

GKN Aerospace Sweden

International R&T collaborations

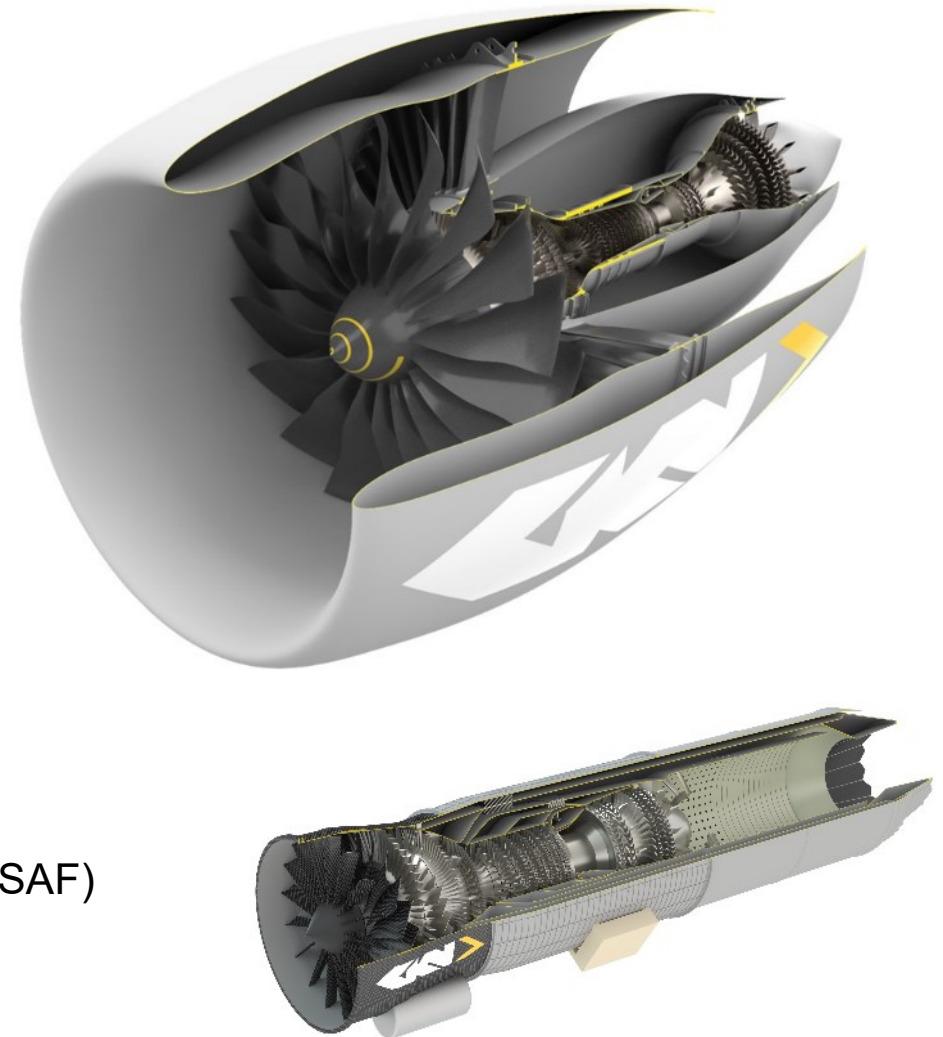
June 2023



MAKING THINGS FLY

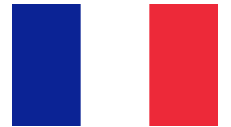
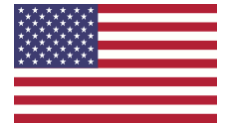
GKN Aerospace Sweden – R&T

- > GKN Aerospace Global Technology Centre – Sweden
- > Swedish R&T eco-system >80 ongoing PhD projects in GKN projects
- > Important international collaborations with engine OEMs (demonstrators)
- > Significant contribution to EU-projects (Clean Sky, Clean Aviation, EDF, Made in Europe)
- > Technologies
 - > Light weight technologies (saving 15-30% weight)
 - > Manufacturing technologies (AM, digitalization)
 - > Functional structures (thermal management, more electric)
 - > Fossil-free aviation (system and subsystem studies for hydrogen and SAF)



