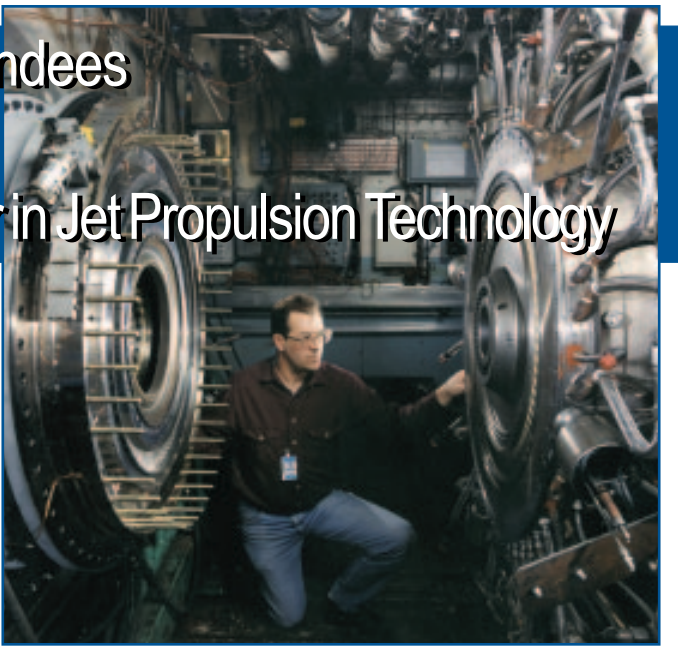
Aerospace/Airline Forum Attendees To Tour GE Aircraft Engines— World Headquarters for Leader in Jet Propulsion Technology



Engine testing at GE Aircraft Engine's Evendale Plant. In addition to being GEAE's world headquarters, the Evendale Plant is also headquarters for the growing GE Engine Services operations, which has engine overhaul and component repair facilities throughout the world.

In October 1948, a handful of employees from the GE Aircraft Gas Turbine Division in Massachusetts set up shop in a massive, abandoned manufacturing complex near the city of Lockland, OH. No one could have imagined how important this plant— reborn with the arrival of General Electric Co.—would become. From its humble beginnings, the plant is now the headquarters for GE Aircraft Engines (GEAE), the world's largest manufacturer of jet engines, and has been a major force in the advancement of jet propulsion.

Located a few miles north of Cincinnati, the plant was radically different before GE's arrival. Constructed during World War II and opened with a ribbon-cutting ceremony attended by Orville Wright, the vast manufacturing complex boomed during the war years as the Wright Aeronautical piston engine factory, employing close to 30,000 people. But when the war ended in 1945, the workers went home and the buildings were emptied.

Three years later, GE's Gas Turbine Division in Lynn, MA (which developed America's first jet engine in 1942), quietly took up residence in Building 500 of the largely empty factory. GE leased the space as an overflow assembly and test site for its new military fighter jet engine, the J47, using components manufactured at Lynn and other sites.

Korean Conflict Spurs Demand for Engines

On February 28, 1949, the plant formally "opened" with delivery to the U.S. Air Force of the first Lockland-produced J47 engine. At the time, plant employment had reached 500 people, and was expected to possibly peak at 1,000. The 1950 outbreak of the Korean Conflict changed everything. Demand exploded for GE's J47 engine, which powered the Boeing B-47, North American B-45, Convair B-36 bomber and North American F-86, the mainstay fighter that recorded a 14-to-1 win ratio in air combat in Korea.

The war created a boom environment. A ten-fold increase of GE employees resulted—from 1,200 to 12,000 people in 20 months—requiring a tripling of the manufacturing space. Over the next several years, GE's J47 became the world's most produced gas turbine, with more than 35,000 delivered by the end of 1956. That engine scored two major firsts: It was the first turbojet certified for civil use by the Civil Aeronautics Administration, and it was the first to use an electrically controlled afterburner to boost its thrust.

In 1954, the manufacturing complex was designated as GE's production facility for large engines, while its sister plant in Massachusetts focused on developing and producing smaller jet engines. For all of its success, however, Lockland's J47 engine was inadequate for the planned Century series of fighters of the 1950s, which would fly at more than twice the speed of sound. The challenge of powering these aircraft resulted in one of GE's most important developments for the jet engine—the variable stator. The movable stator vanes in the engine helped the compressor cope with the huge internal variations in airflow from takeoff to high supersonic speeds.

First Variable Stator Vanes Incorporated into J79 Turbojet

In 1956, the plant (incorporated into Evendale and thereafter called the Evendale Plant) began production of the J79 turbojet engine, the first operational engine to incorporate variable stator vanes. More than 17,000 J79s were built over the next 30 years, powering aircraft such as the F-104 Starfighter and F-4 Phantom II fighters and the B-58 Hustler bomber. On the Convair 880 airliner, the CJ805 derivative of the J79 engine marked GE's somewhat tentative entry into the commercial airline market in the late 1950s.

