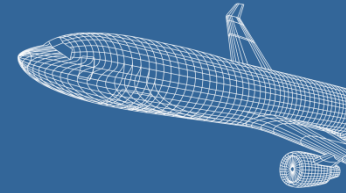


SWE DEMO MOTOR

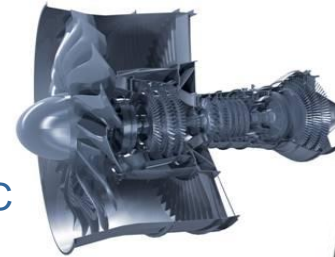
SWE DEMO is a Vinnova funded programme to support increased participation in international demonstrator programmes

Robert Lundberg, GKN Aerospace, Trollhättan

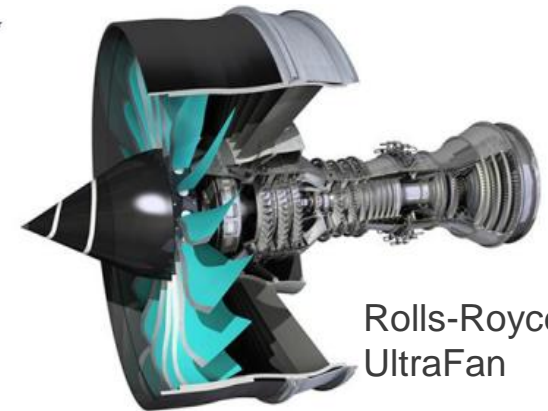
Demonstrator engines



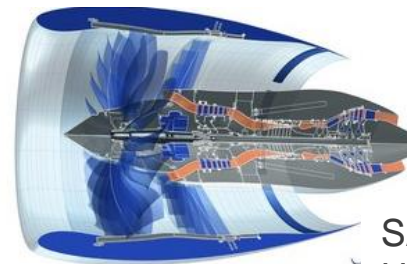
- > Fan static module
 - GKN responsible for fan case, fan frame, fan OGVs, IMC
- > Compressor module
 - GKN responsible for LPC and IC-duct
- > Exhaust module
 - GKN responsible for TEC and exhaust
- > Compressor structure
 - GKN responsible for ICC
- > Rotating frames
 - GKN responsible for front- and aft rotating frames
- > Turbine structure
- > Compressor structure



P&W-MTU GTF



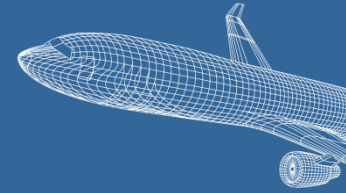
Rolls-Royce
UltraFan



SAFRAN
UHPE



SAFRAN
Open Rotor



SWE DEMO is a Vinnova funded program to support an increased participation in international demonstrator programmes

Industry

- > GKN Aerospace Engines Systems, Trollhättan
- > GKN Aerospace Applied Composites, Linköping

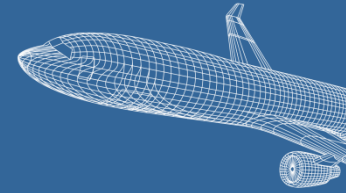
Research centres

- > Högskolan Väst
- > Innovatum
- > Swerea IVF
- > Swerea SICOMP
- > Chalmers
- > KTH

SME

- > Brogren Industries
- > Tooltec
- > Permanova
- > Midroc Automation
- > Tuvanium
- > Inpernova
- > MVG Kristinehamn
- > Termospect
- > Dalco
- > RLM Mekaniska,
- > Råbe Tooling
- > Bröderna Carlsson AB

