



The Power of Flight

# CFM International Media Briefing

November 30, 2018

Hanoi, Vietnam

# Today speaker



**Gaël Méheust**

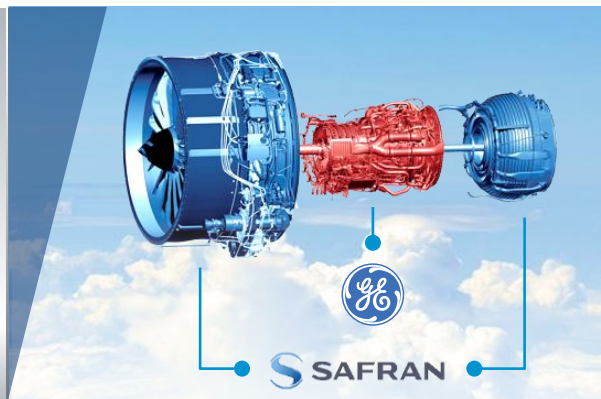
President and CEO

CFM International



# CFM Legacy

# CFM International, a long-standing joint company



GE Y SAFRAN AIRCRAFT ENGINES  
SUCCESSFUL PARTNERS  
**for over 40 years**

## 50/50 joint company

THE WORK SPLIT TAKES ADVANTAGE OF  
THE TECHNOLOGICAL EXPERTISE AND  
CAPABILITIES OF BOTH GE AND SAFRAN  
AIRCRAFT ENGINES



**#1** engine supplier  
worldwide for mainline  
commercial jets  
(over 100 seats)



More than **590**  
operators worldwide



Partnership extended  
to **2040**

# A real 50/50 joint company



Fan &  
accessory gearbox



Core engine



Low-pressure  
turbine



## All activities shared 50/50

Sales, design, development;  
production, support & service  
– same work share for both CFM56 and LEAP



# CFM56: The world best selling commercial engine



 AIRBUS

A320ceo



CFM56-5B



 BOEING

737 NG



CFM56-7B



**99.98%** Dispatch reliability



CFM56

More than  
**33,000**  
CFM56  
engines delivered  
worldwide



Close to  
**1 billion**  
flight hours

Vietnam Airlines became  
the **first Vietnamese**  
operator in 1995



**24,000**  
CFM56

engines in service

Support of the  
fleet beyond 2040



**5 Million**

passengers use  
CFM-powered  
aircraft daily



Every **2 sec.**  
a CFM-powered aircraft  
takes off somewhere in the  
world



# LEAP Engine



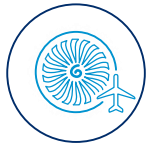
# LEAP: a worthy successor to the CFM56



Program launched in **2008**  
to power the new generation of single aisle aircraft.



Selected by Airbus to power the A320neo;  
by Boeing for the B737 MAX; by COMAC for the C919.



## LEAP

represents the combination of  
CFM's reliability and unrivaled  
technologies:

