Ricardo Software
Powertrain CAE Solutions

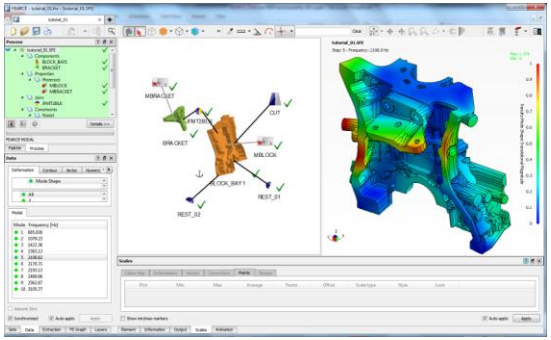
FEARCE 2017.1 New Features

Delivering Excellence Through Innovation & Technology

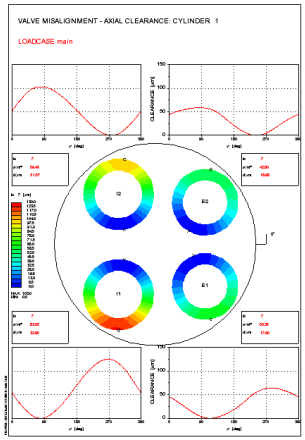
www.ricardo.com

What is FEARCE?

FEARCE is a unique FE pre-/post-processing environment specializing in engine/powertrain processes



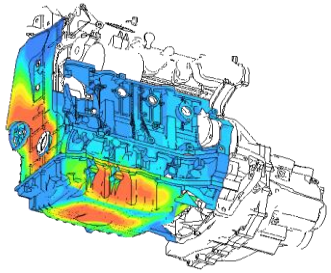
- An efficient and easy to use graphical pre-processor that integrates your FE processes to save time and money

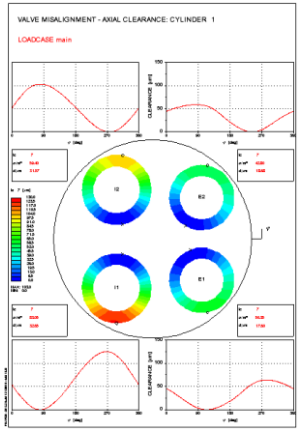


- Tools dedicated to engine/powertrain FEA means you get the results you need the way you need them without extra tools/effort

Efficient FE Processes *Easy to Use* *Dedicated to Engine FE* *Class-leading durability and NVH*

FEARCE enables pre and post processing of structural performance for complete powertrain and vehicle systems





