chairwoman of the HelpAlliance.

An example is the long-term project Abéni in Djougou in the north of Benin which gives girls between the ages of 9 and 18 years the opportunity to obtain a school education. The HelpAlliance finances not only tuition, learning materials and tutors, but also regular meals, doctor’s visits and inoculations. In the meantime, the first graduate from the school has received a stipend for university studies. By contrast, the circle of friends “East Africa” is dedicated above all to the modernization or new construction of clinics in and around Mombasa. A significant element of this type of long-term HelpAlliance project is the acute care for undernourished and malnourished children in dedicated wards. As life-threatening disorders related to malnutrition are not only due to a dearth of food, but also to the mothers’ lack of knowledge, providing information and imparting the basics of child nutrition plays an important role in the concept of this help project. The aim is above all to give everyday tips that can help young mothers to combine available foods in ways that provide their children with all vital nutrients and vitamins.

Closing educational gaps

Whether children in developing countries have a future depends in large part on whether they receive access to education. To achieve this goal is the purpose of the iThemba preschool project in the township of Capricorn in the South African metropolis of Cape Town. Thanks to numerous donations from passengers and Lufthansa employees as well as the considerable commitment of employees at Lufthansa Global Tele Sales Cape Town, 75 children up to the age of six



“Again and again I am fascinated by the devotion with which Lufthansa employees work for the shared goal of making the future of others a bit better. During my visit to the Prana Project in India I found this objective of the HelpAlliance confirmed in impressive ways. And that is why I am very happy to be involved myself.”

Bettina Lauer
Patroness of the HelpAlliance





A course for seamstresses and dressmakers from different castes is part of the Prana Project, an initiative in Pondicherry in southern India supported by the HelpAlliance.

years have been able to take advantage of this offer since January 2010. The preschool compound consists of several classrooms, a playground and administrative buildings. As sufficient and healthy nutrition is the condition for the children's ability to learn, they receive three meals a day. "Studies show that children in townships lag two to three years behind the educational level of other boys and girls," explains Rita Diop. "We want to close this gap with well-trained teachers and instruction in the English language."

Future prospects for children in India

Pronounced poverty and social misery prevail not only in Africa, but also in India. Those who suffer the most are once more children because parents often do not have the means to provide the essentials in an appropriate way. In this situation the so-called boarding houses of Patenschaftskreis Indien e.V. – also a long-term HelpAlliance project since 2004 – resemble a silver lining on a dark cloud. In most cases the children live year-round at one of the 20 boarding houses, where they receive clothing, a school education, regular meals and medical care. In addition, the association covers the costs of teacher salaries and small-scale pharmacies that keep a stock of all vital medications, so that villagers, who are ordinarily excluded from medical attention, can be treated in an appropriate manner. To ensure that the about 3,000 children will be able to organize their lives in their own strength, they also learn the fundamentals of farming and cattle breeding at some boarding houses. Beyond that, Patenschaftskreis Indien looks after children of all age groups who were put on trains by their parents in the hope that someone might take pity on them and care for them in the future. These children often find shelter in special children's houses, where trained personnel provide them with clothing, food and education,

and give them affection. The association generates funds needed for the operation of these houses on the basis of sponsorships: As little as 15 euros is enough to provide a child for one month with everything that is necessary every day.

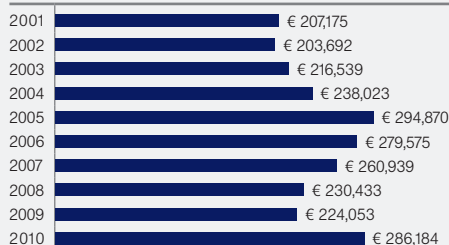
www.help-alliance.com

On-board collection program "Small Change – It's a Big Help"

The on-board collection program allows Lufthansa and Condor passengers on long-haul flights back to Germany to donate coins and bank notes left in foreign currency to a good cause. This option has been offered since May 2001. Small sealable envelopes for this purpose are provided in the seat pockets; the cabin crews collect and forward these to the HelpAlliance. Special donations pillars in the employee areas and Lufthansa lounges at German airports, in the public areas of the Frankfurt and Munich hubs, and at selected lounges outside of Germany serve the same purpose.

On-board collection program

Development of donation volumes¹



Start of Condor's participation: October 2003

¹ All figures quoted in this article for 2010 are preliminary, as the final figures were not available by the copy deadline.

Cargo Human Care: Help for children and the sick



Lufthansa Cargo currently has 10,606 containers and 16,739 palettes in circulation. In 2010, one very special specimen was among them for a period of two months: the LD-3 lightweight container AKE63603LH, printed with images from the cargo world and visionary statements of more than 300 managers at the logistics specialist.

The preparations for the world tour of this container were made by Lufthansa Cargo in the context of an international executive conference at the end of September. Subsequently, it flew at weekly intervals to a different Lufthansa Cargo station. For each segment flown the logistics specialist donated 100 euros to the humanitarian aid project Cargo Human Care (CHC). Finally, in January 2011, the container reached its intended destination, the CHC-supported Mothers' Mercy Home in Kianjogu, north of the Kenyan capital Nairobi. The inside of this loading device was filled with numerous gifts. This campaign was also linked to presenting a donation of 2,200 euros to CHC.

Medical help free of charge

Cargo Human Care e.V. is a registered charity that was founded by employees of Lufthansa Cargo together with German physicians in 2004. The initiative was launched by Fokko Doyen, MD-11F Captain and Lufthansa Cargo Fleet Chief as well as First Chairman of the aid organization with currently 640 members. He had discovered the Mothers' Mercy Home by coincidence during a vacation. Another area of CHC's emphasis is medical services performed at its own medical center, located right next to the orphanage. In addition, the CHC supports the Medical Center at the SOS Children's Village in Buru Buru. The association has been able to count on support from the Executive Board of Lufthansa Cargo

since its foundation. Support is given in the guise of freight capacities on board the MD-11F freighter aircraft, provided free of charge, and in the form of air tickets for the German doctors who fly to Africa on three occasions per month to provide medical aid on a voluntary basis for three days each.

Inauguration of the extension building of the Medical Center

In January 2011, the newly-built extension building of the Medical Center at the MMH was put into service. The reason for its construction was a steady rise in the number of patients. To be able to treat anyone showing up and to use all medical facilities, such as the dentist's chair or the ultrasound equipment, more space and more treatment rooms were urgently needed. The expansion also means that the pharmacy has more space and personnel have their own lounge.

