



Design Studio for Genesis

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

New Features and Enhancements

Versions 15.0

January 2016

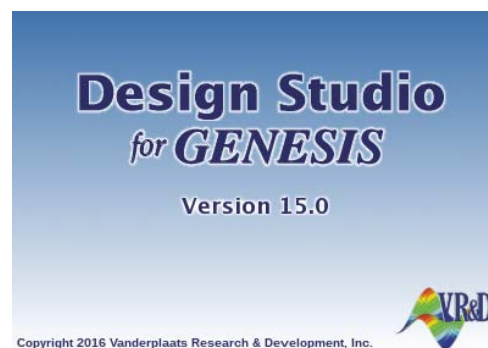
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1 Introduction

This document describes the enhancements and new features added in Design Studio for Genesis 15.0.

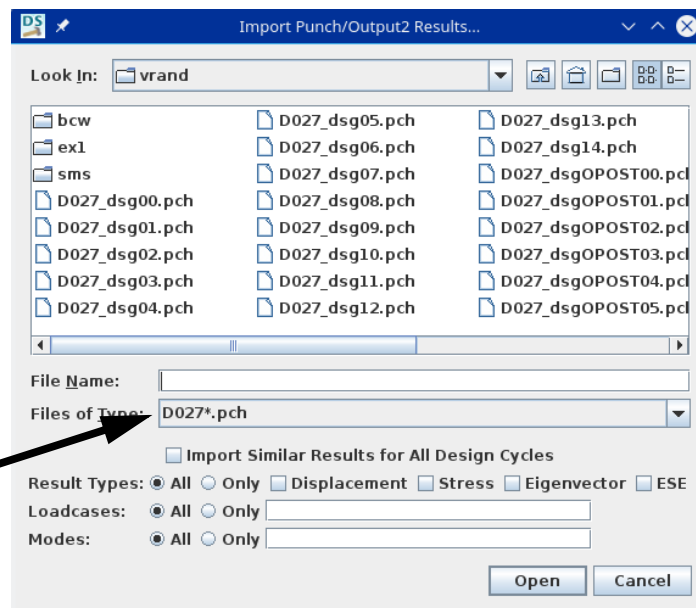
Enhancement Summary

- *GENESIS* 15.0 Compatibility
- Open File Dialog Enhancement
- Save File Dialog Enhancement
- Import Post Dialog Enhancement
- Dynamic Grid/Element/Group Lookup
- Enhanced Grid Highlighting
- Enhanced Show/Hide Elements
- Enhanced Assembly Control
- Enhanced Annotation Tags
- Element Editing Enhancements
- Enhanced Synthetic Results
- Compressed File Import



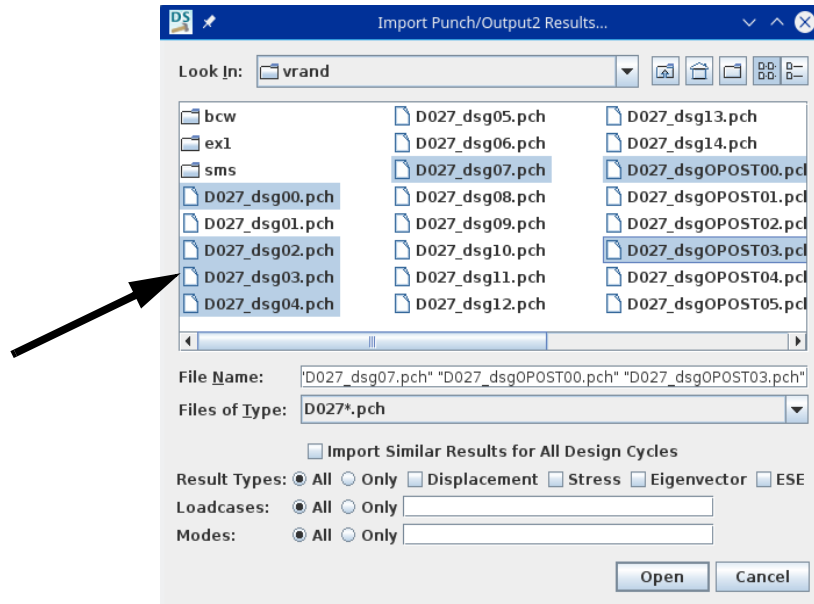
2 General Enhancements

1. *GENESIS 15.0* Compatibility. Design Studio has been enhanced to handle all of the new capabilities of *GENESIS 15.0*. New features in *GENESIS 15.0* include: bolt preload; topology cloning; new topology fabrication constraints; CGLUE1 connection; compressed OUTPUT2 post-processing files.
2. Open File Dialog Enhancement. Design Studio now remembers the last file filter used, including user-typed custom filters. The next open/import file dialog begins with the same filter enabled.



3. Save File Dialog Enhancement. Now save file dialogs remember the directory where a file is saved. The next save/export file dialog begins in that same directory.

