



BOEING AT 100



ON 15 JULY 1916, WILLIAM BOEING INCORPORATED PACIFIC Aero Products Co., a small Seattle company, to build light seaplanes. But much bigger achievements lay ahead. In 1939 the Boeing 314, a massive seaplane, inaugurated the U.S.-Asia service of Pan American Airways. During the Second World War, Boeing built nearly 4,000 B-29 Superfortress planes, the war's largest long-distance strategic bombers. • In October 1958, Boeing's four-engine 707 made its maiden flight to Paris, ushering in the jet age. During the 1960s, Boeing introduced three-engine and two-engine models for shorter trips, notably the 737, a twin jet that has become the most successful airliner in history, with 9,000 sold by April of this year. Capping it all, in 1969 Boeing introduced the 747, the world's first wide-body jet, and powered it for the first time with energy-efficient turbofans (rather than the turbojets of yore). This plane helped make affordable intercontinental travel possible. • The company's innovation continued through the end of the century, with the 757 in 1983—a narrow-body twin jet to replace the 727; the 767 in 1982—another long-range, wide-body plane; and the 777 in 1995—a wide-body plane that could fly nearly 50 percent farther than the 767. Two years later, the company took over McDonnell Douglas and became the sole U.S. maker of large jetliners. • But by that time Boeing had a serious competitor, a European consortium under the distinctly pedestrian label of Airbus. In 1974, when the consortium introduced its first jetliner, the Airbus 300, it delivered just four planes compared with Boeing's 189—a delivery ratio of 0.02. By 1996 that ratio had risen to 0.59, and Airbus was offering five different models, as many as Boeing. In 2003 Airbus at last delivered more planes than Boeing, staying ahead for eight more years. Boeing regained its primacy in 2012, but the Airbus-Boeing delivery ratios have remained close (0.98 in 2012, 0.83 in 2015). • Boeing proposed to recapture its slipping technical leadership with the 787 Dreamliner, a

highly fuel-conserving design that would use composite materials to lighten the key components and would include the best available turbofans to achieve outstanding efficiency. But unlike the 707 or the 747—classic embodiments of American ingenuity—the 787 was the culmination of the company's new strategy of outsourcing its efforts to suppliers around the world. Some 70 percent of the plane's manufactured components were to be made by foreign companies. The carbon-fiber wings, the single most innovative feature, are made in Japan, by Mitsubishi. Other key parts come from a dozen or so other countries in Europe and Asia.

This separation of design and manufacturing led to the loss of tight quality control, as shown by the fleet-grounding problems with fire-prone lithium-ion batteries, made by Yuasa, also of Japan. The outsourcing also led to repeated delays in the delivery of key components.

In 2012 Walter James McNerney Jr., Boeing's CEO, admitted that “we, lemming-like, over the past 15 years extended our supply chains a little too far globally in the name of low cost. We lost control in some cases over quality and service.” Boeing also lost control over the schedule: The first commercial 787 was delivered more than three years late, in September 2011, a delay that helped to jack up the project's final cost to more than five times the initial budget. That overrun will probably never be recouped by future sales.

Fortunately for Boeing, Airbus has to deal with its own self-inflicted pain: the A380, that ungainly, poorly selling double-decker bus that has no convincing commercial justification. And both companies are under pressure from below, as Mitsubishi, Canada's Bombardier, Russia's Sukhoi, and China's Comac are introducing short- and medium-range jets that will reduce the market shares of the best-selling Boeing 737 and Airbus 320 families. Will Boeing learn from its mistakes so that it can prevail and prosper in its second century? ■