Appendix J

ESATAN Thermal Modelling Suite
A New User Interface for CAD Geometry

Henri Brouquet
(ITP Engines UK Ltd, United Kingdom)

Abstract

When generating thermal analysis models from CAD geometry it is common practice to simplify the geometry, removing unnecessary detail, such as holes and fillets and extracting mid-plane surfaces. ESATAN Thermal Modelling Suite now includes a dedicated component which provides the thermal engineer with an environment to view and modify the CAD geometry and generate the analysis model. A combined presentation and demonstration of the CAD interface shall be given.

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CADbench – A New User Interface for CAD Geometry

Author: Henri Brouquet
Date: 8th November 2011

Introduction

- Our vision remains unchanged,
  - Provide a complete and efficient thermal modelling environment
    - Functionality to meet your current & future modelling requirements
    - Provide a high-quality and fully validated product
  - Efficient end-to-end integration within a multi-disciplinary engineering environment

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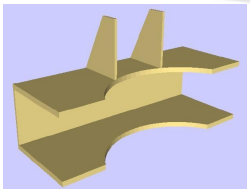
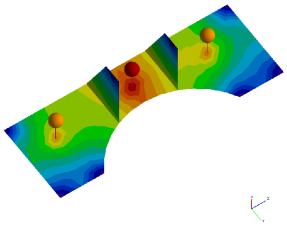
ESATAN-TMS r3 - Import of CAD Geometry

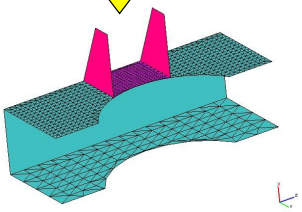
- Improved CAD import process
  - Import geometry
    - Mesh refinement
    - Remove features
    - Shape recognition
  - New CADconverter interface
    - Visualise CAD hierarchy
    - Select/Extract sub-hierarchy
    - Direct include of geometry



Courtesy of OHB

- Mesh
- De-feature
- Shape recognition





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CADConverter – User Feedback

- Easy to use
- Simplify the CAD geometry (de-featuring options)
- Reduce the model time creation

- File format limited support
- “Blind” process
- Dependent on CAD geometry quality

Need to **visualise** and **edit** the CAD geometry

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CADbench – New User Interface for CAD Geometry

- New environment to visualise and modify CAD geometry
- Repair & Prepare CAD geometry for analysis process
- Direct export to ESATAN-TMS

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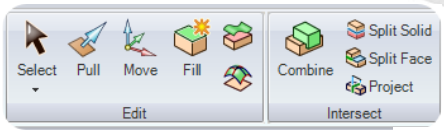
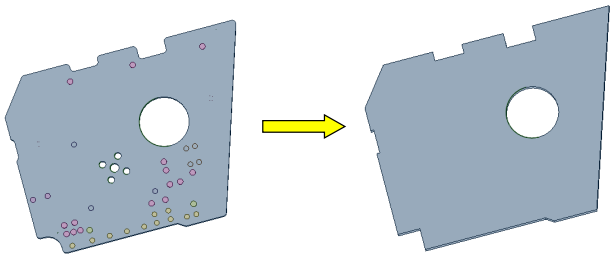
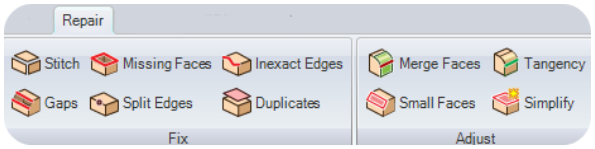
CADbench – New User Interface for CAD Geometry

- Clean Geometry
  - Edit geometry
  - Remove holes
  - Combine component





- Repair Geometry
  - Remove small faces
  - Remove duplicates
  - Stitch geometry



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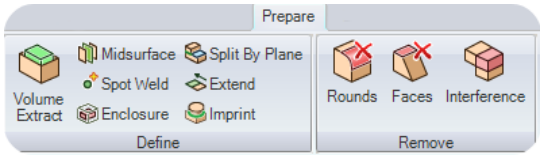
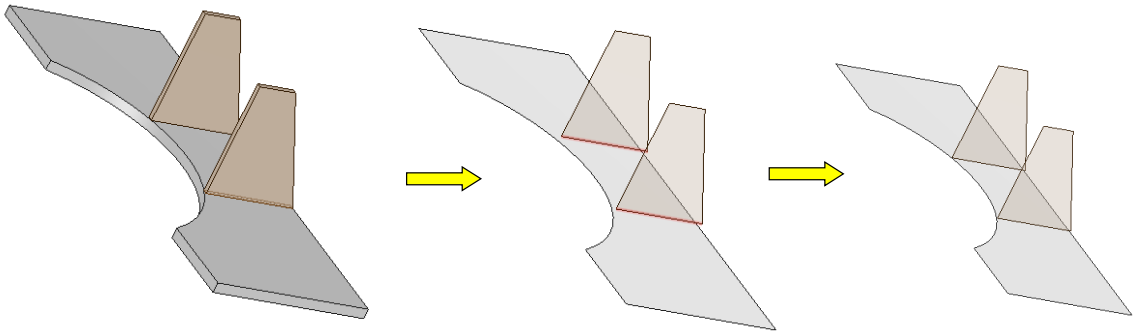
CADbench – New User Interface for CAD Geometry

- Prepare for thermal analysis
  - Midsurface identification
  - Extend capability
  - Remove fillets





