

Global dynamic

Germany is an important market for Boeing and a key partner in developing new technologies

by Bill Seil

Boeing's ties with Germany began long before the company was even founded.

Wilhelm Böing, father of the company's founder, William Boeing, emigrated to the United States from Germany in 1868. In 1934, Boeing delivered its first airplane to Europe, a Boeing 247, to the predecessor of today's German airline Lufthansa.

Germany has long been a leader in technology and innovation, and Boeing is forging new business alliances in partnering with the talent and resources of German research and development. Many German companies produce high-tech products and systems for Boeing airplanes.

Shep Hill, president, Boeing International, said Germany is an important market for Boeing, as well as a great source of quality products and expertise.

"Boeing is very active in Europe, and Germany is a large, economically strong nation in that region," Hill said. "It is the home of airline customers that have made important contributions to our commercial airplane programs, and we are seeing growing opportunities in both technology partnerships and new sales opportunities."

Lianne Stein became president of Boeing Germany in late 2006, three years after the company opened its Berlin office. Months later, Jim McNerney, Boeing chairman, president and CEO, visited Boeing facilities in Germany, including the Eastern Hemisphere headquarters of Boeing subsidiary Jeppesen, located near Frankfurt Airport.

Stein said that during his visit, McNerney emphasized the need to engage with Germany's leading technology companies and research and development institutes to explore opportunities for collaboration.

"Many German aerospace companies can trace their origins back to the earliest stages of the history of flight," Stein said. "Some of the greatest aerospace advances that have occurred over the past 100 years originated here."

Stein noted that much of Germany's current technological strength comes from small and medium-size enterprises, some of which are family owned, such as Diehl Aerospace, a major contributor to the 787 program. At the other end of



Germany at a

Formal name: Bundesrepublik Deutschland (or the Federal Republic of Germany)

Location: Central Europe, bordering the Baltic Sea, the North Sea and nine countries: Austria, Belgium, Czech Republic, Denmark, France, Luxemburg, the Netherlands, Poland and Switzerland

Population (2009 est.): 82,329,758

Capital: Berlin

Other major cities: Frankfurt, Munich, Hamburg, Cologne

National language: German



glance

Government: Angela Merkel leads a coalition government of Christian Democratic Union and the Free Democratic Party in her second term as German chancellor. Germany is a federal republic with regional governments in the 16 federal states.

Gross domestic product (2009 est.): \$2.779 trillion

Largest export partners: France, the United States, the Netherlands, the United Kingdom, Italy, Austria, Belgium, Spain, Poland

Economy: Germany is one of the largest economies worldwide. It is the world's second-largest exporting country with about 40 percent of the economy based on exports.

PHOTO ILLUSTRATION: Following the end of World War II, the Brandenburg Gate marked the border between East and West Berlin. Since the fall of the Berlin Wall in 1989, it has become a symbol of a reunified Germany.

BRANDON LUONG/BOEING; AIRPLANE GRAPHIC: BOEING; BRANDENBURG GATE PHOTO: SHUTTERSTOCK.COM

German brands: Well-known German brands include Mercedes, Siemens, SAP, BMW, Adidas, Audi, Volkswagen, Nivea.

Research and technology: Germany has renowned research centers such as the Fraunhofer Institute and the Max Planck Institute. It has been home to some of the most prominent researchers, including Albert Einstein and Max Planck. German engineers and inventors who have helped shape modern automotive and air transportation technology include Count Ferdinand von Zeppelin, Gottlieb Daimler, Hugo Junkers and Karl Benz.

Sources: U.S. government, German government, Germany Trade and Invest



“We have made significant progress building relationships and establishing joint technology projects with many German companies — large and small.”

— Lianne Stein, president of Boeing Germany

PHOTO: ASSOCIATED PRESS

the spectrum are large multinational corporations in Germany, such as the 160-year-old Siemens—a world leader in many technologies.

“Over the past few years, we have made significant progress building relationships and establishing joint technology projects with many German companies—large and small,” Stein said.

Boeing’s Berlin office has a very engaged staff. One of its main objectives is to position Boeing for future growth in Germany.

“Germany is a base of our competitor EADS/Airbus, which has a large footprint of production sites and employees in Germany,” Stein said. “It is imperative for the Germany team to raise the visibility of Boeing’s commitment to the German marketplace and to enhance and build partnerships and relationships in support of business opportunities in this important market.”

The Berlin office also serves as the company’s liaison with all levels of government. Establishing relationships with German political leaders and generating an understanding for Boeing’s strategy and products is critical to Boeing’s success in Germany.

Commercial airplanes customers in Germany include Lufthansa, one of the world’s largest airlines and an important customer and valued adviser in designing new commercial airplanes. As launch customer for the new Boeing 747-8 Intercontinental, Lufthansa has provided valuable input that will help make the

new airplane a leader in its class for both fuel efficiency and passenger comfort. Another leading German airline, Air Berlin, is a major customer for the new Boeing 787 Dreamliner and the Next-Generation 737.

