

Journal

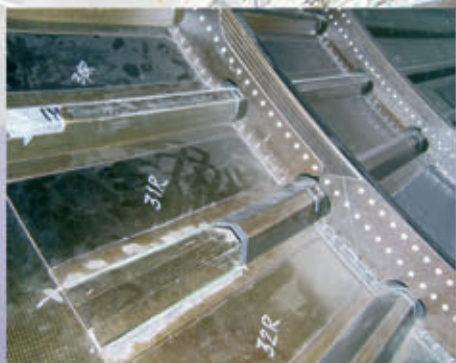
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and Manufacturing Engineering



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Cover story

Aircraft industry belongs to the intensively developing field of contemporary technology. It fascinates even accidental observers, and technological development, which is made here in the field of new materials and avant-garde technology decides many times about global progress.

Human dreams about conquering skies are dated since long time ago. It is beautifully although unreally symbolised by the legend about Daedalus and Icarus. Leonardo da Vinci (1452–1519) constructed one-person flying equipment - leg-operated ornithopters out of which none and never could fly. Trials of jumpers from towers: in 1503 - an Italian G.B. Danti, in 1507 - a Scotsman John Damian, in 1742 - a Marquise de Bacqueville, on 31 May 1811 - a tailor from Ulm Albrecht Ludwig Berblinger were also unfruitful. In 1849 an Englishman, sir George Cayley constructed successfully a triplane glider which soared for a few metres. A model of clock mechanism powered monoplane constructed in 1857-1858 by a French navy officer Felix du Temple de la Croix took off, flew and landed well, and in 1874 that constructor made a first jump by a true 17-metre-wingspanned machine. In 1889 a 41-year-old German engineer Otto Lilienthal built his first stiff-winged glider, and then for the next four years and in 1889-1896 made hundreds of 100-250-metre-long flies until 9 August 1896 when he made an unfortunate fly, came down and died. In 14 August 1901 an American Gustave Whitehead made a first fly of an engine airplane in the history although an uncontrolled one, outdistancing in that way brothers Orville and Wilbur Wrights who after the successful fly on 17 December 1903 were treated as engine pilots for a long time. On 25 July 1909 Luis Bleriot flew across English Channel for the first time. On 31 December 1910 Franklin Cody flew from London to Manchester, in 1929 Polish pilots Franciszek Żwirko and Stanisław Wigura made a flight in RWD-2 plane around Europe, and in 1932 they won in the Polish RWD-6 plane in the world challenge. In 1914 airplanes were used for the first time in army and in 1919 for air communication for a regular line when the German air company "Luftreederei" opened a line Berlin - Lipsk - Weimar.

Airplane production became the aim of creative activity for many businessmen and engineers. Some of companies founded yet at the beginning of aircraft industry in the 20 years of the previous century have functioned till today. The Boeing Company was incorporated in Seattle, Washington, the USA by William E. Boeing, on 15 July 1916, as "Pacific Aero Products Co.". On 9 May 1917 the company became the "Boeing Airplane Company". The first flight of the Boeing 314 Clipper which was the largest civil aircraft of its time, with a capacity of 90 passengers on day flights, and of 40 passengers on night flights was in June 1938. In 1958, Boeing began delivery of its 707, the United States' of America first commercial jet airliner, in response to the British De Havilland Comet, French Sud Aviation Caravelle and Soviet Tupolev Tu-104 'Camel', which were the world's first generation of commercial jet aircraft. With the 707, a four-engine, 156-passenger airliner, the USA became a leader in commercial jet manufacture. A few years later, Boeing added a second version of this aircraft, the 720, which was slightly faster and had a shorter range. A few years later, Boeing introduced the 727, a commercial jet airliner of similar size but with three engines, designed for medium-range routes and well accepted as a comfortable and reliable aircraft. Although production was discontinued in 1984. In 1967, Boeing introduced another short- and medium-range aircraft, the twin-engine 737. It has become since then the best-selling commercial jet aircraft in aviation history. In 1968 the roll-out ceremonies for the first 747 took place, at the massive new factory in Everett, about an hour's drive from Seattle. This four-engine airliner with its 450-passenger seats and its upper deck has an intercontinental range and a larger seating capacity than previous aircrafts. In January 1970, the first 747 flew its first commercial flight. This famous aircraft completely changed the way of flying. The 707 and 747 formed the backbone of many major airline fleets through the end of the 1970s until 2001. Boeing had to offer new aircraft, and developed the single-aisle 757, the larger, twin-aisle 767, and upgraded versions of the 737. In April 1994, Boeing introduced its most modern commercial jet aircraft 777, with a seating capacity of between 300 and 400 passengers. The 777 was the longest, range twin-engine aircraft in the world and the first one to feature a "fly-by-wire" system. This aircraft reached an important milestone by being the first airliner to be designed entirely by using CAD techniques with CATIA (computer aided three-dimensional interactive applications). Also in the mid-1990s, the company developed the revamped version of the 737, known as the 737NG, or "Next-Generation 737". It has since become the fastest-selling version of the 737 in history. In 1996, Boeing acquired Rockwell's aerospace units. The Rockwell products became a subsidiary of Boeing, named Boeing North American, Inc. In August of the next year, Boeing merged with McDonnell Douglas to form The Boeing Company. McDonnell Douglas was a major American aerospace manufacturer, producing a number of famous commercial aircrafts. It was founded from the firms of James Smith McDonnell and Donald Wills Douglas. Both men were of Scottish ancestry. Douglas established Davis-Douglas Company in early the 1920s in Los Angeles, California, the USA. He bought out his backer and renamed the firm the Douglas Aircraft Company in 1921. McDonnell founded J.S. McDonnell & Associates in Milwaukee, Wisconsin, the USA in 1928. His idea was to produce a personal aircraft for family use.

