100 Years of Hangar Advances: Helping Commercial Airports Prosper

By Patrick Brown, AIA, LEED AP

Successful commercial airport operations depend on many parts of the system coming together to best serve the flying public. Hangars are seldom mentioned as a part of those airport operations, but safe and reliable aircraft, kept on-line and flying every day, form the nucleus of the entire air transportation network. Without hangars, aircraft availability is diminished, and air service becomes less reliable.

Some of the first known aircraft hangars are linked to the birth of aviation. A hangar at Kitty Hawk, little more than an outdoor timber shed constructed in 1902, served as the shelter for the original Wright Flyer before the Wright brothers made aviation history in 1903.

Hangars came about at commercial airports when aircraft stayed airworthy long enough to need repair instead of replacement. General aviation pioneer Clyde Cessna crash landed his first aircraft 12 times before making his first successful landing in 1911. When aircraft actually landed, remained intact and airworthy or in need of only minor repair, hangars became essential.

Hangars soon became standard as new commercial airports were being built around the United States. Burbank United Airport (now Bob Hope Airport) opened in 1930 with a terminal and two hangars to support aircraft production and maintenance.

Changing Aircraft, Changing Facilities

Burns & McDonnell embarked on its first hangar project in 1942 at Smoky Hill Army Airfield in Salina, Kan. This hangar is still in use today at what is now the Salina Municipal Airport. While the longevity of the structure is a testament to the design, it hardly meets today’s sophisticated demands for hangar technology. As aircraft grew in length and wingspan, hangars answered the challenge with longer clear spans and larger operable doors.

Hangar technology also advanced with aircraft technology. From the DC-3 and DC-6 piston engine airliners to the jet age of the DC-8 and B707, and on to the B747-8 and A380, aircraft size and complexity keep hangar designers and builders challenged to provide larger and more advanced buildings.

Gains in aircraft complexity now require repairs to be divided among components and subsystems. Hangar facilities added shops for component repairs. Today’s advanced aircraft Maintenance Repair & Overhaul (MRO) facilities have a variety of repair shops. Burns & McDonnell is engaged in a project that includes more than 40 shops for functions such as seat repair, landing gear overhaul and advanced avionics repair. These shops also support 20 hangar bays.

Safety and Efficiency for Crews

Aircraft became so complex and so large that working from a ladder or a simple stand was impractical. Larger components must be handled by overhead cranes in a hangar bay. Simple work stands have evolved into sophisticated work docks. Burns & McDonnell’s latest hangar designs include adjustable work docks for the nose, fuselage, wings and tail, with some docks suspended from the long-span roof above. This allows the docks to be adjusted to accommodate varied aircraft. It also enables connections for power and compressed air for tools, work lights and air conditioning for workers.

Over time, as aircraft fleets grew, airlines saw maintenance tasks grow beyond their staffing and facilities capacity. Commercial airports found less area available for large hangar and shop complexes. Third-party MRO companies were born. In today’s competitive environment for MRO work, tasks are

Congress adopts the Air Commerce Act of 1926, which authorized the Secretary of Commerce to designate air routes, develop air navigation systems, and license pilots and aircraft

1923
First transcontinental non-stop flight

1926
Deutsche Luft Hansa (now known as Lufthansa) begins scheduled service in Germany
expedited to speed the aircraft back into revenue-producing flight, minimizing hangar turn times. Today’s newest hangar facilities are equipped with work docks, automated parts storage and delivery, and shop innovations that make quicker work possible. Commitment to technology also reduces the work hours required to complete repairs through increased efficiency and productivity, keeping MRO providers competitive.

From the Wright brothers’ simple shed on Kill Devil Hills to today’s complex hangar and maintenance facilities, the first century of commercial airports witnessed steady growth and advances in aircraft maintenance and safety reliability. Thanks to advances in maintenance technology and the hangar facilities that support and enhance that technology, commercial airports operate today with safe and reliable aircraft to serve the traveling public.

**Why is the aviation term hangar spelled differently than the hanger in your closet?**

One of the most misspelled words, h-a-n-g-a-r comes from Middle French hanghart, meaning enclosure near a house. The word was no doubt adapted and adopted to describe this unique building type.

Airfield hangars have evolved from the round-topped buildings of the early years to complex, efficient facilities that we know today.

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**Pan American Airlines inaugurates its first passenger flight from Miami to San Juan by way of Belize and Managua**

**First flight lands at Candler Field, today’s busiest U.S. airport — Hartsfield-Jackson Atlanta International Airport**

**First female flight attendant, Ellen Church, is hired by Boeing Air Transport (now United Airlines)**