



Design Studio for Genesis

A Graphical User Interface
for the *GENESIS*
Structural Analysis and Optimization Software

New Features and Enhancements

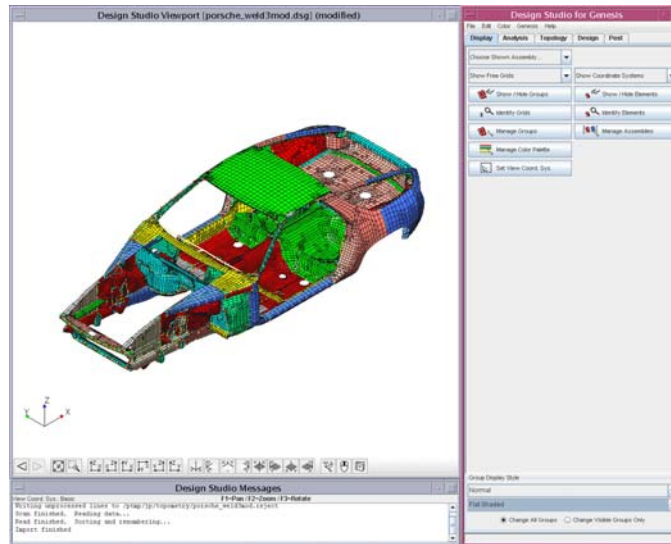
Version 9.0

December 2006

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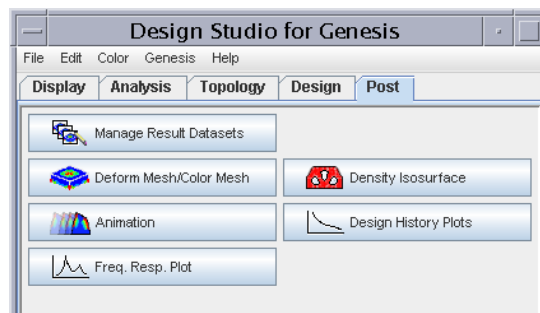
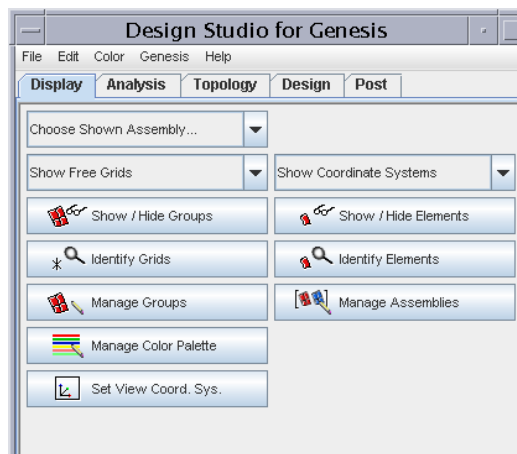
1 Introduction

This document describes the new features available in Design Studio for Genesis 9.0. Design Studio has been ported to has been 64-bit machines.



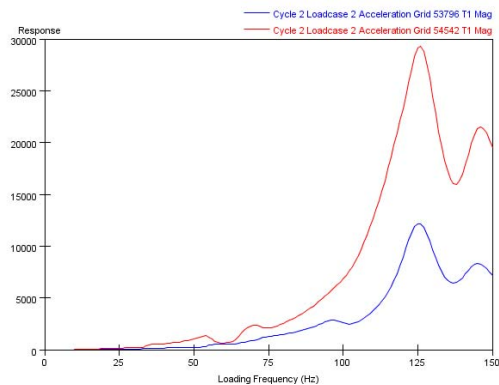
2 Interface Enhancements

1. The tabs in the main windows has been moved from the bottom to the top. This reduces the amount of mouse motion required and speeds up the use of the interface.
2. Icons have been added to buttons in the **Display** and **Post** Tab Panels to speed up finding the desired functions.



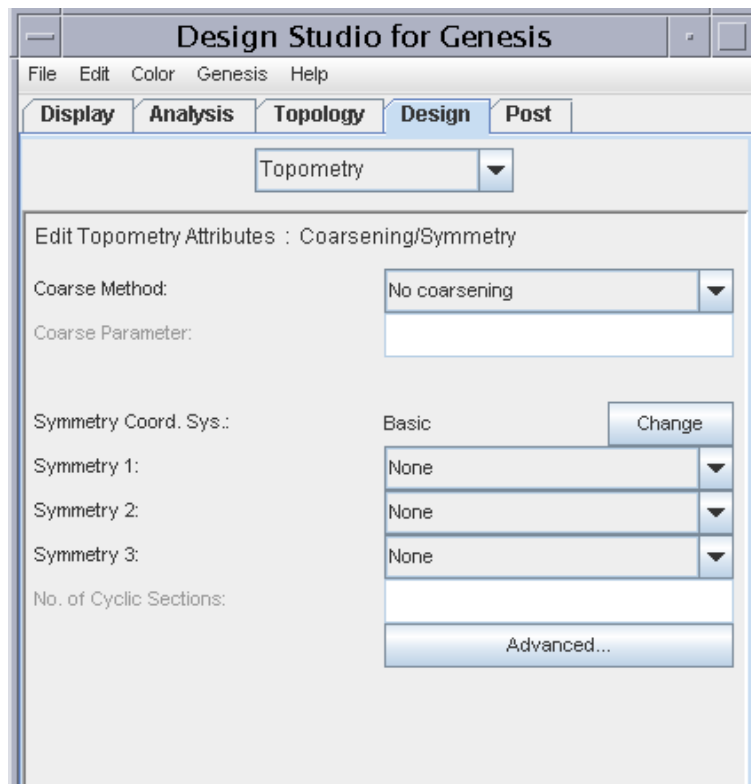
3 Analysis Enhancements

1. 64-bit capability.
2. The PBEAML property added in GENESIS is now available
3. The new solution control command K4AA is now preserved in Design Studio.
4. Graphs with frequency response displacements, velocities and accelerations are now available in Design Studio.
5. User function of dynamic displacements, velocities and acceleration can now be accessed in Design Studio. Graph using these results can be plotted with Design Studio.