Analysis Management

Model Assembly

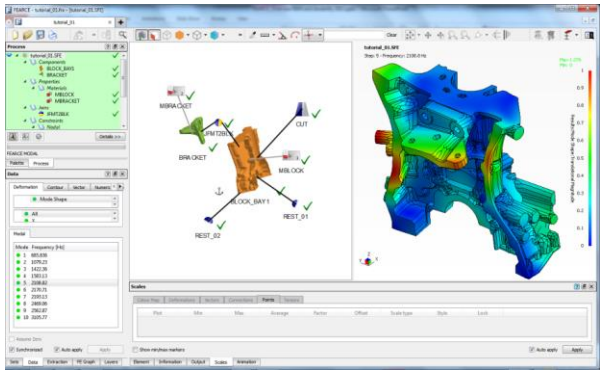
Thermal Analysis

Structural Analysis

Distortion Analysis

Durability

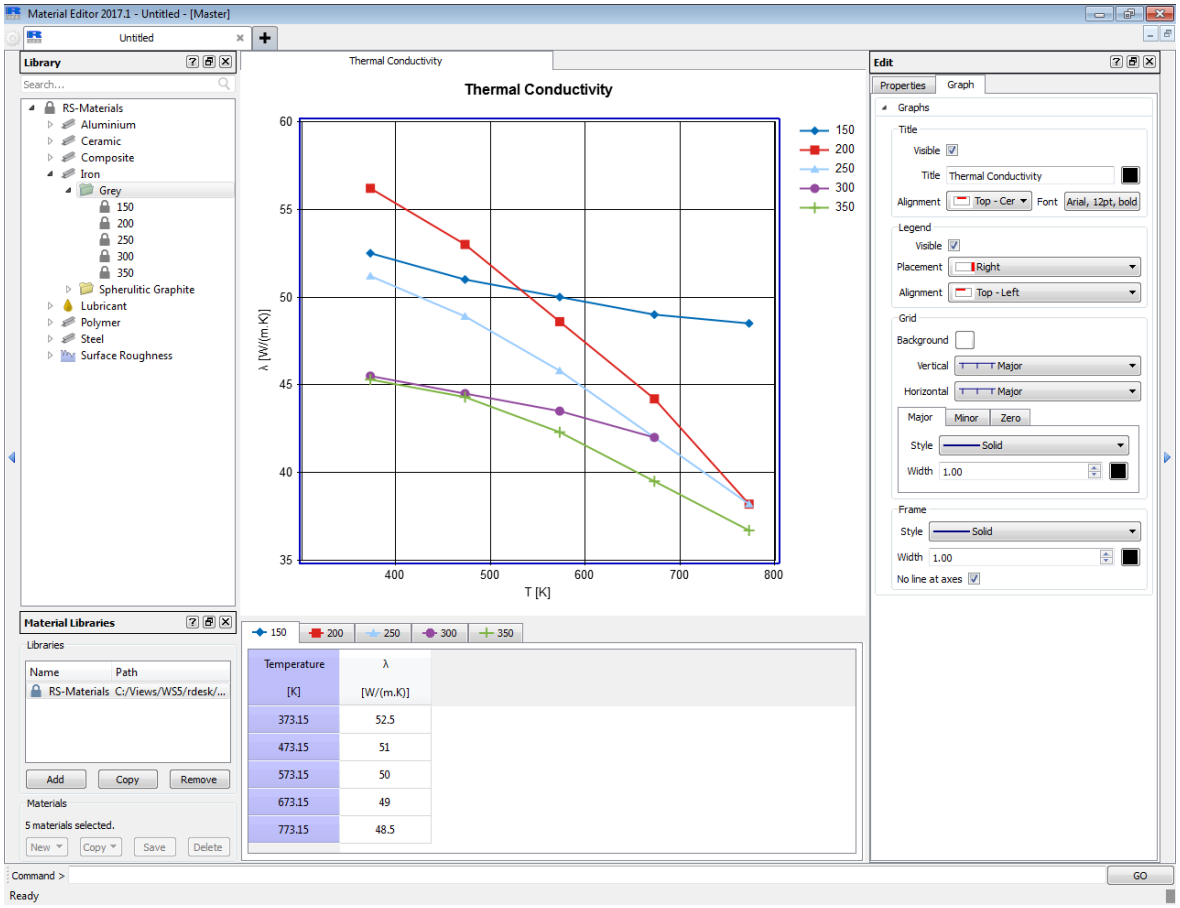
NVH



Material Editor updates

usability

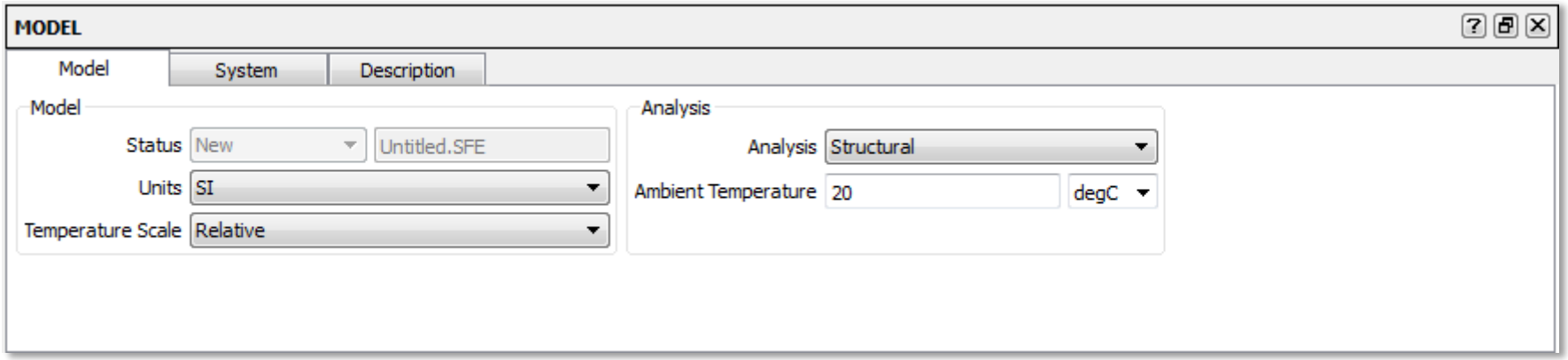
- Improved usability including editing graphs
- Improved visualization options