The 1950s saw further technology advances: the J93, the first engine to operate at three times the speed of sound, and the addition of an aft fan on the CJ805 turbojet to create the first turbofan for commercial service (with application on the Convair 990 in the early 1960s).

Next, a race to power the USAF C-5 Galaxy cargo plane prompted GE's

engineering team in Evendale to put a larger fan on the front of an engine. The result: the TF39, the world's first operational high bypass turbofan, which provided remarkable fuel efficiency and changed the world of aviation forever.

GE Increases Its Civil Market

Building on the TF39 technology, GE entered the civil market in earnest in 1971 with the CF6 engine on the DC-10. Also, in 1971, GEAE was chosen by Snecma of France as a partner in the development of a smaller civilian turbofan. GE and Snecma set up CFM International (CFMI) as a 50/50 joint company to build engines based on French fan technology and the core technology of GE's F101 engine, which powers the B-1 bomber.

CFMI delivered its first engine in 1981. Since then, it has become one of the best-selling jet engines in history, powering the Boeing 737 aircraft family, the Airbus A320 aircraft family, and several military applications, including the re-engineering of the USAF KC-135 tankers. Since the early 1980s, the CF6 family of engines have been the best-selling power plants for widebody aircraft. such as the Boeing 747 and 767, the Airbus Industrie A300, A310, and A330, and the U.S. Government's Boeing VC-25A, better known as "Air Force One."

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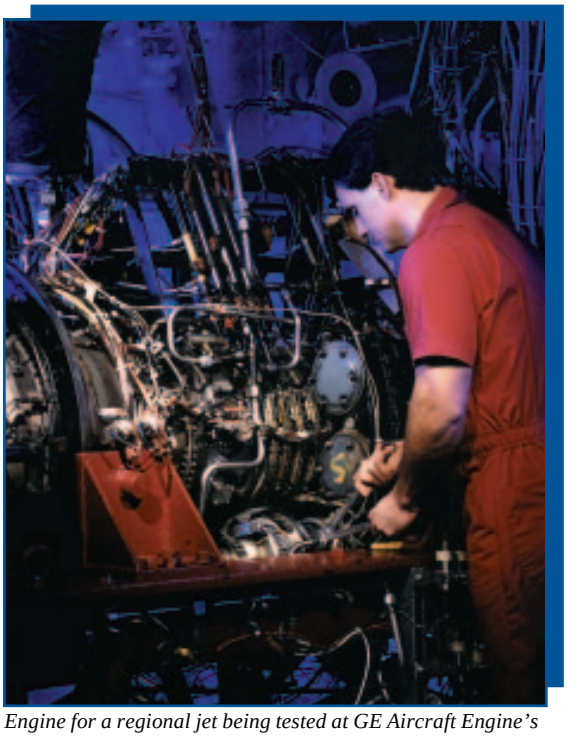
Military Engines

Military engines blossomed in Evendale in the 1980s as well, with the F110 for the F-16 Fighting Falcon and F-14 Tomcat and the F118 in the B-2 bomber. At one point in the mid-1980s, the GE plant employment reached almost 20,000 as both military engine development and production peaked, combined with GEAE's tremendous success in the commercial engine sector. At that time, GEAE became the world's largest producer of jet engines, a position still held today. In the early 1990s, the Evendale facility faced perhaps its greatest challenge when the end of the Cold War, combined with a drastic decline in the commercial aviation business, led to a restructuring of America's aerospace industry. This, in turn, led to a difficult restructuring of the Evendale plant to ensure its status as an industry-leading operation in a brutally competitive environment.



Engine for a regional jet being tested at GE Aircraft Engine's Evendale Plant.

The Evendale Plant Today

The Evendale plant, with more than 7,000 workers today, enters the 21st century at the forefront of jet propulsion. In the 1990s, the GE and CFMI continued to win more than 50 percent of all large commercial engine orders. Fueled by the success of the Boeing 737 and Airbus A320 aircraft families, more than 1,000 CFM56 engines will be delivered in 1999 and in the year 2000. The GE90, the world's largest jet engine, was developed in Evendale. Now, a new derivative GE90 engine, capable of an unprecedented 115,000 pounds of thrust for the Boeing 777-200X/300X, is being developed by Evendale engineers.

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Tour Capacity is Limited! Register by March 3

Because of security and liability considerations, tour attendance is limited. Only Forum registrants and exhibitor personnel will be allowed to take the tour. "Exhibit-only" registrants are not eligible.

- Tour attendees MUST take the AESF-provided transportation to GEAE.
- Tickets for this plant tour are $30. Tickets will not be available on site.
- This will be an outstanding tour! Please register with payment by March 3. Use the registration form on p. 33.