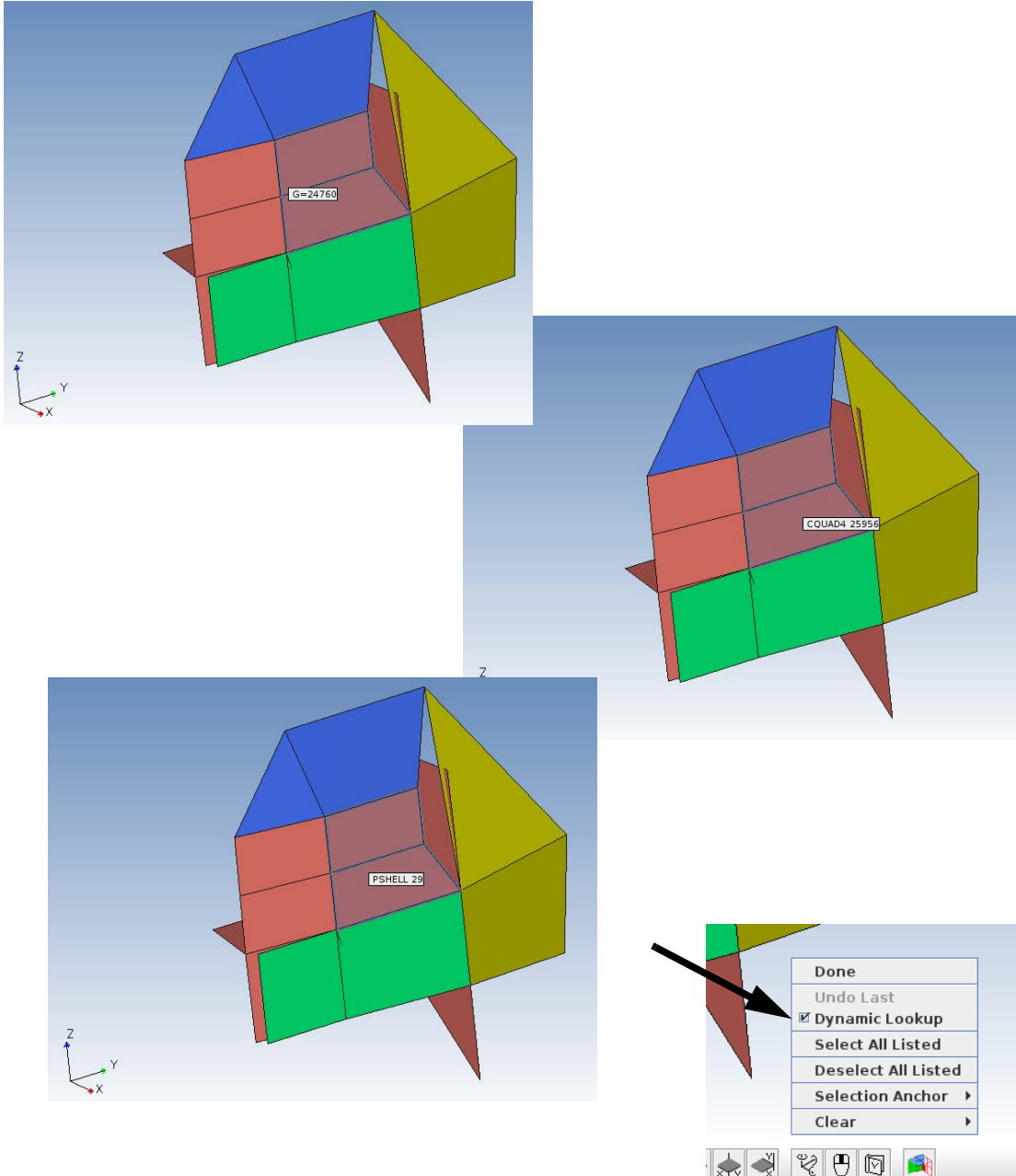
4. Import Post Dialog Enhancement. The Import->Post open file dialog now allows multiple files to be selected. If the “Import Similar...” box is checked, then files similar to any selected file will also be imported.



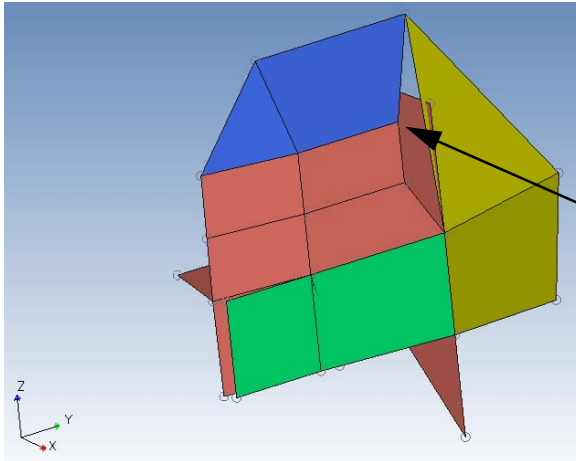
5. New Examples. There are seven new step-by-step example problems in the Design Studio Examples manual that illustrate new capabilities of Genesis.