Library for small and big readers alike

One further successful step was marked by the inauguration of the library at the Mothers' Mercy Home on January 15, 2011. Excitedly anticipated by the children who live there, the collection of books is considered an additional education offer that complements school lessons. While small readers find above all short stories and picture books, adults can select from a wide range of novels, knowledge-related books and textbooks.

15 more children find a home

Furthermore, the Mothers' Mercy Home has been home for another 15 orphans since March 2010. To make it easier for the newcomers, the boys and girls were assigned to one of the older children, who took over the role of a godfather or godmother. Three highly motivated nurses, who were hired by the MMH at the same time, ensure proper care for the new residents.

In August 2010, the currently 99 children of the MMH enthusiastically took part in a summer camp, which offered plenty of opportunities for handicrafts and trade work.

www.cargohumancare.de



The children at Mothers' Mercy Home are just as delighted as Fokko Doyen, MD-11F Captain and Lufthansa Cargo Fleet Chief, by the numerous gifts that could be presented to them in the framework of the Cargo Spirit Tour.



Corporate volunteering

Talking is silver, taking action is golden – Corporate volunteering at Lufthansa

Corporate volunteering – the employees' voluntary commitment to citizens' responsibilities – is an element in Lufthansa's concept of corporate citizenship. The Group promotes the volunteer work of its employees with a wide range of offers to get involved on a project basis or long-term during their time off.

This includes not only existing initiatives such as the HelpAlliance, business@school and Teach First Germany. It also includes numerous social projects that organizations and associations have set up near locations of Lufthansa in Germany. To make the first steps in this direction easier for Lufthansa employees, a list of organizations that are grateful for every helping hand is available on the intranet for guidance. All projects have in common that they provide concrete social benefits while simultaneously widening the employees' scope of competencies and experiences.

JOBLINGE supports training qualifications

One such example is the initiative JOBLINGE of the management advisory company Boston Consulting Group (BCG). It has set itself the goal to improve the level of trainability of low-qualified young people between the ages of 15 and 25, and make them fit for the challenges of a job or an apprenticeship within half a year. Carefully selected mentors from partner companies – including Lufthansa – support the young people in this process.

www.joblinge.de

School project JUSTAment

Lufthansa employees who have taken their retirement or will do so in the near future are active in the school project JUSTAment. It gives them an opportunity to pass on their professional knowledge and experience to young people by being a "senior partner." The mentoring project was developed by the Association for International Youth Support Frankfurt in cooperation with the city of Oberursel near Frankfurt. The goal is to improve the long-term job opportunities of people who have left junior high school or secondary school.

<http://frankfurt.vij.de>

Mentor program Big Brothers Big Sisters

Another charity that can count on reliable support from Lufthansa employees is Big Brothers Big Sisters Germany (BBBSD). It supports children and young people between six and 16 years of age by assigning them a volunteer mentor for one year. The mentors act as role models and persons of trust. This independent charity is supported by the Benckiser Foundation for Youth Support and several corporations.

www.bbbsd.org



business@school – Imparting knowledge in practice-oriented ways

Since 2002, Lufthansa has supported the education initiative business@school, which was founded by the management advising company Boston Consulting Group. Every year, more than 70 high schools with senior classes participate in the initiative. The goal of business@school is to make students of grades 10 to 13 familiar with business topics in practice-oriented ways and to encourage them to develop their own business ideas. In 2010, more than 50 Lufthansa employees participated in the project as volunteers, including Andrea Pernkopf, Director Product Development Leisure Travel at Lufthansa. The business@school patroness describes her impressions: "It is impressive to see with how much commitment and keenness the students picked up business knowledge in the course of a school year and how much creativity went into developing a new business model including a business plan."

Students of the boarding school Hansenberg with business@school patroness Andrea Pernkopf (center).

Environmental sponsorship

Imparting knowledge: Traveling exhibition “World Champions of Nature”



The year 2010 was marked both by biodiversity and numerous international sports events. Animal species also perform at the highest levels every day. Therefore, “World Champions of Nature” is the

title of a traveling exhibit that Lufthansa developed in cooperation with the environmental foundation NatureLife-International. The exhibit presents extraordinary physical abilities and phenomena in the animal world and is meant as a concrete contribution to deepen people's knowledge of nature and make them more aware of species protection at the same time.



A film presentation in the context of the exhibition “World Champions of Nature.”

The exhibit's premiere was celebrated on August 10, 2010 at the Museum of Natural Science in Stuttgart, at Castle Rosenstein, and subsequently continued its tour at the Museum of Hunting and Fishing in Munich. It will be on view in Aachen from June 29 to July 15 and in Pforzheim from November 29 to December 16, 2011. Further stops will be in Frankfurt, Berlin, Hamburg and other major German cities. Additional information is available at

www.naturelife-international.org

Rainforestation Farming creates species-rich secondary forests

Since 2007, the Lufthansa Environmental Sponsorship Program has supported the project Rainforestation Farming in western China, in an area close to the borders with Laos and Myanmar. The goal is to establish a sustainable system of land use to lessen the effects of many years of exces-

sive use. In this region, the environmental foundation NatureLife-International is committed above all to the Tian Zi Biodiversity Research and Development Center in the Bulang Mountains. Over the past four years, work was started to renaturalize an area of about 6 square kilometers. The model project demonstrates that it is possible to turn remnants of primeval forests into species-rich secondary forests by means of reforestation. Apart from making a contribution to the protection of nature, species and climate, this project creates jobs that give the rural population an economic perspective.



The project partners during an information visit to the island of Leyte.

The method of Rainforestation Farming was developed on the island of Leyte in the Philippines by the Visayas State University, Hohenheim University and the foundation NatureLife-International. In the meantime the model project on Leyte has become established. Numerous farmers and municipalities on the island use it with success.



Crane protection

Sponsorships at Frankfurt Zoo

For the first time since 1962, a Demoiselle crane chick hatched at Frankfurt Zoo in May 2010. Lufthansa agreed to sponsor the newly-born offspring and the parents for a number of years. For some time, the company has maintained a sponsorship of a pair of Red-crowned cranes at Frankfurt Zoo.

www.zgf.de

Lufthansa supports the reintroduction of the Eurasian crane in England

The Eurasian crane has been considered extinct in the UK since the 17th century. However, the Wildfowl and Wetlands Trust (WWT) and the Royal Society for the Protection of Birds (RSPB) have been working for some time to reintroduce the crane as a breeding species. With support from Lufthansa, the first eggs from breeding crane pairs at the biosphere reserve Schorfheide-Chorin in Brandenburg were flown to England in 2010, using special breeding containers that had already been tested in air transport. Over the next five years, 30 crane eggs per year are to find their way to the British Isles. Breeding and raising the young birds will take place at the Slimbridge Wetland Centre in Gloucestershire, which has already gathered experience with raising crane chicks.