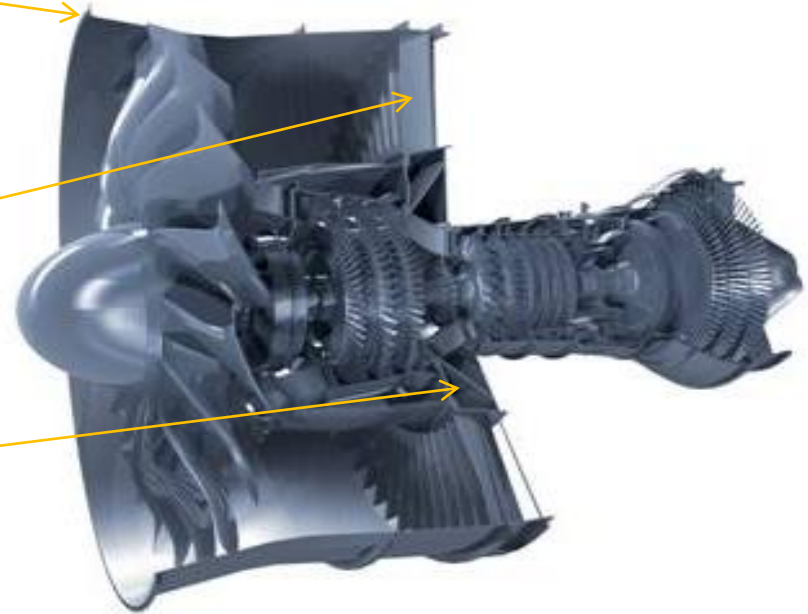
Fan static module



Low cost fan case including stiffeners and containment ribs made by Additive Manufacturing (laser AM)

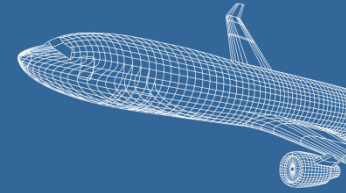
Composite Fan OGVs

Titanium intermediate case

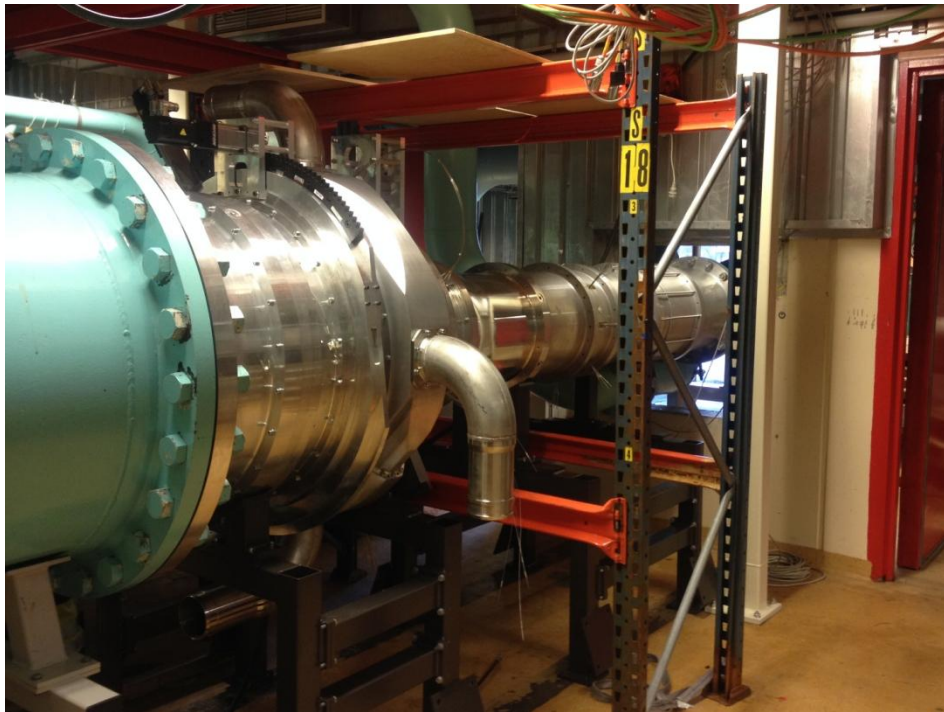


10110_Rev.22

Compressor module with MTU (DE)