Jeppesen, a Boeing company, opened its first office in Germany in 1957 to better serve customers in the U.S. Army Air Corps. Today, Jeppesen GmbH, based in the town of Neu-Isenburg, has nearly 500 employees and serves as the company’s headquarters for Europe, Asia, the Middle East and Africa. It also supports the company’s main corporate U.S. headquarters in Denver.

Jeppesen is internationally known for sophisticated flight and navigational tools, including the Electronic Flight Bag. In commercial aviation, it serves more than 650 airlines and over a million pilots around the world with navigation and other operational solutions, including flight planning, weather services and crew scheduling. It also serves private pilots. In recent years, Jeppesen has expanded into the marine and rail industries.

Bernd Buehrmann-Montigny, vice president, Global Navigation Services for Jeppesen, recently was given the added role of managing director of the company’s Neu-Isenburg office. While the Boeing subsidiary has a diverse customer base and operates independently, Buehrmann-Montigny said that he and others in the Neu-Isenburg office meet regularly with members of the Boeing team in Berlin. They discuss support for Boeing customers, and collaborate on stakeholder events and developing technology partnerships within Germany.

The Jeppesen office at Neu-Isenburg is one of the largest Boeing facilities outside the United States, according to Buehrmann-Montigny. The office is well-respected within Germany and supports the local community. In addition to its business services, Jeppesen is popular among Germany’s many recreational and glider pilots.

Mark Van Tine, president and CEO of Jeppesen, said the Neu-Isenburg office over the years has helped to prepare Jeppesen in becoming a truly global company. It has led the way in building an international employee base and an understanding of diverse cultures. Today, Jeppesen has 43 offices in 22 countries, with nearly half its employees

based outside the United States.

In addition to its success selling aircraft to German airlines, Boeing sees both near- and long-term opportunities in the country for its military products. Historically, Germany and other European countries have focused on developing their own defense business and relied on European defense products to support their forces. But highly specific requirements from the German Ministry of Defense are opening up potential opportunities for Boeing products and services. For example, the German Air Force has identified a need for Combat Search and Rescue aircraft.

“Due to its proven performance in the field and its strong, global customer base, Boeing believes this requirement is best met with tandem rotor capabilities,” said Phil Dunford, vice president and general manager of Boeing Rotorcraft Systems.

Boeing Defense, Space & Security is working closely with Boeing Germany to demonstrate to the Ministry of Defense that Boeing has the right solutions for Germany’s future needs, and that it would make a valuable, long-term partner, Dunford said.

Germany is one of the largest providers of aircraft financing worldwide, and Boeing Capital Corporation, the company’s aircraft financing unit, works closely with German banks to help arrange and facilitate aircraft financing for Boeing customers worldwide.

Boeing has approximately 70 partners and suppliers throughout Germany. Sell, based in Herborn, produces airplane interior features including galleys. Other suppliers produce passenger seats, precision tools and automated fastening systems.

A number of German-based suppliers support the 787 Dreamliner program. Diehl Aerospace, headquartered in Ueberlingen, provides the main cabin lighting for the new airplane. The new, low-maintenance solid-state LED lighting can be adjusted within the cabin to make travel a more comfortable and relaxing experience. PFW, headquartered in Speyer, manufactures metallic tubing and ducting for the airplane.

Telair International, based in Miesbach, has a long history of producing cargo-handling systems for jetliners, including the new 747-8 Freighter and the Dreamlifter, a modified 747-400 airplane used to transport major assemblies of the 787 Dreamliner.



“Our suppliers in Germany are strong potential partners for developing new technologies,” Stein said. “We are working closely with them to identify areas of joint cooperation.”

However, Boeing’s involvement in Germany goes beyond business. It is active in local communities as a corporate citizen, focusing on environmental and educational projects. Boeing supports projects in Berlin, where Boeing Germany is headquartered, and in Neu-Isenburg, where Jeppesen is based.

With a dynamic base of commercial customers, a strong supplier base, growing technology partnerships and emerging opportunities in the defense sector, Boeing’s ties with Germany are

stronger than ever. A relationship that began with Wilhelm Böing has entered an exciting new era. ■

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PHOTOS: (Top) Bernd Buehrmann-Montigny, vice president, Global Navigation Services, is shown with Digital Color Print on Demand and Bookbinding equipment at Jeppesen’s Neu-Isenburg office. The facility prints an average of 3 million sheets of navigation charts per week. **(Above)** Environmental Detectives, a project supported by Boeing Global Corporate Citizenship, encourages children to explore nature and learn about environmental protection. **JEN PREUSLER**

Flying toward tomorrow

Germany's airlines and Boeing have been collaborating—and innovating—for decades

Germany remains one of the strongest commercial airplane markets in Europe. It is one of the largest economies in the world and, in Europe, is second to only the United Kingdom in passenger traffic.

