The Zeppelin airship era

Ferdinand Count Zeppelin was born on July 8, 1838, in Constance. We know from his diary that as early as 1874 he was already investigating the idea of building a “balloon vehicle for conveying mail, cargo and passengers.” The idea gradually came to fruition – and in 1892, he commissioned the engineer Theodor Kober with the task of drawing up the design for an airship. On August 31, 1895, the Count was granted the first patent for a “dirigible airship with multiple, serially arranged gas cells”. He embarked on the construction of his first airship in Manzell by Germany's Lake Constance on June 17, 1899, assisted by Dr. Ludwig Dürr, who later became chief designer and builder of all the Zeppelin airships. On July 2, 1900, the first Zeppelin airship, LZ1, finally rose from its floating assembly hall into the evening sky above Lake Constance. Powered by two 14.2 hp Daimler engines, the airship had five people on board. After a journey of just 20 minutes the airship landed once more on the lake again. Further flights followed on October 17 – 1 hour and 50 minutes – and on October 24 – a 23-minute trip. However, lack of funding forced Count Zeppelin to dismantle LZ 1.

By 1905, the Count was ready to try again, and his second airship launched on a flight over Lake Constance on November 30 of that year. The new airship had a reinforced frame and engine power of 85 hp. However, on its second voyage on January 17, 1906, the airship had to make an emergency landing close to a small town named Sommersried (Allgäu), and was so badly damaged by a storm during the night that it had to be scrapped. After overcoming many challenges and difficulties, the Count commenced construction of LZ 3. On two two-hour flights on October 9 and 10, 1906, the LZ 3 was put through its paces and tested successfully on every conceivable steering maneuver. After completion of another floating hall in fall 1907, Count Zeppelin undertook a range of trials with the new airship, culminating in an eight-hour flight that year.

By this time, Count Zeppelin had finally convinced the general public that his airship had genuine practicable value. Therefore the German gov-

ernment made available a sum of 2.6 million marks to purchase the present airship and commission a second one – under the condition that the airship was able to undertake a 24-hour flight. Many hopes were pinned on the new LZ 4, which embarked on a 12-hour flight over the Swiss mountains on July 1, 1908, proving to the world the significance of the Zeppelin airship for air travel. On August 4, 1908, LZ 4 embarked upon its fateful 24-hour journey down the Rhine to Mainz. On the return flight, LZ 4 had to make a forced landing in Echterdingen due to engine damage. Shortly after landing, the airship was torn from its moorings by a storm. Out of control, it caught fire and burnt to nothing. Even though no one was seriously injured in the inferno, the accident would have meant the end of the airship project but for the spontaneous response from the public. Donations poured in from all over the country, amassing an impressive sum of more than 6 million marks. It was this donation which enabled Count Zeppelin to continue his life's work. The Count channeled these funds into the newly-founded Zeppelin Foundation.

On September 8, 1908, Count Zeppelin founded Luftschiffbau Zeppelin GmbH, and appointed Alfred Colsman, the managing director of the company. A new airship, the LZ 5, was completed in spring 1909 and stood the test of a flight of 37 hours and 39 minutes. In summer 1909, LZ 6 flew to Berlin. This was the last of the airships built in the floating hall at Manzell. The Manzell hall was closed, and a shipyard built in Friedrichshafen. In November 1909, the world’s first air transport company, the Deutsche Luftschiffahrts-Aktiengesellschaft DELAG, was founded in Frankfurt am Main. LZ 7 left the new shipyard in 1910, followed by LZ 8 and LZ 9. To develop suitable engines to power the airships, an engine construction plant, headed by Karl Maybach, was founded in Stuttgart. The first of the airships to be powered exclusively by Maybach engines was LZ 10, named “Schwaben” (or Swabia, the name of the region where Stuttgart is located). It was called the “lucky” airship.

Under the stewardship of Dr. Hugo Eckener, the “Schwaben” completed its many long-range flights with consummate ease. LZ 11, “Viktoria Luise”, left the Friedrichshafen shipyard in 1912. Of the following airships,

LZ 13 (“Hansa”) and LZ 17 (“Sachsen”) are worth singling out. Airships became more powerful with each new construction. In 1914 the engine plant was relocated to Friedrichshafen and renamed Maybach-Motorenbau. Airplanes had also caught the interest of Count Zeppelin at an early stage in his life, and the Count commissioned engineer Claudius Dornier with the design and manufacture of an airboat. The company Dornier-Metallbauten was founded in due course. Since it was also paramount to have appropriate reduction gear units and high-quality gear wheels to install in the airships, a dedicated factory, Zahnradfabrik Friedrichshafen, was founded in 1915, and the engineer Alfred Graf von Soden-Fraunhofen was appointed to lead the new company. Other subsidiaries were soon to follow: Ballonhüllen-Gesellschaft, Berlin; Zeppelin Hallenbau GmbH, Berlin and – to perform charitable works – the Zeppelin-Wohlfahrt GmbH, Friedrichshafen. Until July 31, 1914, the DELAG transported 10,197 passengers without accident on 1588 flights.