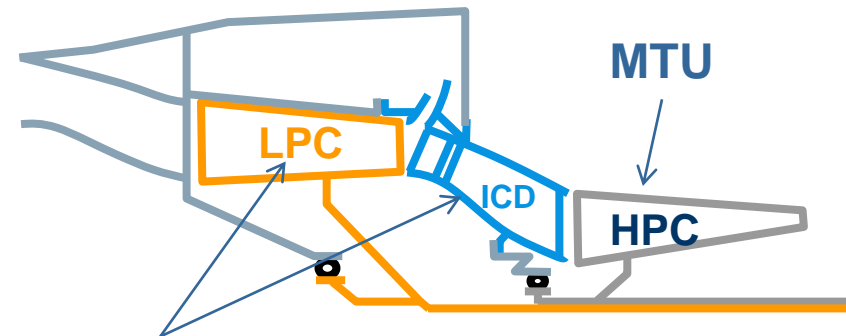
GKN-rig



Aerodynamic test of compressor interduct

DLR-rig

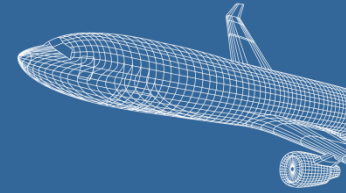
2-shaft compressor rig



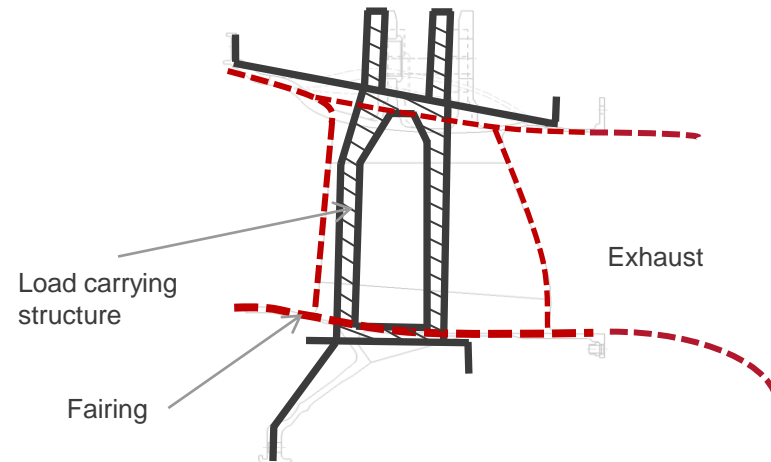
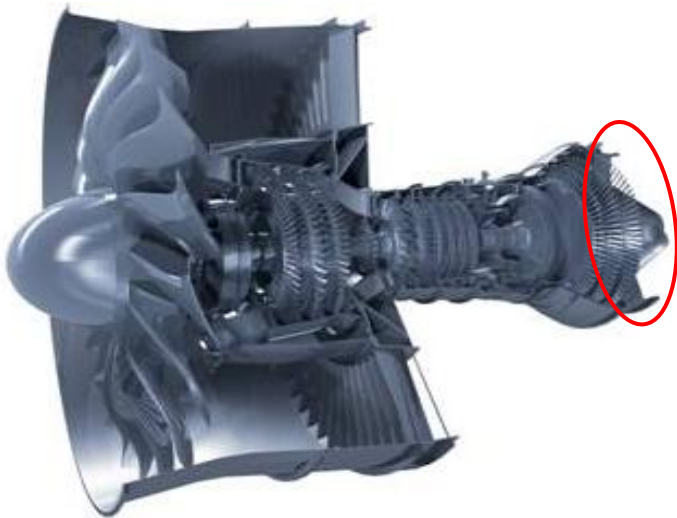
GKN

LPC = Low Pressure Compressor
ICD = Inter-compressor duct
HPC = High Pressure Compressor

Exhaust module with MTU (DE)

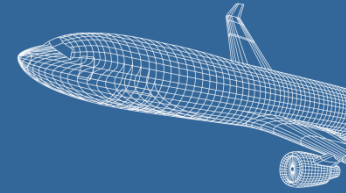


Engine testing using a smaller engine.
Technologies developed for next generation engine.