7th European Crane Conference

At the invitation of the Crane Protection Germany Working Group and with significant support from Lufthansa, about 130 scientists and committed crane protection activists from more than 20 countries met from October 14-17, 2010 in Stralsund for the 7th European Crane Conference. The program included presentations and discussions on topics such as the state of crane research, breeding and resting behavior, and the influence of climate change on migration behavior, in particular on the Eurasian or Common crane. The participants adopted two resolutions demanding that the relevant states and governments implement additional measures to protect endangered crane populations. In particular, they demanded that illegal hunting of cranes in the area of the Adriatic Flyway be stopped and that protected areas along the local migratory routes be declared and guaranteed. The experts also appealed to Armenia, Georgia, Turkey and Iran to protect the migratory routes, breeding and resting areas of the Eurasian crane in those countries and set up cross-border reserves.

New “cranemobile” for Groß Mohrdorf

The Crane Information Center in Groß Mohrdorf, Mecklenburg Western Pomerania, received a new vehicle in September 2010. As part of its work in environmental sponsorship, Lufthansa presented a van with an attractive paint scheme to the Crane Protection Germany Working Group, which has its headquarters there. The “cranemobile” serves rangers and employees on their trips to the resting and breeding areas of these impressive large birds, located in the Rügen-Bock region. Additionally, the van is an advertising medium for the information center, which welcomes more than 15,000 crane enthusiasts per year.

www.kraniche.de



In addition to the Crane Protection Germany Working Group, Lufthansa supports the crane protection projects of the following environmental and nature conservation organizations:

EuroNatur Foundation

Project countries: Spain and Israel

www.euronatur.org

EURONATUR

Society for the Protection of Nature in Israel (SPNI)

Project country: Israel

www.birds.org.il



NatureLife-International

Project country: South Africa

www.naturelife-international.org



International Crane Foundation

Project country: USA, worldwide

www.savingcranes.org



South African Crane Working Group

Project country: South Africa

www.ewt.org.za



EuroNatur and Lufthansa: Commitment to secure migratory routes

EURONATUR

In 2010, about 300 professional and amateur photographers from 22 countries participated in the 17th edition of the EuroNatur photography competition "Nature Treasures of Europe." The charitable foundation EuroNatur has organized the competition for many years together with Lufthansa, the magazine natur+kosmos and the nature-film festival "NaturVision." The participants submitted almost 1,400 pictures of European flora, fauna and landscapes. The 12 most beautiful pictures were used for EuroNatur's 2011 calendar and given an award. Proceeds from the sale of the calendar are used by EuroNatur to finance part of their nature protection projects.

Among these projects is the long-standing campaign "Crime scene Adriatic – Bird hunting in the Balkans," which Lufthansa accompanies with communications and logistical measures. On the Adriatic migratory route, which leads from central, northern and eastern Europe and Siberia in the direction of Africa, about 2 million migratory birds

fly to their certain deaths every year. The responsibility lies with bird hunters along the coastal area between Slovenia and Albania, who threaten bird populations. Among the victims are birds of prey that are threatened worldwide as well as species such as skylark and quail, but also the crane. In Albania, Croatia and Montenegro, hunters concentrate above all on the coastal areas because this is exactly where the few remaining intact resting areas used by migratory birds are located. After an arduous flight across the Mediterranean Sea, the birds arrive at the coast in a state of exhaustion, where they are already being expected by the hunters.

Since its foundation in 1987, EuroNatur has been working intensely on making the Adriatic Flyway more secure for migratory birds. The campaign mentioned aims at generating public awareness of this highly charged topic by providing comprehensive information.

www.euronatur.org

Research for the protection of migratory animal species



Lufthansa has endowed an international dissertation prize since 2004, with the goal of supporting the efforts of the Convention on the Conservation of Migratory Species of Wild Animals (CMS). The research award, which includes prize money worth 10,000 euros, will be presented for the third time already in November 2011; the registration deadline was April 15, 2011. The signatory nations to the CMS have worked for more than 30 years to protect the habitats of the estimated

8,000 to 10,000 migratory animal species. The research competition "UNEP/CMS Thesis Award on Migratory Species Conservation" addresses young researchers worldwide, whose doctoral dissertations provide new insights into the biology and ecology of migratory species and additionally suggest concrete protection measures – for example concerning cranes, whales, bats and elephants.

www.cms.int



One tree per passenger: Lufthansa supports the "Million Tree Project"

For each passenger who traveled in September 2010 on the inaugural flight of the new Lufthansa Airbus A380 "Peking" from Beijing to Frankfurt, one tree was planted in the Kulun Qi province in Inner Mongolia. The aviation company thus supports the "Million Tree Project" of the Shanghai Roots & Shoots Foundation, which intends to plant 1 million trees by 2015. The foundation aims at limiting the advance of deforestation in areas that were used by humans until recently and to reduce emissions in China. Each passenger received a planting certificate to commemorate the occasion.

www.jgi-shanghai.org



Species protection on vacation – Lufthansa in-flight video points the way

Many animal and plant species as well as their genetic resources and entire ecosystems are threatened by extinction today. To cast a light on the decline in biodiversity, Lufthansa has for many years regularly provided information about the issue of species protection in the in-flight programs of many long-haul flights. In 2010, the company produced a new short film in cooperation with the environmental foundation Nature-Life-International. Entitled "Fascination Nature," it informs about the background and goals of species protection. The video provides tips for a responsible way of handling nature and makes a contribution to further increase awareness among travelers and the public at large of the need to conserve biodiversity. The film is also appropriate for use as a medium in environmental education and for information work in environmental and species protection.



The short film "Fascination Nature" is also available on DVD including a brochure and can be ordered free of charge at www.lufthansa.com/responsibility

Cultural commitment and education

Lufthansa is "First Global Partner" of the Gürzenich-Orchester Cologne

For the first time, Lufthansa made a long-term commitment to a German symphony orchestra: In 2010, the aviation company became the "First Global Partner" of the historic Gürzenich-Orchester Cologne, which was founded in 1827 by citizens of this cathedral city and ranks as one of Germany's finest ensembles. "With this commitment we want to take responsibility and give a clear signal for our close ties to Cologne," said Stephan Gemkow, Chief Financial Officer at Deutsche Lufthansa AG. "Cologne is home to Lufthansa's tradition, its legal corporate headquarters and more than 2,500 committed employees."

