

Project Scope: FEA Model
Development of complex jet engine
design, through 5 narrated video
tutorials

Toolsets: MSC Apex Modeler and
Structures (Fossa Release)

Tutorial 01: Geometry Import and
Model Management

Tutorial 02: Shell Model Development

Tutorial 03: Solid Model Development

Tutorial 04: Hybrid Mesh Model
Development

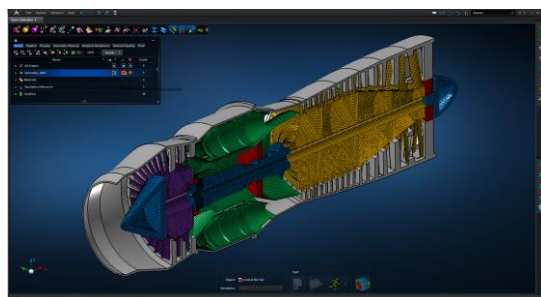
Tutorial 05: Assembly and Analysis

**Jet Engine
Model
Development,
Verification
and Analysis**

Evotech Computer-Aided Engineering Ltd is an Engineering Consultancy, based in the UK, specialising in product development through advanced Finite Element Analysis (FEA). With a background predominately in the Aerospace industry, we are expert in multi-scale model development, analysis and structural optimisation, and hold NAFEMS PSE Certification at Advanced Level (including Non-Linear Analysis, Composites, Optimisation and FE Model Verification).

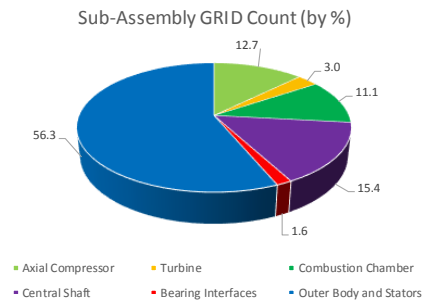
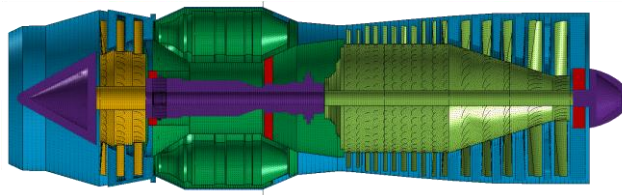
In addition, Evotech CAE Ltd work with MSC Software as 'Elite Partners' for the CAE toolset, Apex, which offers a radical new paradigm in Finite Element Model Management, Build and Analysis.

This case study highlights the development of a complex jet engine FEA model. The work is presented as a series of 5 narrated video tutorials, which highlight key steps and efficiency gains in model build, verification and analysis.

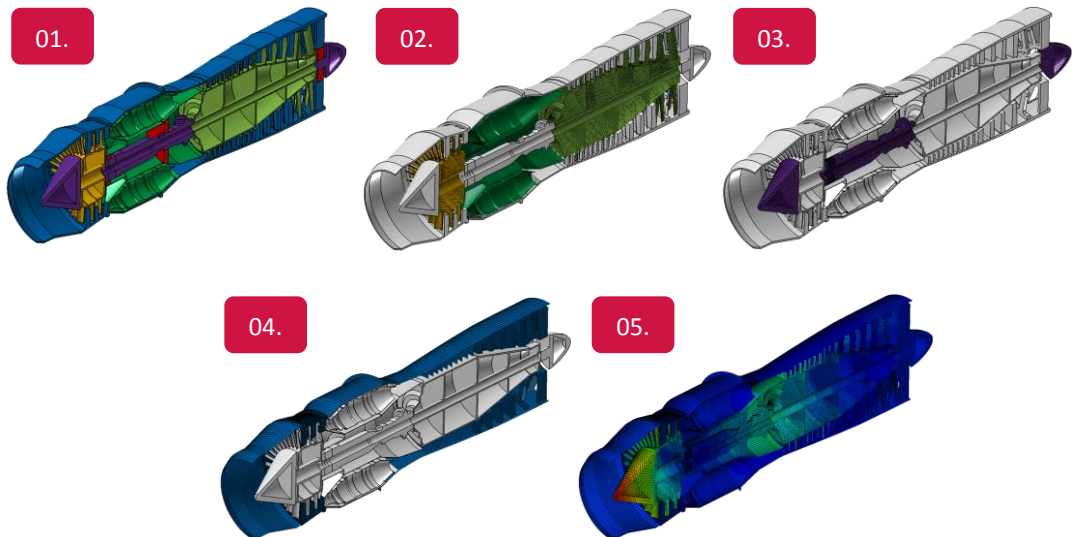


MSC Apex™

Model Size



Model/Tutorial Development



Tutorial Contents

Tutorial 01: Geometry Import and Model Management, focused on geometry import and model management techniques, including the assembly and visualisation tree, sketching tools, material assignment and shell behaviour.

Tutorial 02: Shell Model Development, focused on surface geometry manipulation and shell meshing, including mid-surfacing, element quality and normal direction, automated property definition and Analysis Readiness.

Tutorial 03: Solid Model Development, focused on solid geometry manipulation and solid meshing, including defeaturing solid geometry, Hex and Tet meshing, generative feature-based mesh controls, and glue technology to connect parts.

Tutorial 04: Hybrid Mesh Model Development, focused on hybrid shell/solid meshing techniques, including hybrid model efficiency, automated shell thickness generation for tapered parts, and glue technology with specific application to load transfer across shell/solid interfaces.

Tutorial 05: Assembly and Analysis, focused on model assembly and solution techniques, including assembly connection methodology, load and boundary condition types, computational parts and solver efficiency gains, and geometry and analysis model export to CAD and/or external FEA toolsets.

Narrated video tutorials available at evotechcae.com/apex_tutorials