

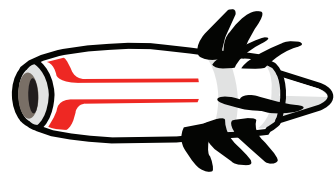
The Road to RISE

CFM International, a 50-50 joint company between GE Aerospace and Safran Aircraft Engines, unveiled the Revolutionary Innovation for Sustainable Engines (RISE) program in 2021. The RISE program aims to reduce fuel consumption and CO₂ emissions by more than 20% compared with today's most efficient engines. The innovations at the heart of the RISE program have resulted from years of pioneering research and experimentation. Here are five major GE Aerospace innovations that have paved the way.



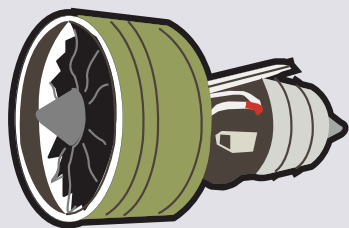
1978 High-Bypass Geared Turbofan Tested

GE Aerospace teams with NASA on the Quiet Clean Short-Haul Experimental Engine (QCSEE). First use by GE of a gear system, variable-pitch fan blades, and composite materials.



1988 Unducted Turbofan Crosses the Atlantic

The GE36, an experimental unducted turbofan engine developed with Safran, completes first transatlantic flight to U.K.'s Farnborough International Airshow.



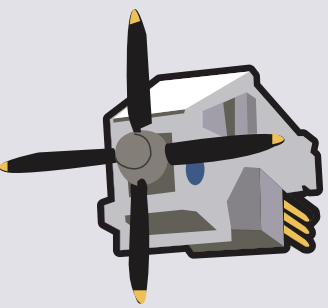
1995 Carbon-Fiber Composites Lift Off

GE90 is first certified commercial jet engine to use lightweight carbon-fiber composite fan blades, which reduce weight and increase fuel efficiency.



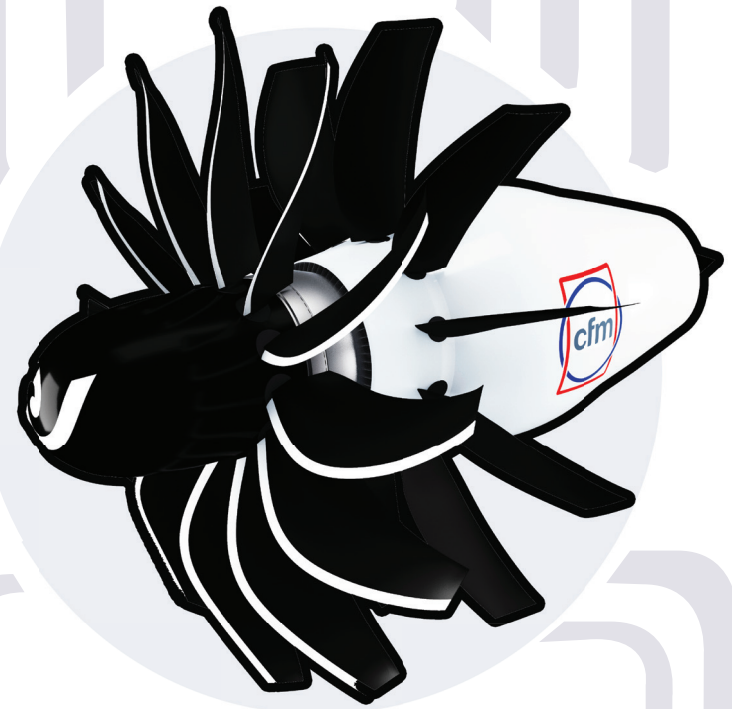
2016 CMCs and Additive Parts Can Take the Heat

CFM LEAP engine enters service with first ceramic matrix composites (CMCs) and additively manufactured components in hot section of commercial aircraft engine.



2022 Hybrid Electric System Works at 45,000 Feet

GE Aerospace and NASA test the industry's first megawatt-class, multi-kilovolt hybrid electric propulsion system in simulated high-altitude conditions.



CFM RISE Program Goals:

20%+
gains in fuel efficiency

100%
compatibility with sustainable aviation fuel (SAF)

Reinventing the Future of Flight



\$2 billion

GE Aerospace R&D spending in 2022*



200 million

composite fan blade flight hours since 1995



1,000+

engineers dedicated to CFM RISE

*GE, customer, and partner funded.