Over the next 20 years European airlines are expected to acquire more than 7,000 new jetliners, with Germany likely to be the second-largest market for the purchase of those airplanes.

"The German airlines have been strong business partners and we've had an excellent collaborative working relationship over the years," said Marlin Dailey, vice president of sales, Boeing Commercial Airplanes.

Boeing's commercial airplane fleet—past and present—owes much to its German airline customers.

Lufthansa, based in Frankfurt, has been a valued partner of Boeing since the late 1950s, when it contributed to the design of the 707-420. The airline entered the jet age in March 1960 with delivery of its first 707.

In the 1960s, Lufthansa was the primary launch customer for the Boeing 737 and the Boeing 747-200 Freighter. As launch customer for the new 747-8 Intercontinental, Lufthansa has worked closely with Boeing on its design.

"When you consider how [Lufthansa] has grown and evolved, it's really quite remarkable, and a testament to its focus on quality and leadership," Dailey said.

Air Berlin, based in the German capital, will be one of the first European carriers to operate Boeing's new 787 Dreamliner. Following a need to reduce its initial 787

order due to market conditions, the airline is still scheduled to receive 15 787s, with an option for five more airplanes. Air Berlin also will be one of the launch customers for the Next-Generation 737 Sky Interior.

Since 1991, Air Berlin has grown from two Boeing 737-400s to a fleet of 152 airplanes, including 66 Next-Generation 737s.

"Our relationship with Air Berlin goes way back," Dailey said. "It's a well-run airline that's been able to adapt to the changing marketplace, creating a really nice mix. It's low-cost, but it provides good service."

Both Lufthansa and Air Berlin speak highly of their long-standing business relationships with Boeing.

Wolfgang Mayrhuber, chairman and CEO of Deutsche Lufthansa AG, said the airline and Boeing have enjoyed strong and fruitful business ties for half a century.

Ulf Huttmeier, Air Berlin's chief financial officer, said Boeing has been a valued strategic partner in the development of new aircraft for its fleet.

Another German airline, TUIfly, part of the TUI Group, has been an important Boeing customer since 1973, when it operated as Hapag Lloyd. It played a key role as a launch customer for the Boeing 737-800.

Although the airline industry has been slowed by the economic downturn, Dailey sees brighter days ahead. "Germany is going to lead the economic recovery in Europe. It's all about getting the economy and businesses moving in the right direction. When that happens, I think you'll quickly see them get that spring back in their step."

— Bill Seil

"Boeing is working closely with us on supplying the airplanes of the future with the development of the 787 Dreamliner..."

— Ulf Huttmeier, chief financial officer of Air Berlin

"For many decades, we have shared ideas to enhance aviation and have brought many innovations into service."

— Wolfgang Mayrhuber, chairman and CEO of Deutsche Lufthansa AG, on the airline's long ties with Boeing, which will continue with the 747-8 Intercontinental

Germany's major airlines

Lufthansa

Headquarters: Frankfurt

Fleet: 269 airplanes, including 63 737s, 30 747s and Airbus models. In addition, Lufthansa Cargo has 19 MD-11s

Notable: Lufthansa is the launch customer for the new Boeing 747-8 Intercontinental, with 20 orders

Air Berlin

Headquarters: Berlin

Fleet: 152 airplanes, including 66 737s, and Airbus and Bombardier models

Notable: Air Berlin has orders for 15 Boeing 787 Dreamliners and 71 Next-Generation 737s

TUIfly

Headquarters: Hannover

Fleet: 25 airplanes, all 737s

Notable: The TUI group has firm orders for 13 787 Dreamliners and 30 Next-Generation 737s

AeroLogic

Headquarters: Leipzig

Fleet: 4 777 Freighters

Notable: Aerologic is a joint venture between DHL Express and Lufthansa Cargo; it has four additional 777 Freighters on order

Other German passenger and cargo airlines include:

Air Cargo Germany, 2 747s; Condor Flugdienst, 13 757s, 9 767s and Airbus aircraft; Germania, six 737s; Germanwings, 27 Airbus airplanes; and Hamburg International, which has an Airbus fleet

PHOTO ILLUSTRATION: BRANDON LUONG/BOEING



Equation for success

Boeing is working with Germany's technology leaders to increase competitiveness—and build business for both countries



“Environmental research is a high priority in Germany, and this could lead to concepts we can use in our commercial airplane programs.”