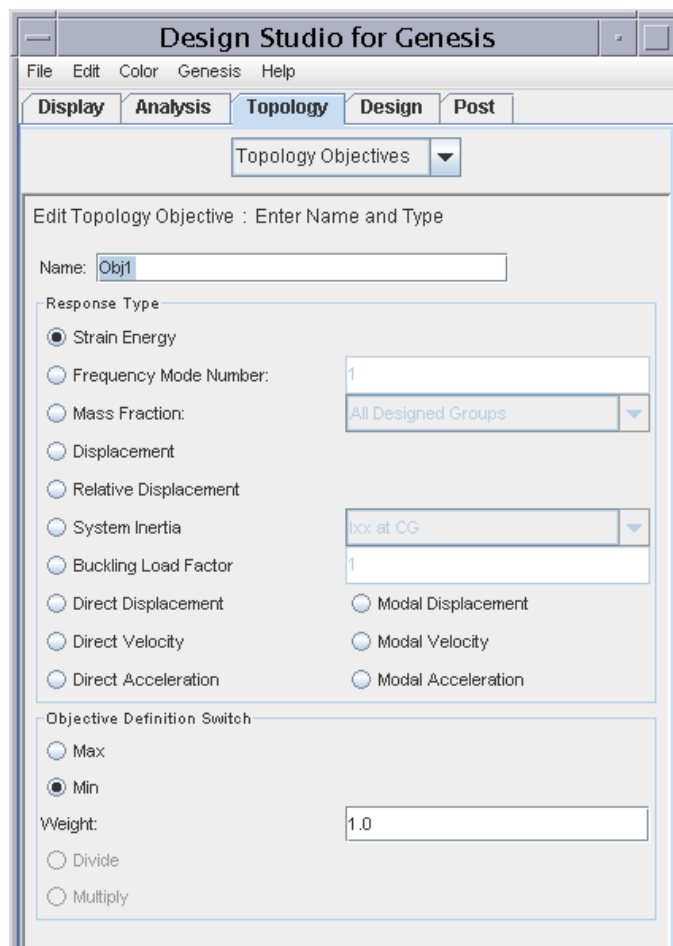
4 Shape, Sizing, Topometry and Topography Optimization Enhancements

1. Coarse topometry parameters can be controlled in Design Studio.
2. Topometry fabrication constraint parameters can be controlled in Design Studio.
3. Multi-objective and hybrid optimization capability has been added.
4. New responses have been added for parametric optimization. Now the real, imaginary, magnitude or phase of user functions of modal or direct frequency response displacements, velocities and/or accelerations can now be selected as objectives or constraints.
5. The algorithm to automatically select internal nodes in 3-D domains has been improved to account for warped faces.



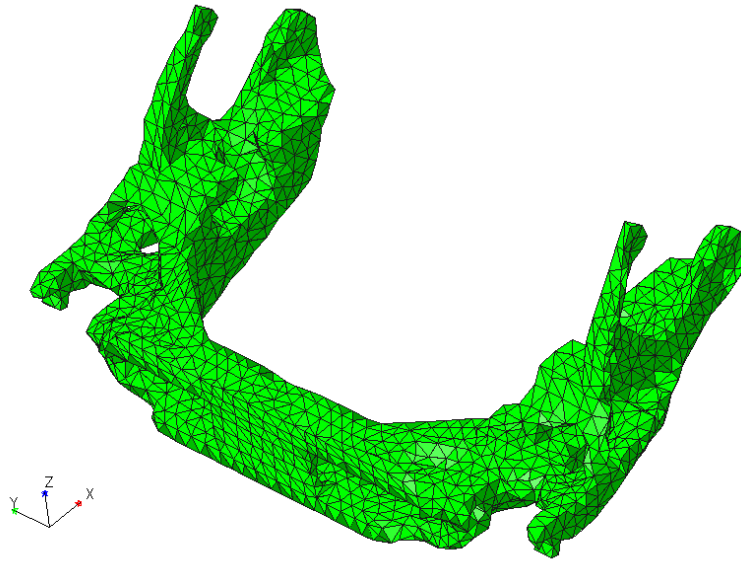
5 Topology Optimization Enhancements

1. The buckling load factor response has been added to topology optimization. Now lma can be selected as the objective or as a constraint.
1. New dynamic responses have been added to topology optimization. New responses for direct and/or modal frequency responses are magnitude, phase, real or imaginary components of displacements, velocities or accelerations. Now dynamic responses can be selected as the objective or as constraints.
2. New combination of fabrication constraints are now allowed. Now geomtery based fabrication constraints (such as the ones use for extrusion and or casting) can be mixed with mirror and cyclic symmetries.



6 Output Enhancements

1. Surface meshes can be coarsened and exported using STL, IGES or Genesis input data format.
2. Frequency response graphs can be exported in “png” and text format.



7 Changes in Design Studio for Genesis Version 9.0 with Respect to Design Studio for Genesis Version 8.0

Design Studio database files (*.dsg) written with version 8.0 are compatible with version 9.0. However, database files written with version 9.0 are not compatible with version 8.0.