The company's financial support allows the orchestra to strengthen "Ohren auf" (literally: "Open your ears!"), its educational program for children and young people, over the long-term. It facilitates visits to rehearsals and concerts, music projects, workshops and encounters. Having taken the role of a trailblazer in imparting musical education, the Gürzenich-Orchester

has already inspired more than 50,000 students and about 10,000 teachers since the 2000/2001 season. Another area of emphasis is placed on supporting Gürzenich-Orchester guest performances at important musical venues and



The partnership with the Gürzenich-Orchester underscores both Lufthansa's understanding as a premium brand and the orchestra's elevated artistic rank and prestige.

renowned festivals, pursuing the goal of promoting the international renown of Cologne as a city of music. At the same time, the musical public in this city on the Rhine will also benefit audibly from the sponsoring agreement: Regular engagements of first-rate soloists and guest conductors, who will add their special touch to the 40 or so symphonic concerts that the orchestra plays

every year at the Cologne Philharmonie. The start of Lufthansa's commitment was also the occasion to launch the "Gürzenich-Orchester Sponsor's Club." It is to set the foundations for generating more than one million euros per year in sponsoring revenues over the long-term.

www.guerzenich-orchester.de

Lufthansa Festival of Baroque Music in London

The 26th Lufthansa Festival of Baroque Music took place in 2010 under the motto "Fountain of the Baroque – Italian Pioneers from Monteverdi to Vivaldi." From May 13-22, the particular influence of Italian composers of the 17th and early 18th century on the development of music was illustrated in 12 concerts: Italy as the cradle of baroque music, a source of inspiration for all subsequent generations and pioneer of a "modern" music freed of dogmas and ossified rituals. In the Lufthansa Lecture entitled "Monteverdi the Modern Man," Robert Hollingworth, singer and director of the ensemble I Fagiolini, very clearly illustrated the context from the perspective of musical history to festival visitors. The event presented internationally renowned ensembles such as the Gabrieli Consort & Players, the European Union Baroque Orchestra, La Risonanza, St James's Baroque with the Westminster Abbey Choir as well as La Venexiana, who gave a grandiose opening concert of Monteverdi's Vespers. In addition, Baroque Fever, Imaginarium and Paolo Pandolfo were ensembles and a soloist less well known but artistically absolutely of equal rank who came to St. John's, Smith Square.

The public, including numerous Lufthansa customers, was just as enthusiastic as the press. The Daily Telegraph summed it all up in two sentences: "The ten-day Lufthansa Festival doesn't try to be all things to all men. It just explores one thing – Baroque music – superlatively well." And in its review of cultural events in 2010, the editors elected the concert given by the ensemble Imaginarium directed by violinist Enrico Onofri the "Classical Concert of the Year." A novelty in 2010 was the availability of the "Festival-Friends" offers for concertgoers who booked tickets for several concerts and feel closely connected to the festival. The public took up this offer so well that it will be continued in the years to come. The long-standing cooperation with the Lufthansa system partner Rolls-Royce and the media partnership with BBC Radio 3 again proved to be successful. The concerts broadcast by the BBC had an audience of about 800,000 listeners around the world.

The next Lufthansa Festival of Baroque Music takes place in May 2011. Under the motto "Hanseatic to Adriatic – Journey through the Heart of Europe" the latest edition of the festival describes a wide arc from northern and central Germany to Venice by way of Poland, Bohemia and Austria. From Buxtehude and Bach, Telemann, Zelenka and Biber to Vivaldi. Among the performing artists are the Collegium Vocale Gent conducted by Philippe Herreweghe, The English Concert, Gustav Leonhardt, Cantus Cölln, Hille Perl, St James's Baroque and the Sonatori della Gioiosa Marca.

www.lufthansafestival.org.uk



The Gabrieli Consort & Players have been among the top ensembles of ancient music for many years. They created one of the festival's highlights at St. John's, Smith Square with Handels "La Resurrezione."



A good tradition: The Lufthansa New Year's Concert

For connoisseurs of classical music the Lufthansa New Year's Concert in Berlin is always one of the first highpoints in the musical calendar of the year. The traditional event, which took place for the 14th time on January 18, 2011, attracted about 1,200 guests to the concert hall at Gendarmenmarkt – among them numerous Lufthansa status customers and representatives of politics, business and culture. The RIAS Youth Orchestra directed by the American conductor Garrett Keast and the young Polish violinist

Wojciech Wiczorek, who is exceptionally talented, gave an impressive performance of their art. The musical repertoire included masterworks by Mendelssohn-Bartholdy and Beethoven. For the first time, concertgoers were not welcomed by Wolfgang Mayrhuber, but by Christoph Franz, the new Chairman of the Executive Board and CEO of Deutsche Lufthansa AG.



Entirely public: “Kunst privat!”

In the context of the project “Kunst privat!” (literally: Private art!) the company opened the doors of the Lufthansa Aviation Center in Frankfurt (LAC) on June 19 and 20, 2010 to give interested citizens the opportunity to view the artwork specifically created for this building by seven artists. The annual initiative of the Hesse Ministry of Economics, Transport and Development, which took place for the sixth time in 2010, counted 30 international corporations and regional companies in Frankfurt, Wiesbaden and Darmstadt among its participants – including numerous banks, insurance companies and medium-sized companies. The private collections, which underscore the cultural commitment of companies, are usually open only to employees. The picture on the left shows the enormous neon sculpture by Welsh artist Cerith Wyn Evans in the LAC.

School's in for equal opportunity: “Teach First Deutschland”

Lufthansa supported the charitable initiative “Teach First Deutschland” for the third year in 2010. The Group was the first DAX-30 corporation to get involved in this project in 2008. Teach First aims at creating better educational opportunities for children and young people. The initiative facilitates the school education of pupils with adverse starting conditions by enabling additional, competent teaching staff (fellows) to become active for two years at selected schools. Since the start of the school year 2010, about 100 fellows have been active at schools in Baden-Württemberg, Berlin, Hamburg and North-Rhine/Westphalia. The Lufthansa School of Business supports this involvement with free seminars for these new teachers. In addition, the Group offers the fellows opportunities to get to know the Lufthansa world and its options for starting a career at presenta-

tions and guided tours of Lufthansa facilities.

www.teachfirst.de

For information about activities that Lufthansa has jointly organized with universities, see the chapter “Corporate training and continuing education” on page 57.

