FEA & CFD for racecar design

RAETECH Corporation

Motorsports

United States of America

www.raetech.com

ANSYS

ANSYS Meshing Solution

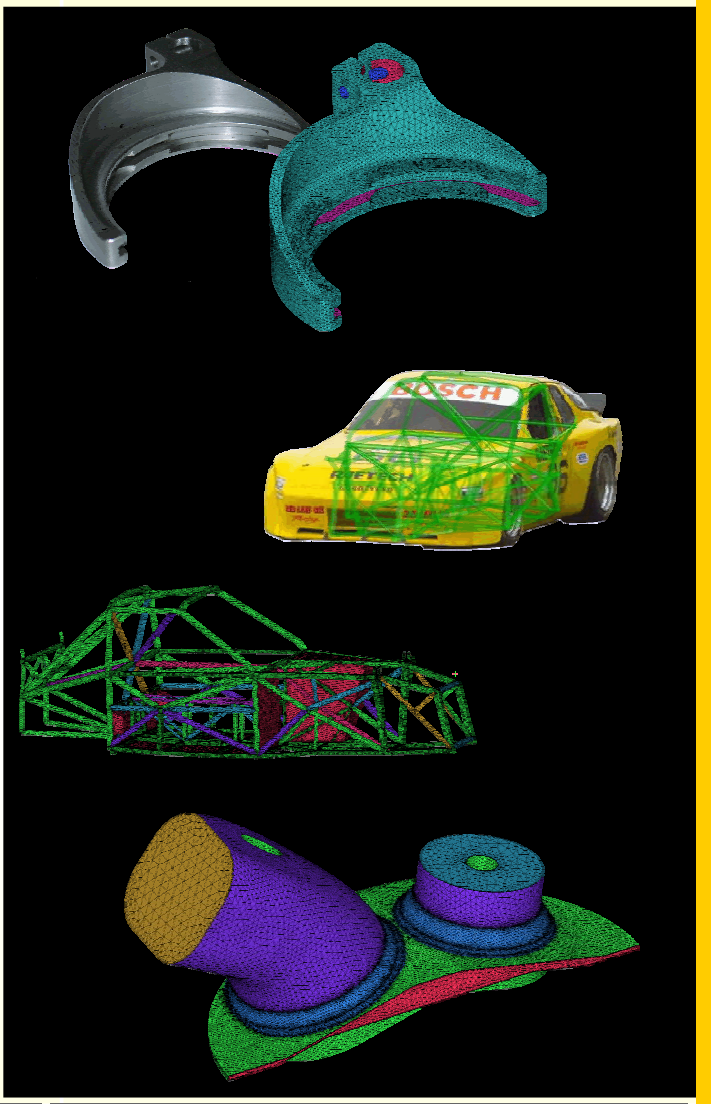
Overview

Specializing in automotive design and analysis with a focus on the Motorsports arena, Raetech is usually involved in projects from the design and analysis phase through prototype and testing of the finished product. Raetech's experience involves almost every type of automotive component and system. Raetech's structural analysis routine generally includes linear, nonlinear and fatigue analyses, although their capabilities extend beyond this. Raetech also utilizes CFD where appropriate, especially in engine component designs and A to B comparisons. Raetech firmly believes in closely coupling the design and analysis phases, followed by properly validating the real physical parts.

Testimonial

"The ANSYS ICEM CFD suite is a great assortment of meshing tools. Complete turnaround time from an imperfect CAD surface model to a fully meshed model ready for analysis is phenomenal. We have not found another tool that can hold a candle to ANSYS ICEM CFD's capabilities in meshing, interoperability, or ease of use. Simply put, this is the best meshing tool for complicated problems."

Kevin Kwiatkowski
Raetech Corporation



The Process

Raetech usually brings data to ANSYS ICEM CFD through the CATIA V4 importer or the Solidworks plug-in. The supplied CATIA V4 reader is hands down the best CATIA V4 translator we have ever seen. The direct Solidworks plug-in also works flawlessly. We import surfaces, and then build the boundary geometry in ANSYS ICEM CFD.

We create both solid and surface meshes using Tetra. Tetra easily creates a triangle mesh that is continuous over all touching or near-touching surfaces. Patch-based meshing approaches require splitting the surfaces at intersections, which can be very time consuming. The ANSYS ICEM CFD Octree meshing approach forgoes cleaning up all but the dirtiest geometry to create a good mesh quickly. Structural meshes are then exported to ANSYS and CFD meshes exported to ANSYS CFX.

The Benefits

Intuitive and easy to use GUI

Minimal geometry cleanup and problem setup before meshing

Fast and thorough responses from customer support

Excellent CAD translation capabilities

ICEM CFD geometry building tools work very well

Efficient mesh analysis, cleanup, and refinement tools

Mesh export to any format required

Visual3 is very fast for post-processing large structural models

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