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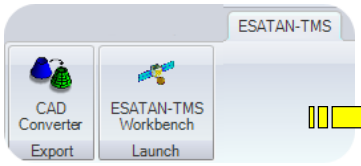
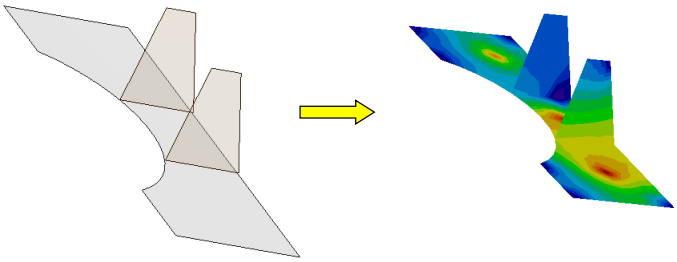
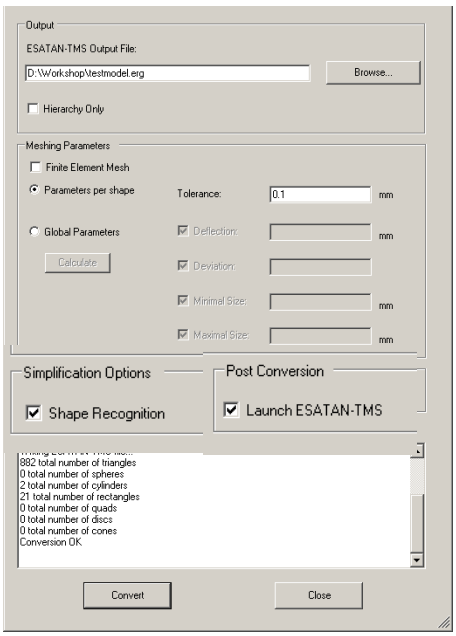
CADbench – Export to Workbench

- Direct Export to Workbench
  - CADconverter menu
  - ESATAN-TMS launch option







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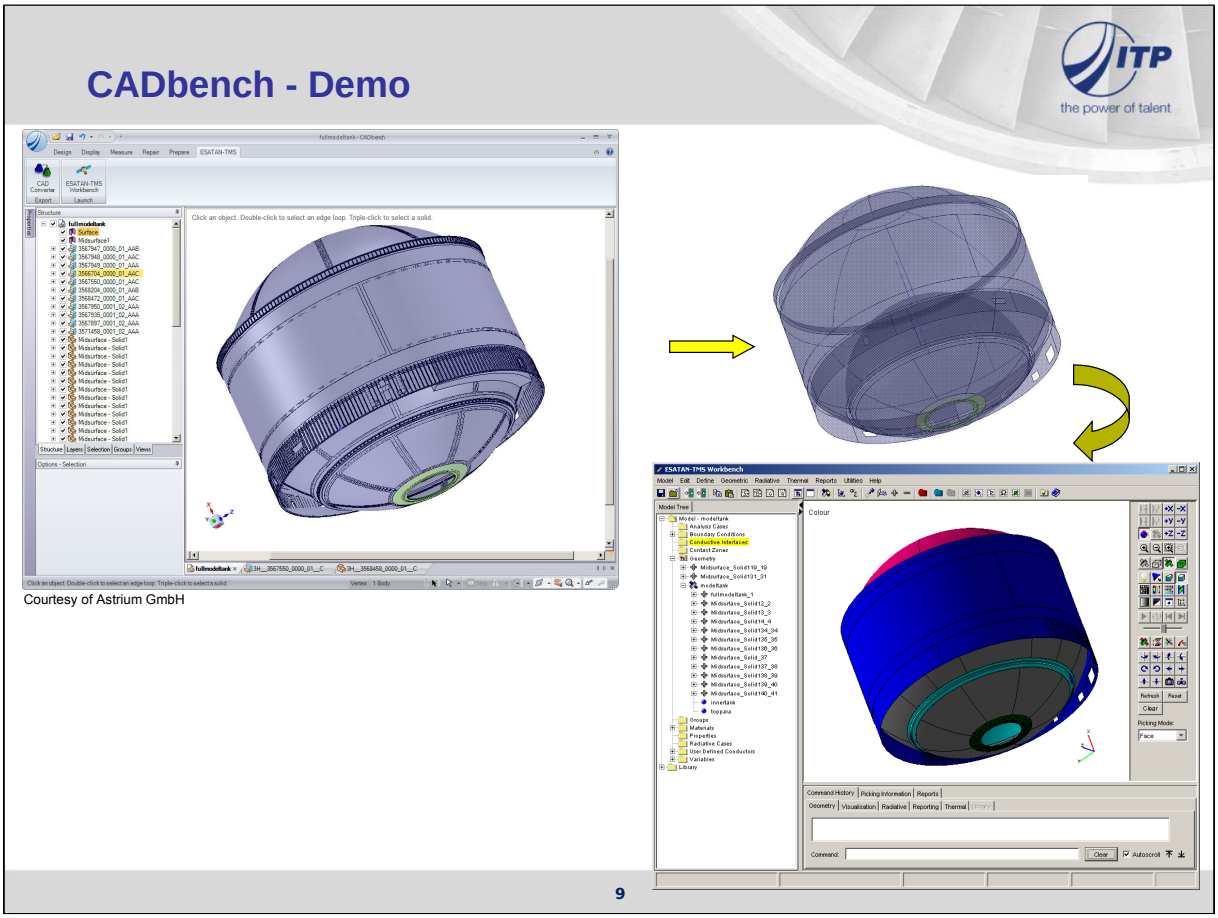
CADbench - Demo
the power of talent
Courtesy of Astrium GmbH
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