Sports sponsorship

Lufthansa – The “Airline of Sports”



Lufthansa further expanded its role as the “Airline of Sports” in 2010. At the beginning of the year, the commitment focused in particular on the Winter Games and Paralympic Games in Vancouver. The company looked after the German national teams on the way to their competitions and served as first contact in all questions of mobility on location for the athletes and officials of the German Olympic Sport Confederation (DOSB) and the German Paralympic Sports Confederation (DBS).

In the context of the patronage program of the German Sports Aid Foundation, three young athletes sponsored by Lufthansa were able to crown their participation in the disciplines of Nordic combination, Alpine skiing and biathlon with a medal. This kind of advancement of highly talented young athletes is one central area of support given by the German Sports Aid Foundation through Lufthansa. Currently, ten athletes receive a financial supplement to the foundation’s basic support. In 2011, the emphasis will be on the Summer Games that will take place in 2012 in London.

Lufthansa has been the foundation’s first national sponsor since 2007 and regularly supports events such as the “Golden Sports Pyramid,” the “Sports Ball,” the “Festival of Encounter” and the “Elite Forum” in Liebenberg. Furthermore, Lufthansa supports the campaign of the German Sports Aid Foundation, launched in January 2010

with the slogan “Your name for Germany,” which aims at generating additional funds for high-performance sports among the Group’s employees, passengers and customers. In the reporting year, the number of donations could be increased significantly by the use of a truck that toured Germany, as well as other events and campaigns.

Since January 2010, Lufthansa has also been National Sponsor of the organization promoting Munich’s candidature for the Winter Games and Paralympic Games 2018. With comprehensive communication measures the company is making a contribution to increasing the population’s level of acceptance of the application and creating a positive environment for the vote of the International Olympic Committee. For example, in March 2011 a large-scale welcome gate above the highway access road at Munich Airport drew attention to the application. The airport’s Terminal 2 also sported an Olympic look under the motto “Winning the Games.” Lufthansa also offers the opportunity to anyone interested to support the Olympic application via a dedicated Web site.

The different facets of Lufthansa’s commitment to sports are described in the current brochure “Lufthansa – Airline des Sports” (available in German only)

www.lufthansa.com/verantwortung

In addition, Lufthansa has compiled everything that sports fans might want to know about sports events on its Internet page (available in German only)

www.lufthansa.com/fanflug

Lufthansa underscores Munich’s application for the Winter Games and the Paralympic Games 2018 on the Internet page (available in German only)

www.lufthansa.com/muenchen2018



Lufthansa employees support top athletes: Impressions of the Sports Aid Foundation Day at the Lufthansa Aviation Center with the participation of biathlete Miriam Gössner, one of the athletes sponsored by Lufthansa.



Glossary

ACARE – Advisory Council for Aeronautics Research in Europe

Created in 2001, the ACARE council consists of representatives from the EU member states, EU Commission, Euro-control, the European aerospace industry, research institutions and others. Its main task is to develop and implement the strategic research agenda (SRA) for Europe's aerospace sector.

www.acare4europe.org

AEA – Association of European Airlines www.aea.be

AIRE – Atlantic Interoperability Initiative to Reduce Emissions

Transatlantic program in the framework of SESAR to reduce emissions from air transport.

ASPI – Advanced Sustainable Performance Indices

Lufthansa features in the ASPI Index, which was set up in 2001. This index depicts the financial performance of the 120 best companies of the Dow Jones EURO STOXX according to the criteria of sustainability. The prerequisite for being listed in the ASPI Index is the systematic integration of the long-term interests of stakeholders in the context of corporate policy, strategy and activities. The index is run by the agency Vigeo in cooperation with Stox Ltd.

www.vigeo.com

ATM – Air Traffic Management

Air Traffic Management ensures both the safe and efficient movement of aircraft in all phases of operations.

Atmosphere

The whole mass of air surrounding the Earth. It is divided into various layers, distinguished from one another by distinct differences in vertical bands of temperature. Important for air traffic are the two lower layers: the troposphere and, above it, the stratosphere. The troposphere's upper boundaries vary depending on season and latitude. They lie at altitudes of 16 to 18 kilometers above sea level at the equator, and

at 8 to 12 kilometers above sea level at the poles. The temperature in the tropopause, the transition layer between troposphere and stratosphere, drops to only about minus 60 degrees Celsius. It rises again in the stratosphere. The so-called ozone layer is also located in the stratosphere at altitudes of about 25 to 30 kilometers. Today's commercial aircraft fly at cruising altitudes of between 8 and 13 kilometers. According to the latest research, air traffic emissions do not contribute to the reduction of the ozone layer.

B.A.U.M. – Bundesdeutscher Arbeitskreis für Umweltbewusstes Management e.V. – Federal Working Group for Environmentally-Aware Management

B.A.U.M. was founded in 1984 as the first independent environmental initiative of German business. At currently 450 members, it is the largest of its kind in Europe. Lufthansa has been a member of the Working Group since 1997.

www.baumev.de

BDI – Bundesverband der Deutschen Industrie e.V. – Federal Association of German Industry

www.bdi-online.de

BDLI – Bundesverband der Deutschen Luft- und Raumfahrtindustrie e.V. – Federal Association of German Aviation and Space Industry www.bdli.de

BDL – Bundesverband der Deutschen Luftverkehrswirtschaft – Federal Association of the German Aviation Industry www.bdl.aero

Carbon dioxide (CO₂)

Gas resulting in nature from the burning or decomposition of organic masses (e.g. plant material) and from the breathing process of humans and animals. The greenhouse gas CO₂ remains for about 100 years in the atmosphere. Scientists attribute the increase of atmospheric CO₂ over the last 100 years to the burning of fossil fuels (e.g. coal, oil, natural gas) by humans. Per tonne of fuel, 3.15 tonnes of CO₂ result from the combus-

tion process. Currently, about 2 percent of man-made CO₂ emissions are due to worldwide air traffic.

Source: IPCC/WRI 2007

Carbon monoxide (CO)

Chemical compound consisting of one carbon and one oxygen atom, formed in the incomplete combustion process of substances containing carbon. For aircraft engines, the level of CO emissions depends greatly on the thrust level: The emissions per kilogram of fuel burned are higher at idle settings, while taxiing and on approach than during the climbing and cruising phases.