When World War I broke out, the civil airships were placed under military control and new ships also developed for warfare. Over 100 airships were constructed during the World War I. By early 1916, ships were already being built with a volume of 36,000 cubic meters, able to carry a load of 17,000 kg. New airships relentlessly pushed the boundaries of speed and altitude. Between July 26 and 31, 1917, the Zeppelin LZ 90 (army name LZ 120), captained by Lieutenant Ernst A. Lehmann, undertook a flight of 101 hours. LZ 101 (marine name L 55), captained by Hans C. Flemming, set an altitude record on October 19 of the same year of 7600 meters. 104 (marine name L 59), captained by Ludwig Bockholt on an expedition to German East Africa, performed a masterly achievement. It took a cargo of 15 tonnes on a 6,800 kilometer journey, landing after 95 hours flight time back at its port of origin in Jamboli (Bulgaria). By summer 1918, the airships in the 6200 cubic meter class were advanced enough to carry 44,000 kg. Powered by seven 260 hp Maybach engines, the airships achieved an impressive performance.

Count Zeppelin did not see the end of the war. He died suddenly on March 8, 1917, in the midst of planning the future use of airships as a global means of transport.

Following the war, things also changed for airship construction, with new and fresh challenges to surmount. Re-built by Dr. Eckener, the DELAG operated a regular flight service between Friedrichshafen and Berlin with airship LZ 120 “Bodensee”. After 101 flights, the service was however discontinued on order of the Allied forces. LZ 120 and LZ 121 “Nordstern” were delivered to Italy and France. In 1924 LZ 126, called the “reparation ship” (ZR III) was completed and transferred to the USA on October 12. After a smooth trip across the Atlantic, the airship landed in Lakehurst on October 15. The ship and its crew received a tremendous reception.

To be able to build a ship for global travel, Dr. Eckener now decided to appeal to the German people for donations. The Zeppelin-Eckener donation brought in a grand total of 2.5 million marks, funding the construction of LZ 127, “Graf Zeppelin”. The maiden flight was on September 18, 1928. The first flight carrying passengers, mail and freight was to Lakehurst (New Jersey) and took place between October 10 and 15. Well over 100 transatlantic flights were to follow. Some notable flights include the round-the-world voyage of the “Graf Zeppelin” from August 15 to September 4, 1929, the first scheduled three-point flight in 1930 from Friedrichshafen via Rio de Janeiro to Lakehurst and back to Friedrichshafen, the research voyage into the Arctic from July 24 to 30, 1931 and the scheduled flights to Rio de Janeiro every 14 days.

With DELAG long since dissolved, a new subsidiary, the Deutsche Zeppelin-Reederei GmbH, Frankfurt, was founded to run regular transatlantic flights. On March 4, 1936, the new airship LZ 129 “Hindenburg” went into service. With a length of 245 m and a diameter of up to 41.2 m, it was the biggest airship ever built. Powered by four Daimler diesel engines with 1050 hp each, it could attain a cruising speed of 125 km per hour. On 56 long-distance flights across land and sea, LZ 129 – ahead of all other modes of transport of its era – demonstrated utmost safety. In total, the

airship travelled some 300,000 kilometers. After a complicated landing maneuver, delayed and made more difficult by a storm, the Hindenburg exploded on May 7, 1937 in Lakehurst. 13 passengers, 22 crew members and one member of the land crew lost their lives.

Following this catastrophe it was clear that it would no longer be possible to fill passenger airships with hydrogen. The new airship LZ 130, which was already in construction, was retrofitted for operation with helium. However, since the USA barred exports of helium, the airship had to revert to hydrogen. On September 14, 1938, LZ 130 “Graf Zeppelin II” embarked on its first trial flight. Some 30 of these trails were conducted. Following the start of the Second World War, the airship was decommissioned and remained in the Frankfurt airship port. On the command of the German Air Ministry, airships LZ 127 and LZ 130 and the halls in Frankfurt were demolished on May 6, 1940. The proud era of the Zeppelin airships was over.