FEARCE 2017.1

usability and capability

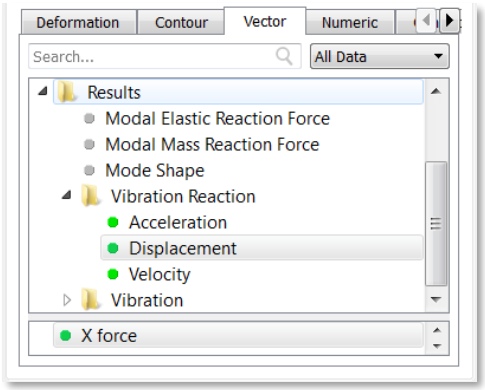
- Support of Thermal Springs and Dampers
- Calculation of beam section properties and stresses of an arbitrary solid section
- Explicit Temperature Scale
  - User can define whether temperatures are stored in the SFE as Absolute (Kelvin) or Relative (Celsius) temperature scale

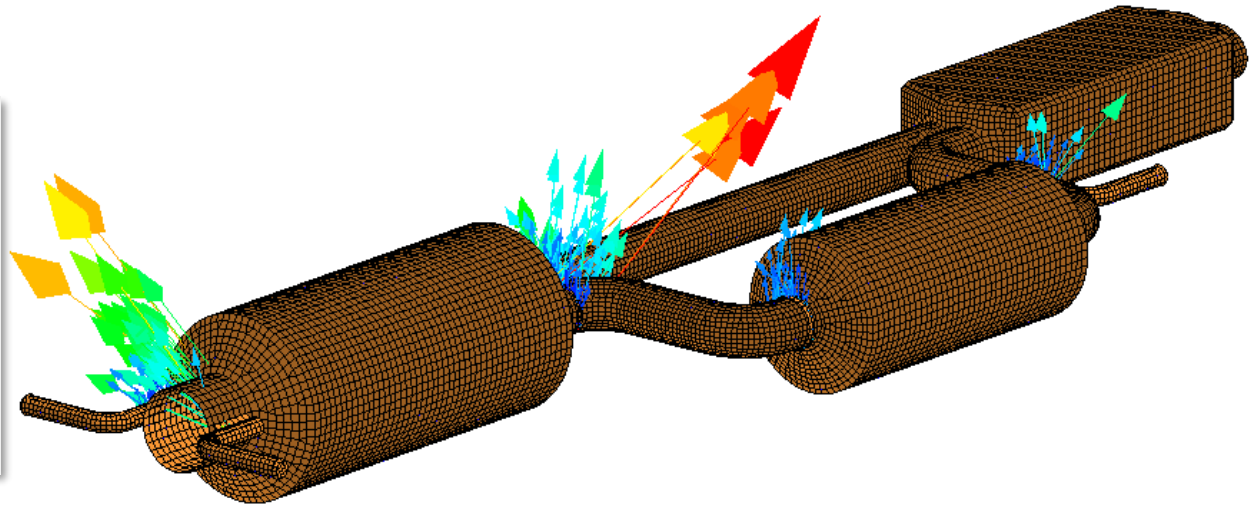


FEARCE 2017.1

usability and capability

- NVH Updates
  - Calculation of reactions at restraints from forced response analysis
    - Reactions at mount locations
  - Combination of vibratory loading from different sources
    - Engine excitation, Gas pressure excitation,…
  - Frequency dependent spring and damper properties to be defined by file
- Calculation and export of reaction forces at restraints by FEARCE Solver for all displacement-bases solutions





FEARCE 2017.1

flexibility and capability

- Improved support of local directions by FEARCE and FE Translators
- Abaqus translator now supports more than 999 loaded degrees of freedom for a dynamic analysis
- Updated SWT parameter for Low Cycle fatigue calculation consistent with published paper
  - $\sqrt{\sigma_{peak} \in_{range} E}$ instead of $\sqrt{\sigma_{peak} \in_{amplitude}}$
- Corrections:
  - CMS Reduction with COUPLING (RBE2/RBE3)
  - Numbering of imported models is now maintained by default