Chapter-4 aircraft

Aircraft that meet the regulations of the strictest noise protection standard currently in force – the Chapter-4 noise standard. The Environmental Committee (CAEP) of the ICAO agreed on this standard in September 2001. As a result, all aircraft newly certified from 2006 must remain cumulatively below the Chapter-3 noise levels by 10 decibels or more. The maximum noise emission values for aircraft were introduced by the ICAO under Annex 16 to the convention on international civil aviation. Noise levels depend on the aircraft's maximum takeoff weight and number of engines.

Cash flow

Indicator used to assess a company's financial strength and earnings potential. It is calculated as the difference between the inflow and outflow of cash and cash equivalents generated from ongoing business activities during the financial year.

CDA – Continuous Descent Approach Procedure for a flight's approach phase that reduces noise emissions 20 to 40 kilometers ahead of the runway threshold (Frankfurt). At Frankfurt Airport, it can only be used at night due to capacity restrictions.

CO see “Carbon monoxide”

CO₂ see “Carbon dioxide”

Codeshare

A codeshare is a flight segment that is sold under the flight number of one airline, while being operated either partly or entirely by another airline. Both companies maintain their independent profiles in the market.

Compliance

Compliance describes the entirety of all measures that ensure the lawful conduct of companies, their management bodies and their employees with regard to legal directives and interdictions.

Corporate responsibility (CR)

Corporate responsibility expresses to which degree a company assumes accountability for the effects its business activities have on employees, customers, society and the environment.

Corporate University

Corporate education institution for professionals and managers. See also Lufthansa School of Business (LHSB).

Customer Profile Index (CPI)

The Lufthansa Passenger Airlines, in cooperation with renowned institutes, continuously conduct worldwide surveys and thus assess the level of customer satisfaction. These data are compiled in the Customer Profile Index, which informs the entire company in the form of a single figure about the current status of customer satisfaction.

CVA – Cash Value Added

Indicator for measuring performance of value creation. When the cash flow generated in a period (EBITDAplus) is greater than the minimum cash flow required to cover the cost of capital, the CVA is positive and value is created.

Decibel (dB)

Measuring unit for the intensity and pressure of sound. The difference in intensity between the softest sound the human ear can perceive and the pain threshold is 1:10 trillion. To depict this enormous range objectively, acoustics uses the logarithmic decibel scale. On this scale, the value "0" is assigned to the perception threshold (for a sound of

1,000 Hz) and the pain threshold at the value "130." An increase of 10 dB corresponds to a tenfold increase in the sound's intensity. For the perceived volume, a difference of 10 dB corresponds to half or double the volume. However, the human ear is not equally sensitive across the entire range of frequencies. Low and high sounds are not perceived as being equally loud even at the same intensity. For measurements, this difference is equalized and noted accordingly. The best known such notation is the "A value," marked by the index dB(A). To measure aircraft noise, the EPNdB (Effective Perceived Noise Decibel) unit is used internationally.

Deutsches Netzwerk Wirtschaftsethik (DNWE) – German Network for Business Ethics

DNWE is a nonprofit organization, in which Lufthansa has been a member since January 1998. DNWE has about 600 current members, including many from German business, politics, religion and science. At the same time, DNWE is a national association of the European Business Ethics Network (EBEN).

www.dnwe.de

Diversity

In a corporate context, diversity refers to all characteristics that distinguish employees from one another. Diversity management offers approaches for handling human differences for the benefit of company and employees alike.

DLR – German Aerospace Center

The DLR serves scientific, economic and social purposes. It maintains 30 institutes, testing facilities and operational sites. Its goal is to help – using the means of aviation and space flight – to secure and shape the future. In its work, the DLR also seeks cooperation and allocation of research tasks among European partners. www.dlr.de

Dow Jones Sustainability World Index

The leading sustainability index worldwide lists the top 10 percent of companies in each industry, whose sustainable approach to corporate management is exemplary.

econsense – Forum for Sustainable Development of German Businesses

An association of globally active corporations and organizations in German industry that have integrated the guiding principle of sustainable development into their corporate strategies. Lufthansa is a founding member of this cross-industry network, which was set up in 2000. www.econsense.de

EMAS – Environmental Management and Audit Scheme

Colloquially referred to as EU eco-audit regulations. European regulations concerning environmental management and certification.

Equivalent continuous noise level (Leq)

The Leq is a measure for the energetic average of all sound pressure levels over a defined period of time. All sound events that differ in intensity and duration are summarized according to mathematical rules. The resulting average value is an accepted and proven measurement of the "noise quantity" occurring over an observed time interval.

Ethibel – Ethibel Sustainability Index

The independent Belgian agency Ethibel has listed Lufthansa in its Ethibel Investment Register and the Ethibel Sustainability Index (ESI). The ESI offers institutional investors, asset managers, banks and investors a comprehensive overview of the financial results of companies that distinguish themselves by pursuing sustainable business practices. Since the merger with Vigeo and Stock at Stake in 2005, this index is part of Vigeo. However, Forum Ethibel continues to be responsible for the ethical criteria and the composition of the ESI. Updates of and calculations for the index are performed by the internationally renowned index provider Standard & Poor's.

www.ethibel.org

FAB – Functional Airspace Block

Instrument of the Single European Sky to evolve the fragmented ATM over Europe, oriented by national airspace boundaries, into a cross-border coordinated ATM. Currently, there are nine different



FAB projects in the EU that have reached different levels of development. According to SES regulations, the EU member states must take the measures necessary to implement the FABs by December 4, 2012.

FABEC – Functional Airspace Block Europe Central

Shared airspace that Germany, France, Belgium, Luxembourg, the Netherlands and Switzerland intend to set up by December 2012.

Freight performance (FTKO/FTKT)

Airlines distinguish between freight performance offered (FTKO, freight tonne kilometers offered) and its sold freight performance (FTKT, freight tonne kilometers transported). See also tonne kilometers.

FTSE4Good

Index introduced by the Financial Times and the London Stock Exchange in 2001. The FTSE4Good lists only companies with above-average performance in the areas of human rights, social standards and environmental protection. Lufthansa has been listed since 2001.

www.ftse4good.com

Fuel Dump

Dumping of fuel in flight due to emergency situations. A procedure used on long-haul aircraft before unscheduled landings (e.g. in the event of technical problems or serious passenger illness) to decrease the aircraft's weight to the maximum permissible landing weight. In the event of a fuel dump, special airspace is assigned to the aircraft, if possible above uninhabited or thinly populated areas. Fuel is usually dumped at altitudes of 4-8 kilometers. A minimum altitude of 1,500 meters and a minimum speed of 500 km/h are required. The aircraft may not fly a fully closed circle. The dumped kerosene forms a fine mist in the turbulence behind the aircraft. Despite the use of highly sensitive methods of analysis, no contamination has been determined so far in plant or soil samples after fuel dumps.