GKN Aerospace Sweden – international R&T

- > The aeroengine business is an international business.
Major OEMs: GE (US), Pratt & Whitney (US), Rolls-Royce (UK), SAFRAN (FR), MTU (DE)
- > GKN Aerospace Sweden involved in EU R&T projects since before Sweden was an EU member. At the top of the list of SE companies winning EU funding.
- > Bilateral R&T projects through Innovair-IFFP (UK and DE)
- > Main reasons for international collaboration:
 - > Business positioning (work with the OEMs)
 - > Access to important infrastructure (test rigs, engine tests, flight tests)



Demonstrators with international OEMs - example

- > Rolls-Royce UK UltraFan demonstrator
- > Partly funded by Clean Sky-2
- > SE SMF participation through Innovair – IntDemo
(Brogren Industries, AIM Sweden)
- > Regional manufacturing technology centre
(Innovatum/PTC)



GKN intercase for UltraFan

- New welded concept
- 3D-printed parts
- Duct aerodynamics

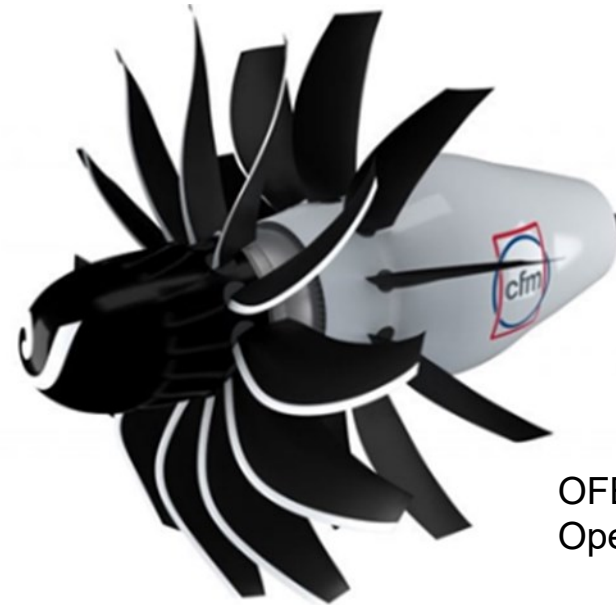


UltraFan engine testing started

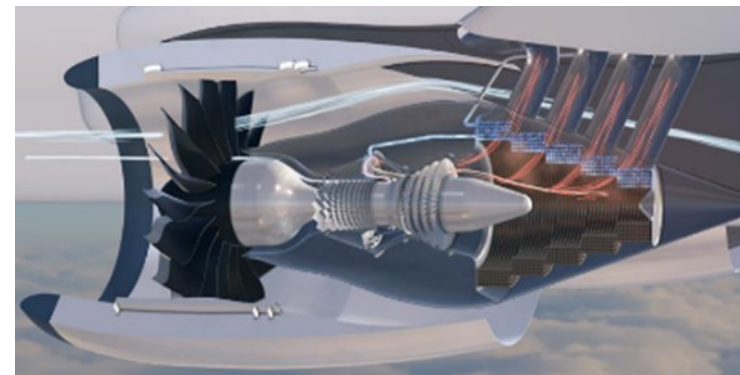


UltraFan

- > GKN Aerospace Sweden AB is a Founding Member
- > Involved in two demonstrator projects
- > OFELIA (SAFRAN, France, lead)
 - > GE major partner
 - > Open Fan demonstrator
 - > GKN responsible for structures in compressor and turbine. Novel AM technologies to be validated
- > SWITCH (MTU, Germany, lead)
 - > Pratt & Whitney major partner
 - > Water Enhanced Hybrid Electric Turbofan
 - > GKN responsible for developing and integrating a heat exchanger and for integrating an electric generator (functional structures)
 - > Chalmers a partner – heat exchanger testing in unique turbine rig



OFELIA (SMR)
Open Fan demonstrator



SWITCH (SMR)
Water Enhanced Hybrid Electric Turbofan

Some examples of GKN SE bilateral IFFP projects



- > **Loughborough University**
Compressor duct aerodynamics
- > **Oxford University (RR CoE)**
Turbine aerodynamics
- > **Renishaw**
Development of large scale AM
- > **TWI**
Additive manufacturing



- > **Tital**
Casting development, Titanium and Aluminium
- > **DLR**
Compressor duct aerodynamics

> **Joint calls**

or

> **National calls with LoS** ← easier