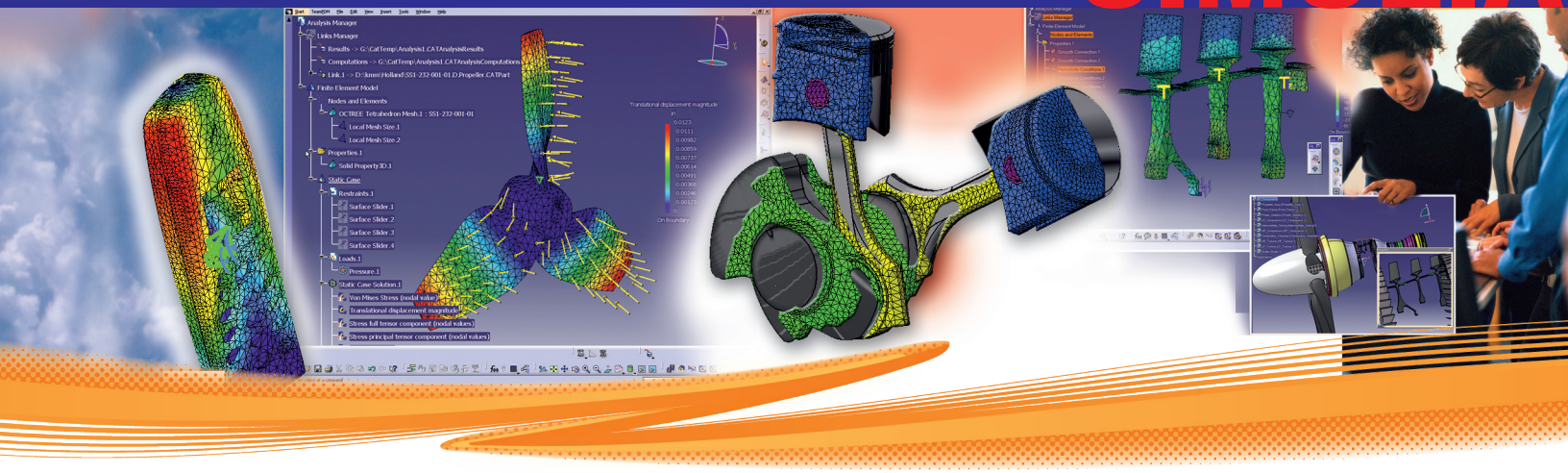
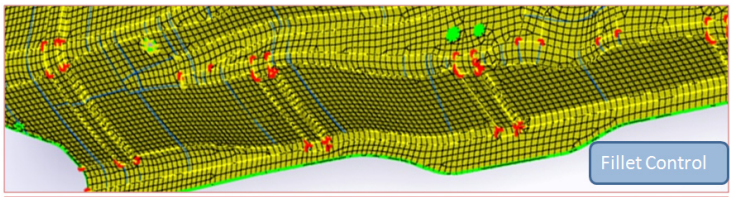


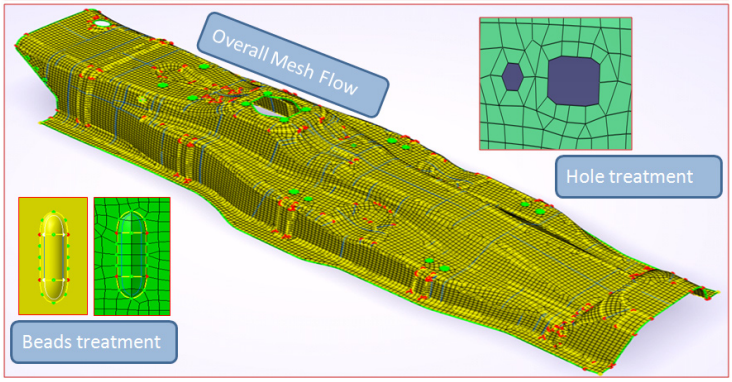
Rule Based Mesher (RBM)

Extends meshing capabilities of FMS to enable automatic meshing of complex surface geometry based on pre-defined meshing rules.

