FAA CLEEN PHASE III

CONSORTIUM – PUBLIC PRESENTATION

SAFRAN NACELLES - LEAD PROJECT

SAFRAN

AGENDA

Company overview

LeAD concept

Project accomplissements

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SAFRAN NACELLES OVERVIEW

AN INTERNATIONAL HIGH-TECHNOLOGY GROUP

World's No.3 aerospace company
(excluding aircraft manufacturers)

World's No.2 aeronautical equipment company

More than **79,000 employees**
In **30 countries**

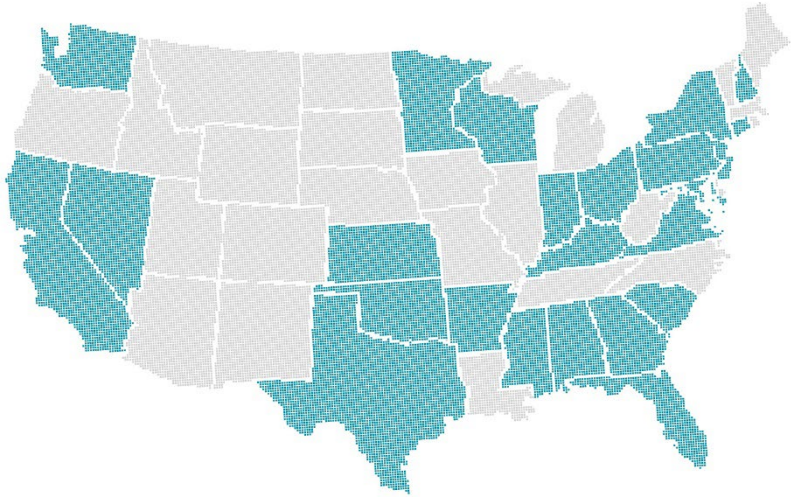
€16.46 Billion*
in revenue

4 core businesses:
Aerospace propulsion
Aircraft equipment
Aircraft interiors
Defense

€1.21 Billion*
in R&D expenditures

* 2020 figures

SAFRAN'S U.S. FOOTPRINT



Nearly
50 years
of committed
operations in the U.S.

8,000
employees
in
24 states

Safran Companies:

Safran Aero Boosters
Safran Aerosystems
Safran Aircraft Engines
Safran Cabin
Safran Electrical & Power
Safran Electronics & Defense
Safran Helicopter Engines
Safran Landing Systems
Safran Nacelles
Safran Passenger Innovations
Safran Power Units
Safran Seats

Safran Joint Ventures:

A-Pro
CFAN
CFM International
FADEC International
Nexcelle
Propulsion Technologies International

SAFRAN NACELLES

3,500
employees

A world leader
for nacelles and services

A worldwide footprint
with over 10 sites

€1.2 Billion
in sales*

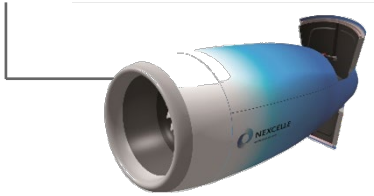
* 2020 figures

SAFRAN NACELLES - MARKET SEGMENT

Commercial aviation

Regional aviation

Business aviation



More than 78,000 flight hours everyday

19,000 Safran Nacelles components in service

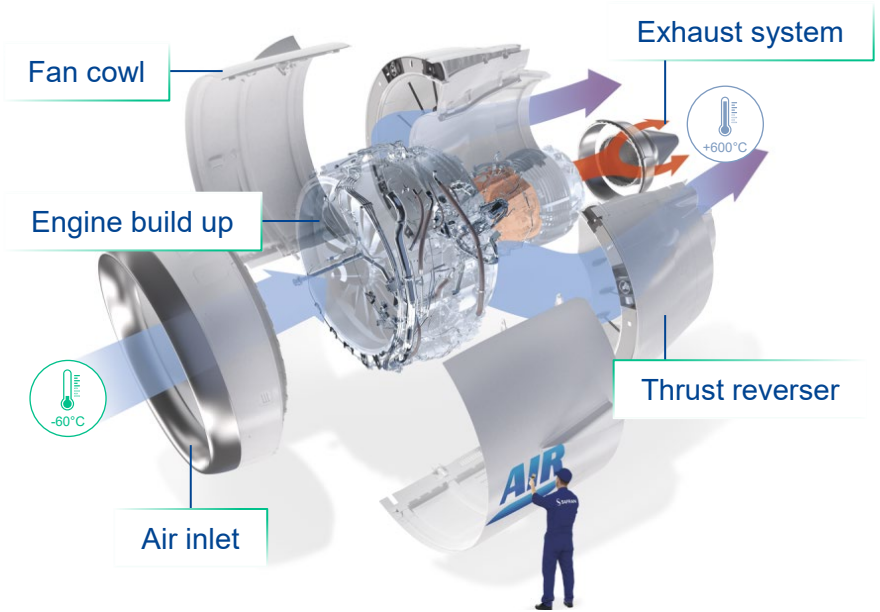
A thrust reverser cycle every **2 seconds**

