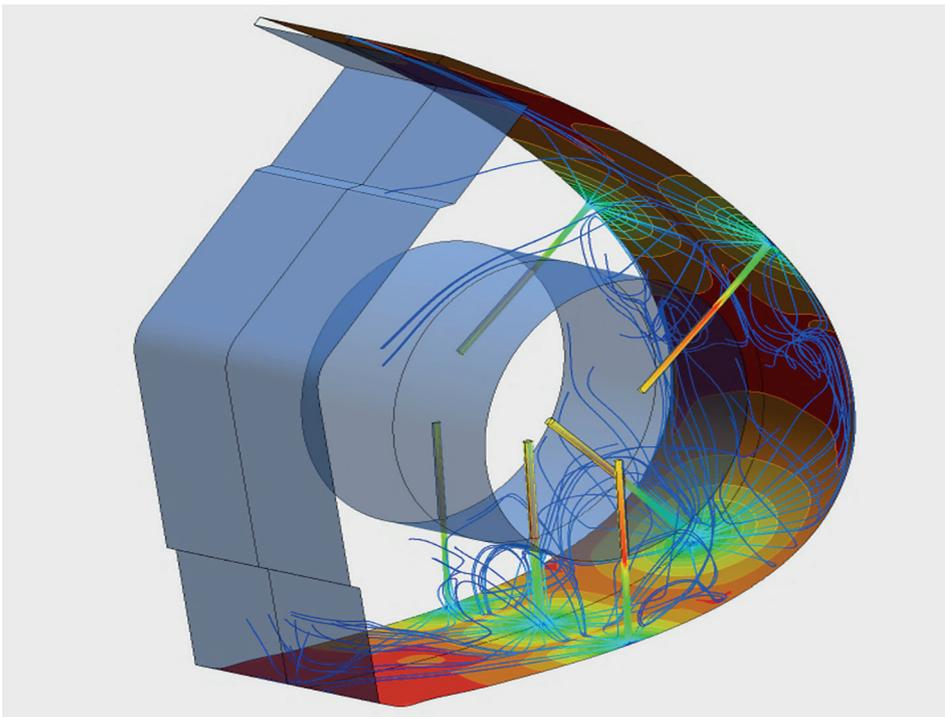
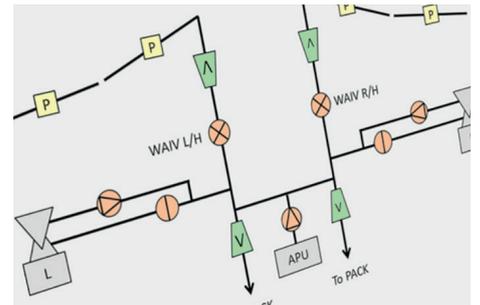


Advanced Systems

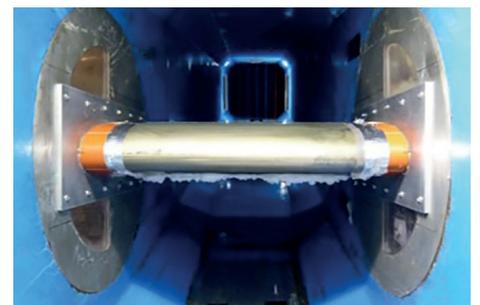
- Experimented team
- Icing protection systems
- Fluid dynamics & thermo-mechanics studies
- Thermal management
- Systems architecture & RAMS engineering
- Mechanisms and actuation
- Vibration analysis
- Equipment qualification by simulation & tests validation



Icing protection system Simulation

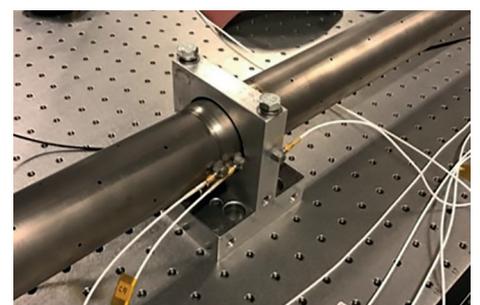


Advanced system architecture



Icing tunnel test campaign

Your partner in
the development of reliable and
efficient advanced systems



Vibration test

DIFFERENTIATORS

- **Icing protection system development** is part of our core business for more than 20 years
- **Certified icing code**, part of our numerical platform, allowing coupling with stress calculations
- **Performance optimization & RAMS engineering** (Reliability, Availability, Maintainability and Safety) are central to our approach for architecture definition
- **Equipment qualification by simulation & tests:** In-house numerical tools calibrated through a large database of test campaigns, internal labs and code certified to perform equipment qualification.

A unique approach based on experience gained through more than 20 years of development of advanced systems for major aircraft manufacturers

SERVICE IDENTIFICATION

LOCATION

Gosselies – Belgium

EXAMPLES:

- Icing protection systems development, qualification and manufacturing
- Pressure loss & multiphase flow calculations
- Vibratory studies on piccolo lines
- Involvement in major European R&D programs on thermal and aerodynamics topics

CUSTOMERS

Airbus, Dassault, Embraer, Bombardier, Liebherr, Safran, Pilatus

QUALIFICATIONS

- EN 9001
- ISO 14001

TOOLS & METHODS

- In-house multiphysics
- ANSYS Fluent
- SAMCEF

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VALUE STREAM MAPPING

- 1 Customer requirements analysis
- 2 Research & development
- 3 Technology trade-off
- 4 Product optimization
- 5 Simulations & tests
- 6 Verification & Validation
- 7 System certification

GLOBAL FOOTPRINT

SONACA GROUP HEADQUARTERS

- Engineering - R&D Center
- Advanced Composite Process
- Additive Manufacturing (FMAS)
- Complex Assembly
- Manpower: 1650

SONACA SPACE GMBH

- Thermal Engineering & CFD
- Acquisition in 2016
- Manpower: 25

SINELSON

- Assembly
- Manpower: 40

LMI

Acquisition in progress

SONACA MONTREAL

- Long Bed Machining
- Stringer Milling & Forming
- Manpower: 320

SONACA AIRCRAFT

- JV with TAF
- General Aviation
- 2 seats S200 AC

SONACA TRANSYLVANIA

- HLU Composite
- Assembly
- Manpower: 30

AERO FORMING TRANSYLVANIA

- Large sheet forming
- Start in 2018

SOBRAER

- Engineering
- Assembly
- Manpower: 260

SOPEÇAERO

- Small Sheet Forming
- Manpower: 85

PESOLA

- Small Machining
- Manpower: 50