Global Compact see “UN Global Compact”

Great Circle Distance

Shortest distance between two points on the Earth's surface, measured in kilometers (great circle kilometers) or nautical miles. The center of a great circle is the center of the Earth.

Greenhouse gases

Gaseous substances that contribute to the greenhouse effect and have both natural and human (anthropogenic) causes. The most important natural greenhouse gases are water vapor (H₂O), carbon dioxide (CO₂) and methane (CH₄); the most important anthropogenic greenhouse gas is carbon dioxide from the combustion of fossil fuels. It accounts for about 77 percent of the greenhouse effect attributable to human activities. Methane, primarily generated by agriculture and large-scale animal husbandry, contributes about 14 percent to the anthropogenic greenhouse effect. Other artificial greenhouse gases are nitrous oxide (N₂O), fluorocarbons (FCs and HFCs), sulfur hexafluoride (SF₆) and chlorofluorocarbons (CFCs). Source: World Resources Institute (WRI), 2005.

Hub

In air transport, a hub refers to a central traffic point or an airline's transfer airport. Passengers as well as freight are transported from their original starting point to one of the airline's "home airports" (hub). From there, they are carried to their destination by a second flight alongside passengers and freight from other departure points, but with the same destination.

HVO biofuel – Hydrotreated Vegetable Oil

Biofuel based on hydrotreated plant oil, which Lufthansa is testing for six months under regular operating conditions. Hydrotreated vegetable oils are plant oils that are transformed into hydrocarbons by means of a catalytic reaction involving hydrogen (hydrogenation).

HWFAP – Hard Wall Forward Acoustic Panels

Noise-absorbing panels with a homo-

genous hard-wall surface at the engine inlet that significantly reduce noise emissions.

IATA – International Air Transport Association

The umbrella organization of international commercial aviation.
www.iata.org

ICAO – International Civil Aviation Organization

A United Nations agency that develops internationally binding norms for civil aviation. www.icao.int

ICC – International Chamber of Commerce

The ICC was founded in 1919 as the World Business Organization. More than 1,500 business organizations and over 5,000 corporations are organized in the worldwide framework of the ICC. Lufthansa has been a member since 1955.
www.icc-deutschland.de

ILO standards

Work standards of the International Labor Organization, which include among others the bans on child labor, forced labor and discrimination as well as the fundamental right of freedom of association for employees.

Pro Recycling Paper Initiative

Founded in 2000, the initiative unites various industries and aims at promoting an intensive usage and the acceptance of recycling paper. Lufthansa is one of the initiative's founding members.
www.papiernetz.de

IPCC – Intergovernmental Panel on Climate Change

An international UN panel of experts on climate change, founded in 1988 by the World Meteorological Organization (WMO) and the United Nations Environmental Program (UNEP). The latest worldwide scientific, technical and socio-economic information, relevant for climate change, are analyzed and processed to advance the understanding of climate change.
www.ipcc.ch



ISO 14001 – International environmental management system

Companies hereby receive an effective instrument that allows them to take environmental aspects into consideration in decisions relating to corporate policies and to continuously improve the situation of environmental care in relation to all daily tasks. www.iso.org

Kerosene

Fuel for jet and propeller engines that is chemically similar to petroleum. Like diesel fuel or gasoline, kerosene is produced by distilling crude oil; unlike these fuels, kerosene does not contain halogenated additives.

Lufthansa School of Business (LHSB)

Germany's first corporate university. It has received multiple awards for the worldwide standards it establishes for the development and training of professionals and managers. The LHSB supports processes of change within the Group and promotes a shared management culture.

Mentoring

Instrument for targeted support of junior employees. Focuses on regular personal contacts between mentor and mentee.

MRO

Acronym standing for maintenance, repair and overhaul of aircraft

MSC standard – Marine Stewardship Council

Leading worldwide certification program for fish and seafood from sustainable fishing.

MTOW

Acronym standing for maximum takeoff weight of an aircraft

Nitrogen oxides (NO_x)

Chemical compounds consisting of one nitrogen and several oxygen atoms. NO_x is defined as the sum of NO and NO₂ compounds. Natural sources include lightning and microbes in the soil. Nitrogen oxides are also generated in combustion processes under high pressures and temperatures. Both of these para-

meters have been increased in modern aircraft engines to significantly reduce fuel consumption as well as emissions of carbon monoxide and unburned hydrocarbons. However, future combustion chambers of an advanced design could help reduce NO_x emissions by 85 percent. Depending on the type of aircraft and operational conditions, this value varies between 6 and 20 kilos per tonne of fuel burned. Air traffic has a share of 2-3 percent in man-made NO_x emissions. Climate models show that nitrogen oxides have increased the concentration of ozone at cruising altitudes by a few percentage points.

NO_x see “Nitrogen oxides”

No-frills carrier

Airline which largely offers low ticket prices but with reduced service levels and sometimes additional charges on board and on the ground. Flights are mostly from secondary airports and therefore outside population centers.

Operational towing

Procedure of pushing aircraft back from their parking positions by means of tractors or tow trucks until they reach the point from which they taxi under their own power.

Ozone

Molecule consisting of three oxygen atoms formed in the stratosphere. The ozone layer located in the stratosphere has an important protective function, as it absorbs harmful ultraviolet light. While ozone at higher altitudes is broken down massively by chlorofluorocarbons (CFCs), it develops close to the ground under the influence of sunlight from numerous precursor substances (“summer smog”) and irritates the mucous membranes. At current levels, nitrogen oxide emissions from air traffic at cruising altitudes cause an increase in atmospheric ozone, analogous to the generation of summer smog, estimated by scientists at 3-4 percent on the heavily-flown North Atlantic routes.

Passenger kilometers (PKO/PKT)

Measure for transport performance in passenger carriage (number of passengers multiplied by distance flown). Here one distinguishes between available transport performance (PKO, passenger kilometers offered or synonymously SKO, seat kilometers offered) and actual transport performance (PKT, passenger kilometers transported).

RSB – Roundtable for Sustainable Biofuels

International initiative to develop a global standardization and certification system for agrofuels.

