

AIRCRAFT ENGINE OEM

Aviation

ALTEN ADDED VALUE

Full design Iteration Support
Thermals, Air Systems model auditing and productionalization
Thermals, Air Systems, and oil/fuel systems result in validation and matching
Monte Carlo Simulation and Certification
Red Top and SAR (Safety alert report) support
Film holes design arrangement optimization

KEY TOOLS & TECHNOLOGIES

SPAN and SC03
ICEM CFD, Fluent and CFX
Space Claim, ANSYS Workbench

KEY DATA

Team Size: 26 FTE
Time: 2021–Ongoing
Time and Materials

ALTEN TECHNOLOGY

THERMOFLUIDS SUPPORT

OVERVIEW

- ALTEN is working on analyzing flow fields and metal temperatures of different engine components
- ALTEN provided design, analysis, and documentation support for the thermofluid activities

PROJECT DETAILS

- Geometry cleaning and tagging (CAD Fix, NX, and Space Claim)
- 3D meshing using Customer Specific Tools
- Post-processing 1D and CFD results to enhance SC03 BCs modeling: distribution, scaling, and read-across of BCs parameters like mass flows, HTC, swirl velocities, and windages
- Used 3D SC03 thermal/stress models to map temperatures to 2D models
- Used 1D air system models to predict mass flows and pressure
- Transient temperatures and displacement prediction
- Mass flow, pressures, temperatures, and displacements uncertainty assessments
- Seals and compressor/turbine blade clearance assessment
- Thermal and air system results validation and matching
- Scripted in SC03
- Optimized and parametrized (NX, Davinci, and SMART tools)
- Reporting and consulting work