250+ airline customers

2020 figures

The nacelle - A major, high-tech system at the interface between the engine and the aircraft

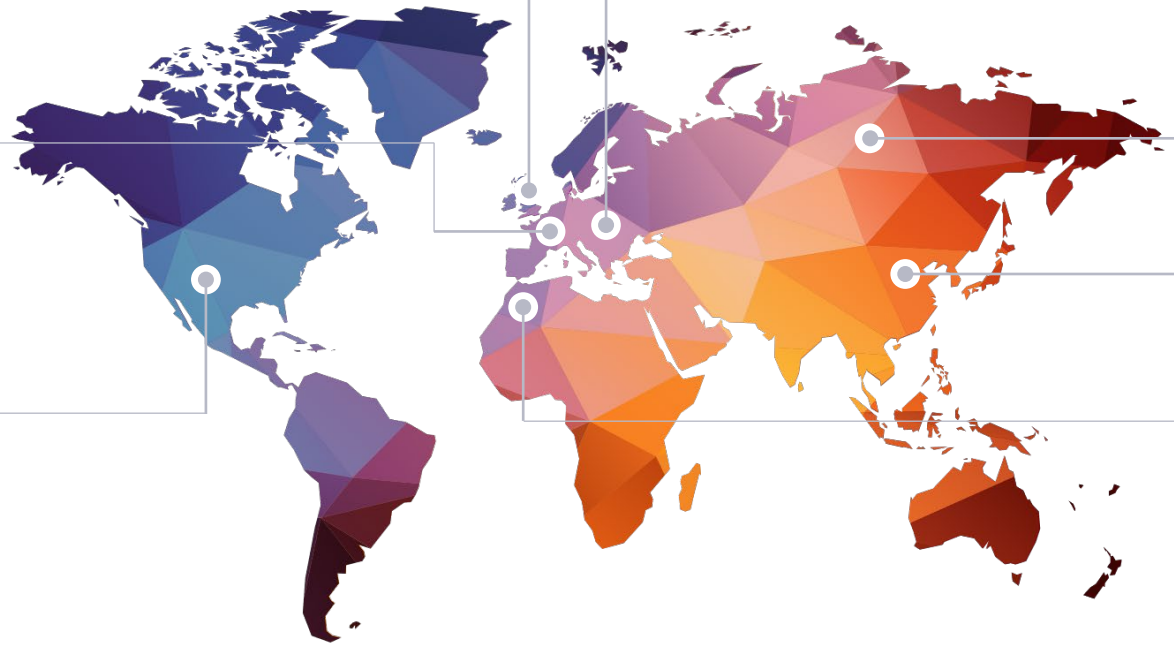
- Air supply function
- Aerodynamics function
- Acoustics function
- Heat function



- Structure function
- Propulsion function
- Braking function
- Engine access function
- Cosmetic function

Our nacelle is a key system for performance and operating cost

SAFRAN NACELLES – Worldwide presence



UNITED KINGDOM
Burnley

FRANCE
Florange
Le Havre
Paris
Toulouse

UNITED STATES
Cincinnati*
Seattle
Mobile

GERMANY
Hamburg

RUSSIA
Komsomolsk

CHINA
Xi'an*

MOROCCO
Casablanca

*Joint-venture

Industrial plants | Headquarters | Integration | Office

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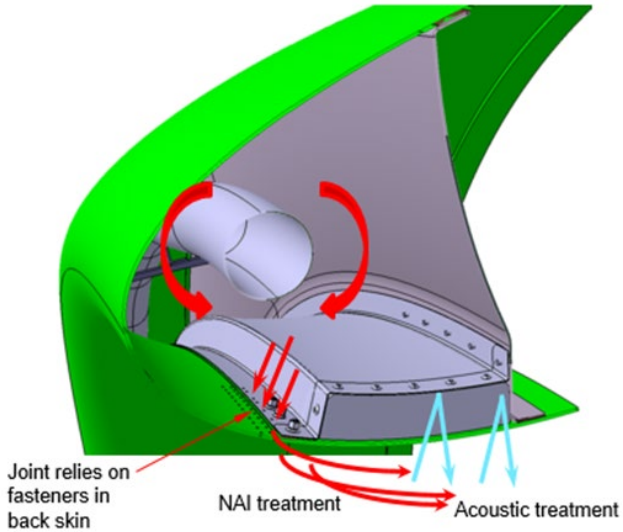
LEAD CLEEN PHASE III PROJECT OVERVIEW

Concept

- **LeAD (Lèvre Acoustique Dégivré) – Anti-icing Acoustic Lip:**
  additional acoustic surface in D-Duct area while supporting de-icing functionality