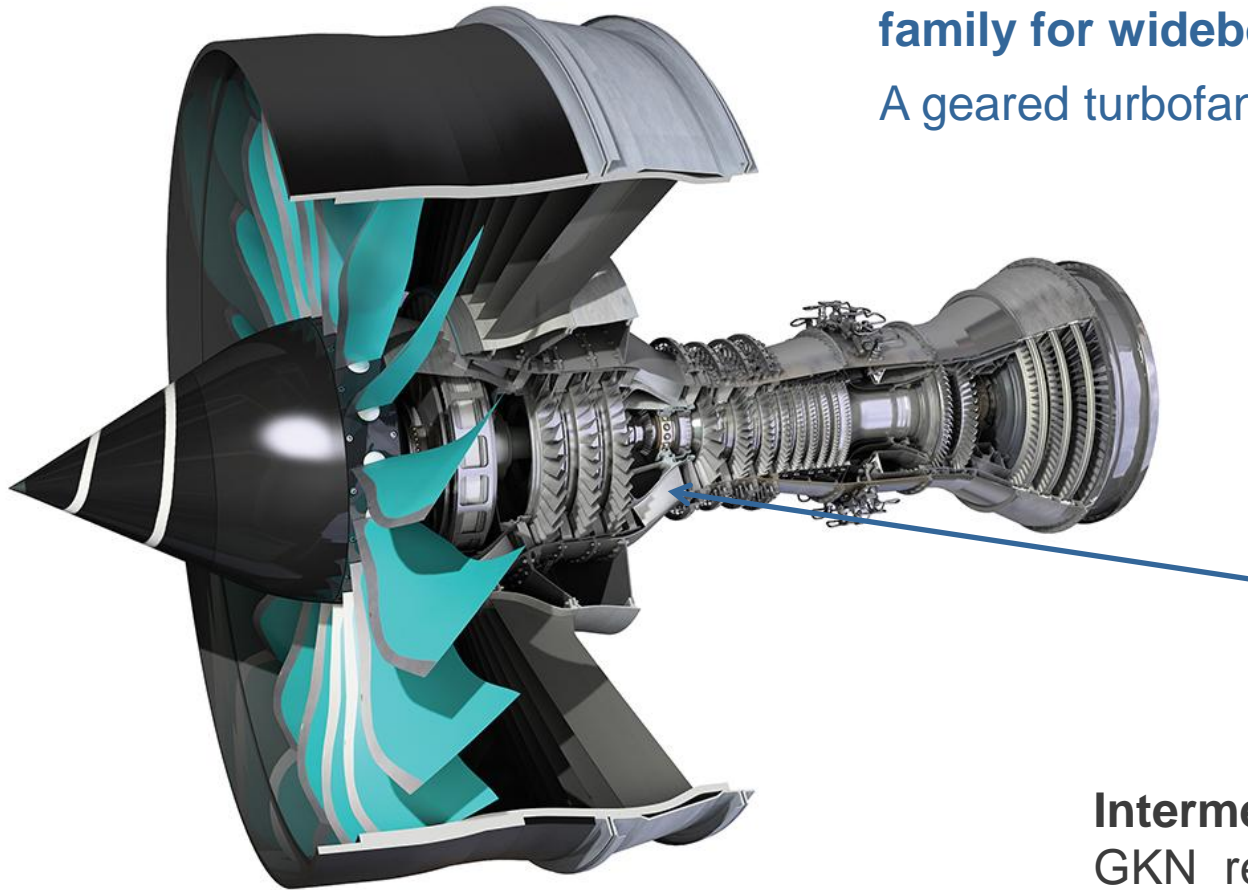
10110 Rev.22

Rolls-Royce UltraFan engine (UK)



UltraFan - Next generation large engine family for widebody aircraft

A geared turbofan

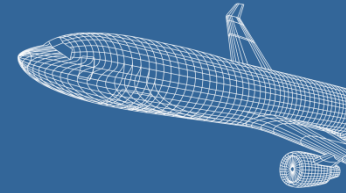


Intermediate Compressor case
GKN responsible
Optimized welded Ti design

GKN Aerospace Sweden AB Proprietary Information. This information is subject to restrictions on first page.



