The LEAP engine is a worthy successor to the CFM56 family, the best-selling engine in aviation history. Leveraging the strengths of its parent companies, GE and Safran Aircraft Engines, the LEAP engine incorporates leading-edge technologies to meet customers’ increasingly demanding economic and environmental requirements. These technology innovations include optimized thermodynamic design, higher bypass and compression ratios, advanced 3-D aerodynamic design, and greater use of lightweight materials.

The LEAP family of engines is designed to power commercial aircraft requiring 20,000 to 35,000 pounds of thrust.

CFM COMMITMENTS:
- BEST ENGINE PERFORMANCE
- BEST EXECUTION
- TECHNOLOGY FIRSTS

MAINTENANCE COSTS
Comparable to today’s industry-leading CFM56 engines

THE LEAP ENGINE REPRESENTS THE OPTIMUM COMBINATION OF CFM INTERNATIONAL’S UNRIVALED EXPERIENCE AS THE PREFERRED ENGINE SUPPLIER FOR SINGLE- AISLE AIRCRAFT AND ITS 40+ YEAR INVESTMENT IN RESEARCH AND DEVELOPMENT.

MAINTENANCE COSTS
Comparable to today’s industry-leading CFM56 engines

Aircraft compliance
WITH LATEST CHAPTER 14
NOISE REGULATION

MAINTENANCE COSTS
Comparable to today’s industry-leading CFM56 engines

15% REDUCTION
in fuel consumption and CO2 emissions versus previous generation engines

UP TO 50% MARGIN ON NOx EMISSIONS versus CAEP/6 standard
CFM has leveraged all of this unrivaled experience for the LEAP engine program, and the basic principle hasn’t changed: give customers the best possible engine, today and for years to come.

CFM has a long history of constantly investing in its product lines to deliver greater value. This is the approach the company used to develop the LEAP engine and will continue to develop new technologies that will be incorporated into the engine throughout its service life, as well as in a new generation of engines.

The LEAP is the fastest-selling engine in aviation history.

CFM and Safran Aircraft Engines together since 1974, partners through 2040+

GE and Safran Aircraft Engines have ordered the LEAP as of May 2019

*Assuming a steady production rate of 2000 engines per year.

A320neo
Dual-source (LEAP-1A)

737 MAX
Single-source (LEAP-1B)

C919
Sole western powerplant (LEAP-1C)

5,000,000+ LEAP engine flight-hours

100+ OPERATORS

BACKLOG EQUAL TO 8 YEARS of production*
3-D woven carbon fiber composites used for the fan blades and fan case on the LEAP engine are revolutionizing the single-aisle market. This material helps reduce engine weight by 500 lbs per engine. The 3-D RTM technology is highly impact resistant and, thus, reduces maintenance requirements.

Composite materials, such as CMCs, are made from separate materials that are joined together. CMCs are produced from silicon carbide fibers 5 times as thin as human hair embedded in a silicon carbide matrix and coated in a proprietary coating creating a part that is stronger than metal. CMC materials have a 20% better thermal resistance (reducing cooling needs), two times the material strengths and are 2/3 lighter vs the metallic alloys they replace (contributing to engine weight reduction), all of those contributing to better fuel efficiency.

CFM’s LEAP engine is an impressive package of innovative technologies. It sets a new standard in engines for single-aisle commercial jets, providing a 15% reduction in fuel consumption and CO2 emissions versus previous generation engines.
THE LEAP ENGINE HAS DEMONSTRATED AN UNRIVALED UTILIZATION SINCE IT STARTED REVENUE SERVICE IN AUGUST 2016. ITS FOOTPRINT IS NOW GLOBAL AND HAS DELIVERED PERFORMANCE IN LINE WITH THE COMMITMENT MADE BY SAFRAN AND GE.

As of June 2019, more than 1,650 LEAP engines were in service on six continents, flying in various environments, logging more than 5,000,000 flight-hours.

Designed for reliability, the engine’s proven architecture has enabled the highest utilization rate in its thrust class. LEAP engines have demonstrated longer time spent in the air versus previous generation engines, flying an average of 10 hours a day and up to 11 flight cycles, every day.

To operators, this means more flights and more flexibility to meet their economic objectives, with the opportunity of opening up new routes and supporting longer flight legs.

Delivering 15% fuel efficiency, the LEAP meets its environmental challenge by reaching the rate of 90 miles per gallon per passenger. A fuel saving of more than 60% compared to an average car drive.

It is highly gratifying to see the continued confidence our customers have in our products. Everyday, the LEAP product is delivering world-class fuel efficiency and utilization, fulfilling the commitment we made to customers more than a decade ago.

Gaël Méheust, President and CEO of CFM International
CFM also provides 24-hour support for Aircraft on Ground (AOG) issues, spare parts and spare engine requirements, and technical assistance, while our Technical Training facilities in the U.S., France, China and India provide comprehensive, hands-on and digital maintenance training for all engine models. CFM provides also a dedicated worldwide LEAP experts network to support new operators.