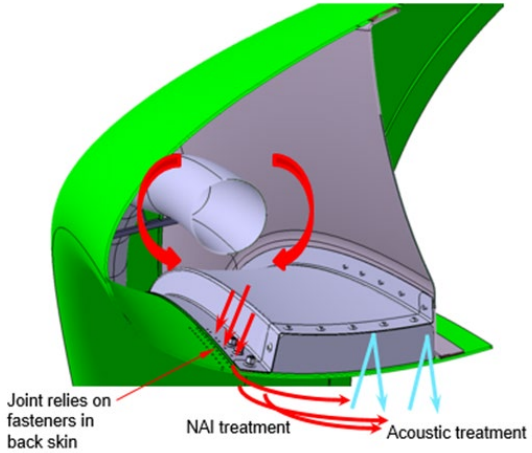
- **Benefices:**

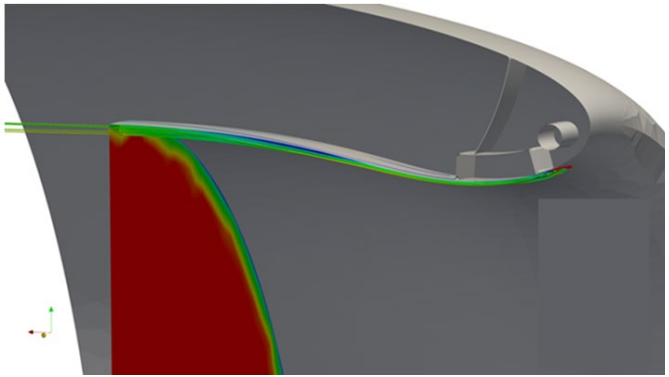
  > Significant Fuel Burn reduction (shorter inlet)
  > Opportunity to increase nacelle's acoustic performance
  > Quick development as based on mature technologies
  > Can be deployed on standard inlet designs



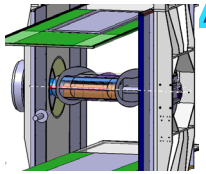
LeAD CLEEN Phase III - Objectives

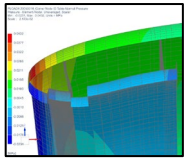
- **Concept / functionality**
  - > Demonstrate the performance of de-icing by heating air film
  - > Demonstrate the acceptability of heating air film in the engine operation
  - > Demonstrate the acoustic performance
- **Design tools & methods**
  - > Structural design of a LeAD inlet
- **Manufacturing materials & processes**
  - > Demonstrate LeAD inlet manufacturability

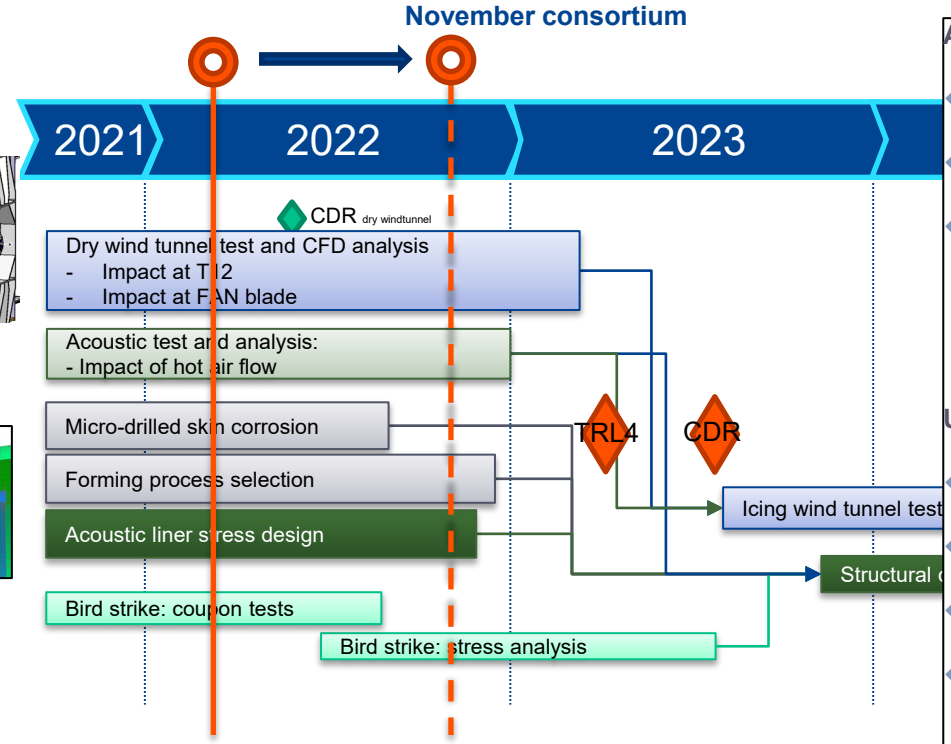




Project overview - Upcoming activities







Accomplishments

- Wind tunnel test plan and test equipment design
- Acoustic test plan
- Preliminary stress design

Upcoming

- Acoustic tests results
- Micro-drilled skin corrosion
- Detailed stress design
- Bird trike coupon tests and first analysis

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SUMMARY AND CLOSING REMARKS