SAFRAN Open Rotor (FR)



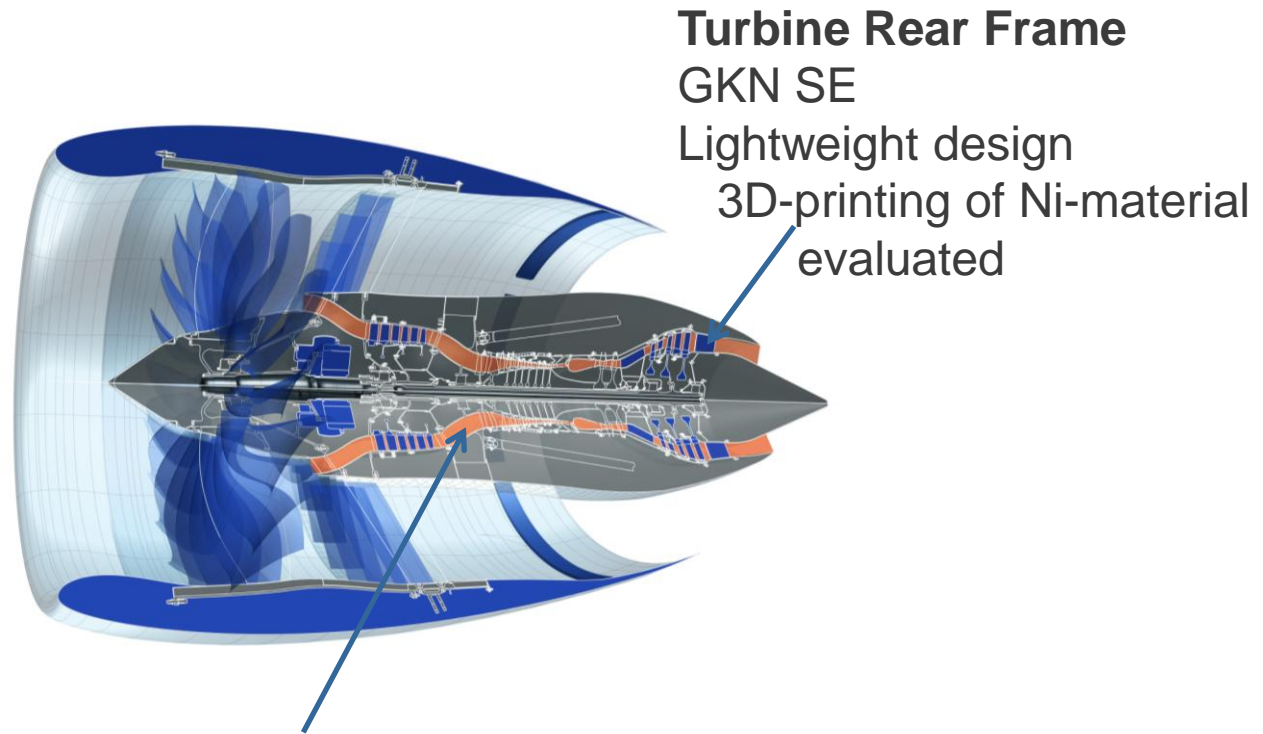
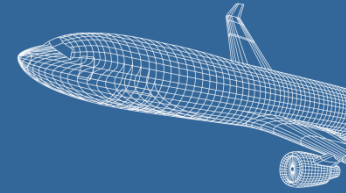
Rotating frame modules by GKN



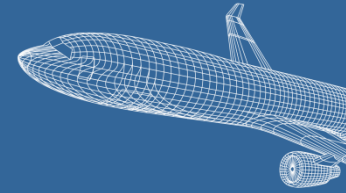
Engine ground test preparations

<https://www.youtube.com/watch?v=1Bs4ioNbrYA>

SAFRAN UHPE geared turbofan (FR)



Intermediate Compressor Frame
GKN SE, GKN ACAB
Additive Manufacturing (Ti)
HT Polymer Composite study



Why demonstrators?

- Validation to TRL6 is difficult and very expensive
- Can only be made in collaboration with an OEM
- Positioning for future business
- Relevant, high TRL topics for SMEs and Research Centres
- INNOVATION



<https://www.youtube.com/watch?v=6Se24DfpUgw>