SAFUG – Sustainable Aviation Fuel Users Group

Initiative of airlines, aircraft manufacturers and providers of refinery technology whose goal is to accelerate the development and commercialization of sustainable fuels for the air transport industry.

SES – Single European Sky

Describes the efforts of the European Commission undertaken since the late 1990s with the goal of restructuring the European airspace in terms of optimizing traffic flows and dissolving the airspace's fragmented structure, defined by national borders and interests, by creating a limited number of Functional Airspace Blocks (FABs).

SESAR – SES Air Traffic Management Research

This project is carried out by Eurocontrol within the EU project SES with the project partners and in close coordination with the ICAO.

SJU – SESAR Joint Undertaking

A publicly and privately funded EU project involving Eurocontrol and industrial partners (e.g. Airbus).

Seat kilometer

Measure for the transport capacity available (SKO, seat kilometers offered).

Seat load factor (SLF)

Passenger-related measure of utilization of aircraft: The ratio of transport performance (PKT, passenger kilometers



transported) to capacity (PKO, passenger kilometers offered).

Slot

Designated point in time at which an airline may use an airport's runway for takeoff or landing.

Stakeholder

Groups or individuals who formulate their demands on a company (e.g. attainment of corporate goals) and pursue these either personally or through representatives. This includes shareholders, employees, customers, suppliers and others.

Sustainable development

According to the guiding principle of sustainable development formulated in 1987 by the World Commission for Development and the Environment (Brundtland Commission), "sustainable development is a form of development that meets the needs of today's generation without jeopardizing the abilities of future generations to satisfy their own." For businesses, this means acting responsibly not only in economic matters but also in environmental and social issues. All three aspects – economic, ecological and social – must be kept in balance.

Tonne kilometer (TKO/TKT)

Measure of transport performance (payload multiplied by distance). One distinguishes between available transport performance (TKO, tonne kilometers offered) and the actual transport performance (TKT, tonne kilometers transported). In calculating payloads, passengers are taken into account by means of a statistical average weight.

Trace gases

Gases of which there are only very small amounts present in the atmosphere (e.g. ozone, methane, nitrous oxide, etc.) but which are of great significance for the Earth's climate and the chemical processes in the atmosphere.

Transparency International

Anti-corruption organization, of which Lufthansa has been a member since 1999. www.transparency.de

UHC – Unburned hydrocarbons

Organic mixture of carbon and hydrogen that results from the incomplete combustion of fuels containing hydrocarbons or from the evaporation of fuel.

VOC – Volatile Organic Compounds

Volatile organic substances that are characterized by high steam pressure and thus evaporate easily into the atmosphere at room temperature. VOCs are present in solvents, cleaning agents, fuels and other substances. In the presence of nitrogen oxides and intense sunlight, VOCs lead to the generation of ozone.

UNEP – The United Nations Environmental Program www.unep.org

UN Global Compact

Global network in whose context the United Nations cooperates with private-sector corporations and civil action organizations to advance human rights, labor standards, environmental protection and anti-corruption measures. Deutsche Lufthansa AG has been a member since 2002.

www.unglobalcompact.org

Water vapor

The most important greenhouse gas, even ahead of carbon dioxide. Without water vapor from natural sources, the Earth's surface would be around 22 degrees Celsius cooler. This makes water vapor responsible for two-thirds of the natural greenhouse effect (33 degrees Celsius). For each kilo of kerosene burned, 1.24 kilos of water vapor are released. Concerns that air traffic might increase the concentration of water vapor in the stratosphere and thus change the climate have been refuted by scientific research. The German Aerospace Center (DLR) concluded that even a one hundred-fold increase in the quantity of water vapor emitted by air traffic would not result in a detectable climatic signal.

Work-life balance

Refers to a healthy equilibrium between work and private life.

WRI – World Resources Institute

Founded in 1982 as a nonprofit organization. This independent environmental think tank has its headquarters in Washington, D.C. and is concerned with subjects related

to global warming, diverse ecosystems, government systems and structures, renewable energies and the use of resources. The WRI's work goes beyond scientific research and aims at finding pragmatic solutions to protect the environment, advance sustainable development and improve people's general life situation. www.wri.org

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www.lufthansa.com/responsibility

Please note that **www.lufthansa.com** is the central contact point for all inquiries concerning customer service. Under the header "*Help & Contact*" you will find full information on how to contact Lufthansa.



Memberships

Lufthansa also documents its striving for responsible business practices with numerous memberships in environmental and sustainability-related organizations. Furthermore, in the context of different initiatives the aviation company seeks active exchanges with other economic organizations and social groups. The goal is to participate in shaping the future of sustainable business practices and social responsibility, and to further develop the company's own activities.

- B.A.U.M. – Bundesdeutscher Arbeitskreis für Umweltbewusstes Management – Federal Working Group for Environmentally-Aware Management
www.baumev.de
- BDI – Initiative Wirtschaft für Klimaschutz – Initiative of German Industry for Climate Protection
www.wirtschaftfuerklimaschutz.eu
- BDL – Bundesverband der Deutschen Luftverkehrswirtschaft – Federal Association of the German Aviation Industry
www.bdl.aero
- DNWE – Deutsches Netzwerk Wirtschaftsethik – German Network for Business Ethics
www.dnwe.de
- EABA – European Algae Biomass Association
www.eaba-association.eu
- ecosense – Forum Nachhaltige Entwicklung der Deutschen Wirtschaft e.V. – Forum for Sustainable Development of German Business
www.ecosense.de
- ICC – International Chamber of Commerce, German chapter
www.icc-deutschland.de
- German Air Transport Initiative
www.initiative-luftverkehr.de
- Pro Recycling Paper Initiative
www.papiernetz.de
- SAFUG – Sustainable Aviation Fuel Users Group
www.safug.org
- Transparency International
www.transparency.de
- UN Global Compact (see on page 20)
www.unglobalcompact.org

Furthermore, Lufthansa is an active member in a number of sustainability and environmental working groups and committees, including:

- AEA – Climate Change Working Group
- BDI – Committee on the Environment
- BDLI – Working Group “Eco-efficient Flying”
- DRV – German Travel Association – Environmental Committee
- ecosense – Management Circle and several project groups (Sustainability Management, Renewable Resources, Sustainability/Financial Markets)
- IATA – Environmental Committee
- Star Alliance – Environmental Concept Team
- VDR – The German Business Travel Association – Sustainability Committee

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