- 3D Woven composite fan blades
- CMCs materials
- Additive Manufacturing



LEAP began  
commercial operation with A320neo in **2016**







# LEAP: Most successful service entry in history

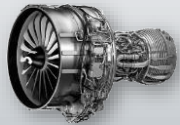


A320neo



ON TIME

**LEAP-1A**  
Entry into service  
August 2016

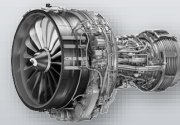


737 MAX



ON TIME

**LEAP-1B**  
Entry into service  
May 2017



C919



ON TIME

**LEAP-1C**  
First flight  
May 2017



**LEAP**

**16,500+**

Engines orders as of the  
end of October 2018

**80**



operators on  
**5 continents**

# LEAP is delivering what we promised



## PERFORMANCE



**15+%** better fuel efficiency



More thrust and lower noise & emissions

## BEST-IN-CLASS ASSET UTILIZATION



Product reliability; no design issues



Predictive maintenance

## LIFE CYCLE MAINTENANCE COST



Global team of support engineers

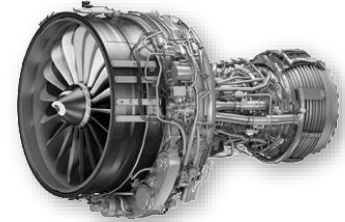


Broad offerings through CFM Services



# LEAP fleet in service: nearly 3 million flight hours

**96%** flown days



**LEAP-1B**

EIS May 2017

More than 830,000 cycles  
~Two million hours  
35 operators  
10+ hours average per day  
~300 aircraft in service

## Utilization

More than 325,000 cycles  
~One million hours  
45 operators  
10+ hours average per day  
~260 aircraft in service

**LEAP-1A**

EIS August 2016



**96%** flown days

Fleet statistics are engine only



# Production & Support

# Unprecedented ramp-up



BACKLOG:  
**14,996 LEAP**  
**830 CFM56**



- Represents **~7 years** of production at current levels  
... uninterrupted LEAP engine deliveries since April 2016
- ... **1,000<sup>th</sup> LEAP engine** delivered in July  
... LEAP powering **75%** of new single-aisle deliveries
- On track to delivery **1,100 LEAP** engines in 2018 ; **2,000** in 2020

## Meeting unprecedented ramp up

- Began preparing nearly a decade ago
- ramp rate has tripled quarter-over-quarter in 2018
- ... **dual and multiple source** strategy on critical parts 100% in place
- 8 new facilities built by GE and Safran
- 1+ billion USD investments in capacities

# CFM Global Support Capability



- 250+ field service engineers
- 30 Specifically trained LEAP experts
- 10 Overhaul shops
- 8 Component repair shops
- 15 On-site support locations
- 5 Customer training facilities
- 3 call centers – 2,200 inquires per month
- 4 Material distribution centers

 Planned capability



# A strong industry

# Industry is strong



## GLOBAL FLEET WILL ALMOST DOUBLE IN THE NEXT 20 YEARS



**1,000** net new aircraft to be added to worldwide fleet in 2018

CONSUMERS WILL SPEND **1% of GDP** ON AIR TRAVEL ... \$870 BILLION



RPKs grew **6%** in April vs. 2017  
Average load factor is above **80%**



**~\$34 BILLION\***  
**NET PROFIT PROJECTED FOR 2018**

\* Source: IATA June 2018 Economic Forecast

## ON WATCH ...



Fuel costs ... now -24% of average op cost vs



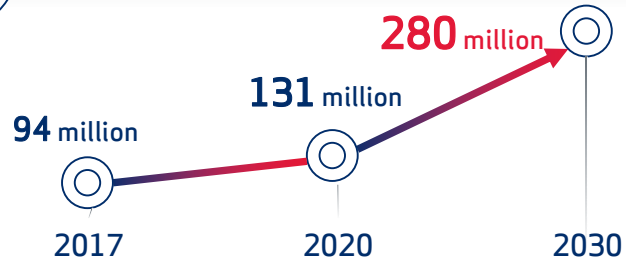
Passenger traffic worldwide will double in the next 20 years



# Vietnam is an important market



Vietnam aviation is growing fast



Vietnam is the fastest growing passenger market in the world

23 active airports by 2020 ... 28 airports by 2030

\* Source: International Airport Council





# CFM in Vietnam

# CFM: 23 years in Vietnam



1995

Vietnam Airlines takes delivery of first CFM56-5B-powered Airbus A320



2011

VietJet begins operation with CFM56-5B powered Airbus A320



2016

VietJet orders 100 LEAP-1B-powered Boeing 737 MAX airplanes



2018

Bamboo Airways becomes the first operator in Vietnam of the LEAP-1A on the Airbus A321neo



Thank you!

[cfmaeroengines.com/vietnam2018](https://cfmaeroengines.com/vietnam2018)