INITIATIVES:
- Dedicated LEAP experts network supporting new LEAP operators
- Entry into Service Road Map customized for each airline
- New LEAP Customer Support Center (CSC), (Available 24/7)
- LEAP Maintenance Training Centers
- Flight Ops dedicated to airline pilots LEAP training

WORLDWIDE COVERAGE FOR A NEW STANDARD OF EXCELLENCE

WORLDWIDE NETWORK

- Saint-Quentin-en-Yvelines, France
- London, United Kingdom
- Brussels, Belgium
- Doha, Qatar
- Shanghai, China
- Seoul, South Korea
- Chengdu, China

MAXIMIZED RESPONSIVENESS

- Tarbes, France
- Villaroche, France
- Rio de Janeiro, Brazil
- Dubai, United Arab Emirates
- Subang, Malaysia
- Singapore
- Brussels, Belgium
- London, United Kingdom

STANDARDIZED PRACTICES

- Lafayette, Indiana, United States
- Cincinnati, Ohio, United States
- Dallas, Texas, United States
- Querétaro, Mexico
- Saint-Quentin-en-Yvelines, France
- Villaroche, France
- Rio de Janeiro, Brazil
- Doha, Qatar
- Shanghai, China
- Seoul, South Korea
- Chengdu, China

17 ON-SITE SUPPORT CENTERS

- Tarbes, France
- Villaroche, France
- Saint-Quentin-en-Yvelines, France
- London, United Kingdom
- Southampton, United Kingdom
- Brussels, Belgium
- Doha, Qatar
- Shanghai, China
- Seoul, South Korea
- Chengdu, China

4 TRAINING CENTERS

- Lafayette, Indiana, United States
- Cincinnati, Ohio, United States
- Dallas, Texas, United States
- Querétaro, Mexico

3 CUSTOMER SUPPORT and DIAGNOSTICS CENTERS

- Lafayette, Indiana, United States
- Cincinnati, Ohio, United States
- Dallas, Texas, United States

A PROVEN GLOBAL SUPPORT NETWORK

- 91 ON-SITE SUPPORT CENTERS
- 17 ON-SITE SUPPORT CENTERS
- 4 TRAINING CENTERS
- 3 CUSTOMER SUPPORT and DIAGNOSTICS CENTERS
- A PROVEN GLOBAL SUPPORT NETWORK

CLOSE TO OUR CUSTOMERS

ON-SITE SUPPORT

WORLDWIDE COVERAGE FOR A NEW STANDARD OF EXCELLENCE
This achievement is anchored in the development and continuous improvement of world-class facilities on both sides of the Atlantic, with each partner responsible for half the workshare. GE develops and builds the core, comprising the high-pressure compressor, high-pressure turbine, and the combustor, while Safran Aircraft Engines designs and builds the fan, the accessory gearbox, and the low-pressure compressor and turbine. Final assembly of CFM engines is performed at both GE and Safran Aircraft Engines facilities.

INDUSTRY’S HIGHEST PRODUCTION RATE
CFM maintains the highest production rate in the industry and the company is modernizing and expanding its facilities to ensure the successful ramp-up in production for the new LEAP engine. Both GE and Safran Aircraft Engines have added new manufacturing capability worldwide, making a combined capital investment of more than $1 billion.

As the ramp-up continues, CFM is on track to deliver 1,800+ LEAP engines in 2019 and will reach more than 2,000 engines per year by 2020. CFM will continue to build CFM56 spare engines for several years to support the in-service fleet.

CFM ENGINES ESTIMATED DELIVERIES

Note: «Year #» stands for the number of production years for each engine. For instance, after 5 years of production, ~600 CFM56 were delivered (~1985) vs ~2,000+ LEAP (~2020).
CFM COMMITMENTS

BEST ENGINE PERFORMANCE
fuel consumption, maintenance cost, reliability, minimal environmental footprint.

BEST EXECUTION
35,500+ CFM engines delivered, unprecedented ramp-up.

TECHNOLOGY FIRSTS
proven architecture, multiple proven and new technologies.
ENGINES OF CHOICE

HIGH RESIDUAL VALUE MAXIMIZES FLEET AVAILABILITY

MAXIMIZES FLEET AVAILABILITY

WORLD CLASS RELIABILITY

OPERATIONAL EFFICIENCY

ADVANCED, PROVEN TECHNOLOGIES

GLOBAL SUPPORT CAPABILITY

5,000,000 FLIGHT HOURS

96% UTILIZATION

OPENS NEW ROUTES

CLEAR ADVANTAGE

INNOVATION

ADVANCED, PROVEN TECHNOLOGIES

GLOBAL SUPPORT CAPABILITY

www.cfmaeroengines.com