Overview

Rule Based Meshing (RBM) extends the capabilities of FMS to enable automated and higher quality surface meshing for all workflows that use CATIA meshing tools. RBM gives the user a means to specify globally the desired meshing treatment of entities such as holes, fillets, and beads. RMB also gives the user a means to specify acceptable element quality criteria, such as minimum edge length, aspect ratio, and skewness. Once the complete set of meshing rules has been specified, no additional user involvement is necessary, as the actual mesh generation is completely automated.





Product Highlights

- Enables fully automatic meshing of complex surface geometry
- Results in higher quality surface meshes with fewer elements
- Governs the treatment of common geometric entities through user-defined rules
- Creates meshes with the desired level of quality with pre-specified mesh-quality targets
- Provides consistent meshing results for all geometries subjected to the same meshing
- Offers meshing rules appropriate to the target discipline (NVH, crash, etc.)

SIMULIA

Features and Benefits

In addition to the functionalities and benefits provided by FMS, Rule Based Mesher (RBM) offers:

Automatic meshing of complex surface geometry

Once the rules have been defined, RBM generates the mesh automatically. Automatic meshing greatly increases productivity because much less time is spent making manual improvements to the mesh.

Higher quality surface meshes with fewer elements

The end result is a higher quality and more efficient surface mesh than was previously possible. The mesh is optimized based on the rules which are much more efficient than manual operations. Rather than modifying and refining the mesh where a user notices problems, RBM considers the meshing problem in a global sense with a goal to meet meshing criteria.

Consistent treatment of common geometric entities

RBM is able to recognize common geometric entities, such as holes, fillets, and beads, and treat them in a manner consistent with the user's requirements. For example, the user may specify that holes with a diameter less than 5 mm be removed, holes between 5mm and 10mm should have a single washer layer of 6 elements around the circumference, whereas holes with a diameter between 10mm and 15mm have two washer layers around the circumference. Using this approach, the user can ensure consistent treatment of geometry from one region to the next and one model to the next.

Pre-specified mesh-quality targets

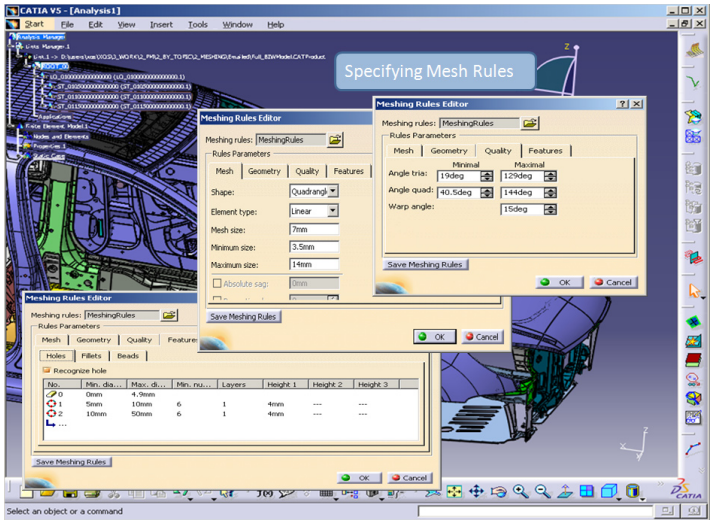
In addition to consistent treatment of common geometric entities, RBM lets the user specify mesh-quality targets to satisfy objectives for global quality. The user can specify limits for element geometry, such as minimum edge length, element aspect ratio, and element skewness to ensure that element shape is not detrimental to simulation results.

Consistent meshing results for all geometries

Because RBM enables the user to use the same set of rules for any number of part meshes, RBM ensures a high level of consistency in meshing results. Such consistency is very important, especially when comparing models with minor variations. In such cases it is important that differences in the meshes do not influence the results.

User-defined meshing rules for target discipline (NVH, crash, etc.)

Each simulation discipline has its own mesh requirements to produce high-quality results with an acceptable number of elements. With RBM the user can easily select the appropriate set of rules for the target simulation discipline.



SIMULIA World Headquarters
166 Valley Street
Providence, RI 02909 USA
+1 401 276 4400
E-mail: simulia.info@3ds.com

DASSAULT SYSTEMES