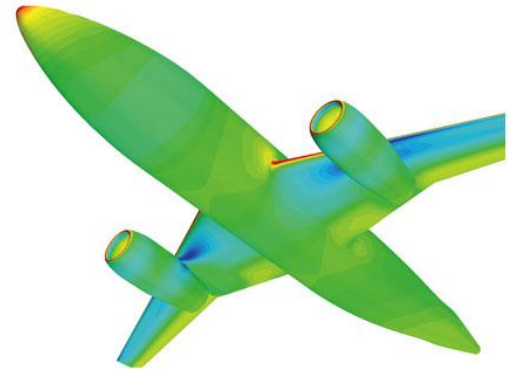


# Aerospace

## Modelling and Simulation Service Overview

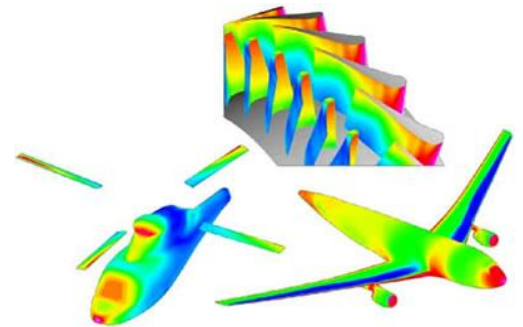
### Internal and External Aerodynamics

- Lift and Drag Calculation
- Design and Optimisation of High Lift devices
- Aerofoil selection and shape optimisation
- Control surface design
- Stability and Control Calculations
- Shock and boundary layer effects.



### Actuation Systems and Sealing Systems

- Performance characterisation of Components
- Nano-Coatings for Landing Gears
- Design of precision seals
- Seal life prediction.

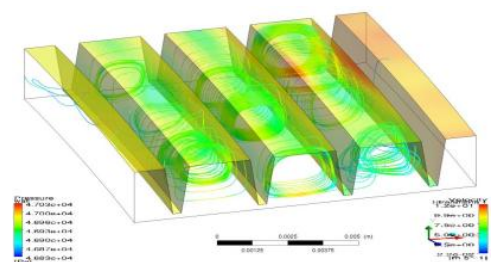


### Aero-structures

- Material modelling of multi-laminate composites
- Ply failure analysis
- Fatigue and Creep characterisation
- Component life prediction
- Cavity Acoustics Calculation
- Landing gear noise calculation.

### Fluid Distribution Systems

- Air management system design
- Tank Sloshing
- Hydraulic network design and simulation
- Predict flow rates, pressures and flow distribution in multiple fuel tank systems
- Predict CG shift during refueling and defueling
- Component sizing & performance calculations.



### Modeling Techniques

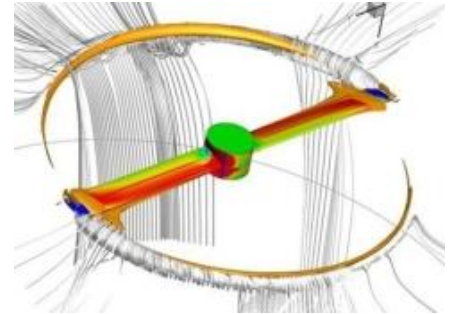
- Potential flow modelling
- Turbulence modelling
- Multi-Field Simulation
- Multiphase flow modelling
- Volume of fluid
- Free Surface modelling
- Computational Fluid-Structure Interaction
- Computational Aero Acoustics

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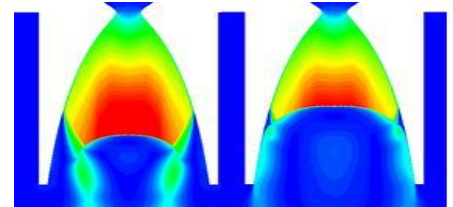
#### Turbo-machinery/propeller

- Fatigue/Creep/Life time estimation for Turbo-machinery components
- Efficiency Calculation of Turbo-machinery component
- Flow induced vibration of sealing components
- Modelling wake propagation
- Rotor-Airframe Interaction.



#### Combustion modelling

- Combustion Efficiency Calculation
- Combustion Stoichiometry
- Injector design Plume Analysis
- Modelling Film cooling process.



#### Thermal management

- Heat Sink design
- Thermal contact efficiency calculation
- Predict maximum/minimum oil temperature during service
- Derive response curves for heat exchange cycles
- Estimate net pressure drops during heat exchange.

#### Rockets and missiles

- Store separation Analysis
- Thruster performance calculation
- Exhaust Nozzle design and Optimisation
- Modelling Launch Mechanism.



#### Modeling Techniques

- Linear and Non-linear Finite element methods
- Modal analysis
- Harmonic response analysis
- Multi-Field Simulation
- Aero-elasticity
- Computational Fluid-Structure Interaction
- Thermo-fluid Dynamics
- Hydrodynamics
- Elasto-Hydro dynamics

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