— Michael Friend, technology director for Germany

PHOTO: ASSOCIATED PRESS

PHOTOS: (Far right, top) Integration and test engineer Wolfgang Egerer assembles the optical head of a satellite component at Boeing supplier Jena-Optronik in Germany. **BOEING (Far right, bottom)** Germany and the German airlines focus strongly on research to make the air transport system more efficient. Shown here is the control tower at Frankfurt Airport. **GETTY IMAGES**

Germany has long had a reputation for technological prowess, particularly in aerospace. Its experiments in flight began with glider pioneers Gustav and Otto Lilienthal in the 1800s and Hermann Oberth's work in rocketry in the early 20th century.

“Germany is a land of innovation, where education, science and research play an important role,” said Lianne Stein, president of Boeing Germany. The country has one of the highest national investments—government and private—in research and development in the world. Germany also is among the top countries in the global patent registration rankings for applied technologies, such as automotive, mechanical, environmental, chemical, power and construction technologies. It has a strong education system; engineering is a highly valued profession.

Boeing Research & Technology's Global Technology organization in 2007 assigned Michael Friend to serve as the company's technology director for Germany. Friend said the company sees Germany as one of the leading countries in the world for cutting-edge technology. “The Germans have engineered solutions to problems in very eloquent ways,” Friend said. “Their engineering really focuses on thinking through problems and coming up with the best solutions for consumers.”

So it makes sense that Germany plays an important role in Boeing's international strategy of working together with technology leaders worldwide to participate in the world's \$1.1 trillion a year investment in technology.

Although Boeing has a long tradition of working together with German research facilities, there is now a focused effort to develop collaborative projects within that country, Friend noted. Recently, that has included work in component manufacturing, propulsion, fuel cells, smart-grid technology, solar energy and environmentally progressive technology.

“A lot of the fundamental research and thinking that started in Germany has contributed to the success of Boeing products over the years,” Friend said. “Now we are increasing the amount of technical interaction that occurs with German companies and institutes to add value to our business units and to our partners in Germany.”

In addition to building relationships within Germany, Friend regularly communi-

cates with technology leaders in programs across the Boeing enterprise. He also gets guidance from the company's Enterprise Technology Strategy team, which aligns research investments with business priorities. Friend coordinates his activities in Germany with Boeing Research & Technology–Europe, which is headquartered in Madrid.

One important accomplishment was the opening of the Direct Manufacturing Research Center (DMRC) at Germany's University of Paderborn in 2009. This collaboration of Boeing and several other companies is designed to further the development of direct manufacturing processes and systems.

"Boeing and the partners in the DMRC can potentially leverage relatively small investments into much bigger technology gains," Friend said.

The goal of the DMRC is to reduce part production costs and enable the fabrication of more complex and functional component parts.

"One thing that pleases me is our success in finding people here in Germany to help us work on environmental technologies," Friend said. "Environmental research is a high priority in Germany, and this could lead to concepts we can use in our commercial airplane programs."

As part of efforts to explore and develop environmentally progressive technologies, Boeing and Rolls-Royce have been engaged in collaborative testing of a wind-tunnel model aimed at helping the companies better understand the interaction between fuel-efficient open-fan engines and commercial airframes. The concept—if proved in testing—has the potential to significantly reduce fuel consumption below levels achieved with current turbofan powerplants, also reducing carbon dioxide emissions.

The project involves testing a large, complex wind-tunnel model with a wingspan of about 11.5 feet (3.5 meters). The model, built by Deharde Maschinenbau of Varel, Germany, is equipped with a pair of hydraulically powered engine simulators, developed and provided by RUAG Aviation, capable of producing up to 240 kilowatts of power to spin counter-rotating propeller blades. Testing takes place at RUAG Aviation's Large Subsonic wind tunnel in Emmen, Switzerland.

Deharde Maschinenbau was recently



among the international winners in the Boeing Supplier of the Year competition.

Boeing also has a number of research projects under way with Boeing supplier Diehl Aerospace, headquartered in Ueberlingen. It is a coordinated research and development effort where a small portion of Diehl's overall research portfolio is directed at projects that are of mutual interest to Boeing and Diehl.

Friend noted that when he first arrived in Germany, many of the companies he contacted were focused on working with Boeing's competitor, Airbus.

"This has changed in the past years, as it is increasingly important for the suppliers to diversify their business base and their customer base," Friend said.

In addition to Boeing's Global Technology organization, Boeing subsidiary Jeppesen is working with German companies to develop new technologies. Jeppesen's office is in Neu-Isenburg, Germany, near Frankfurt Airport.

One of Jeppesen's projects is exploring future cockpits for the next generation of commercial airplanes, and the types of products that will be used by their flight crews.

"It's imperative that we invest in the future in order to be cutting edge and ahead of the competition," said Jens Schiefele, Jeppesen's director of Advanced Research and Marine Technologies. "That's how we contribute to the success of Jeppesen and The Boeing Company."

– Bill Seil