3 Display Enhancements

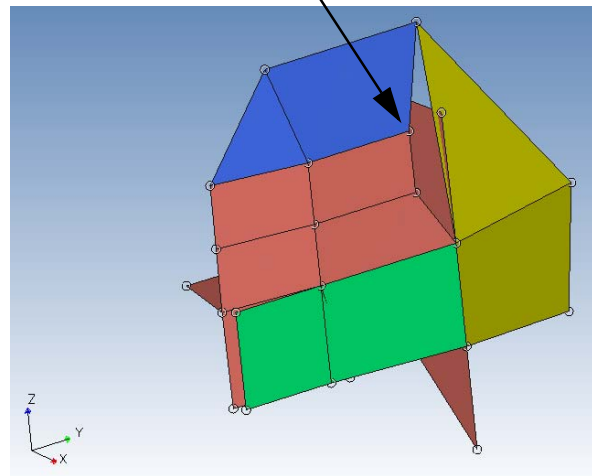
1. Dynamic Grid/Element/Group Lookup. Now all grid/element/group selection panels have the option to dynamically lookup and display the ID of the grid/element/group under the mouse. The right-click menu contains an option to disable/enable this option.



2. Enhanced Grid Highlighting. Selected grids are drawn with a different style intended to make the selection more visible on a wider range of model/background colors.



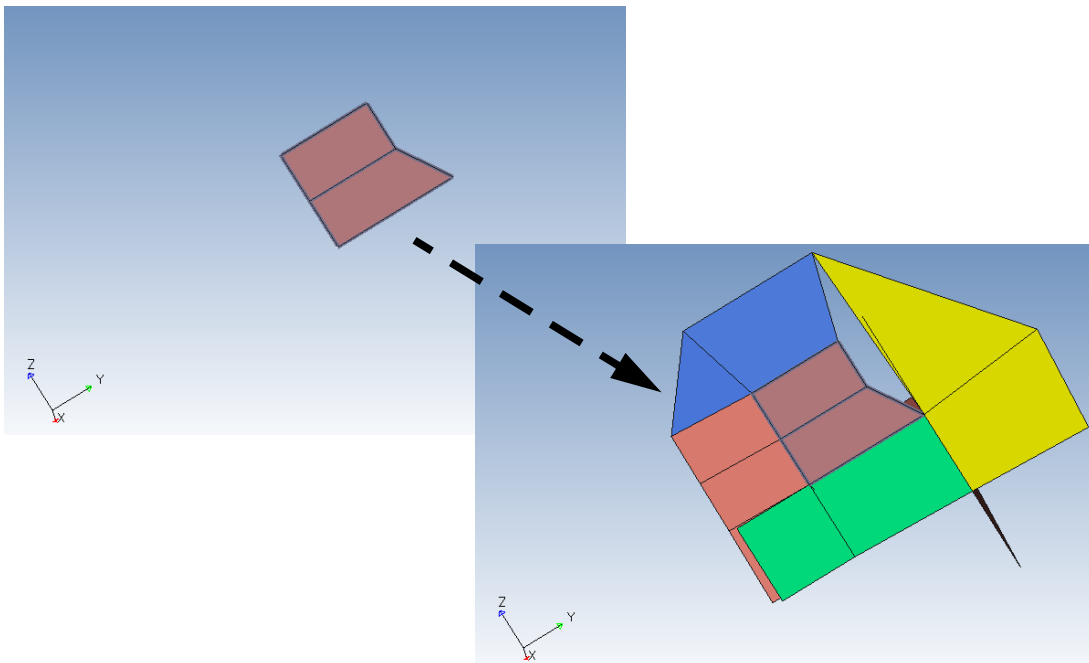
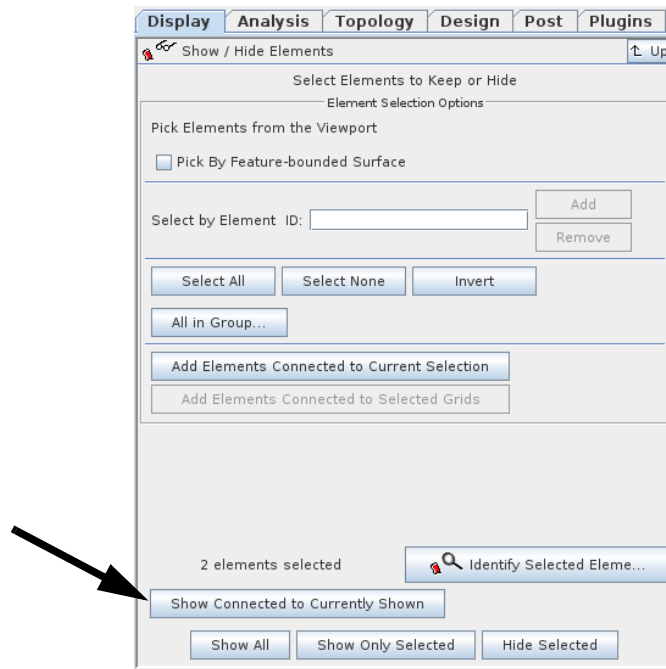
Previous highlight style



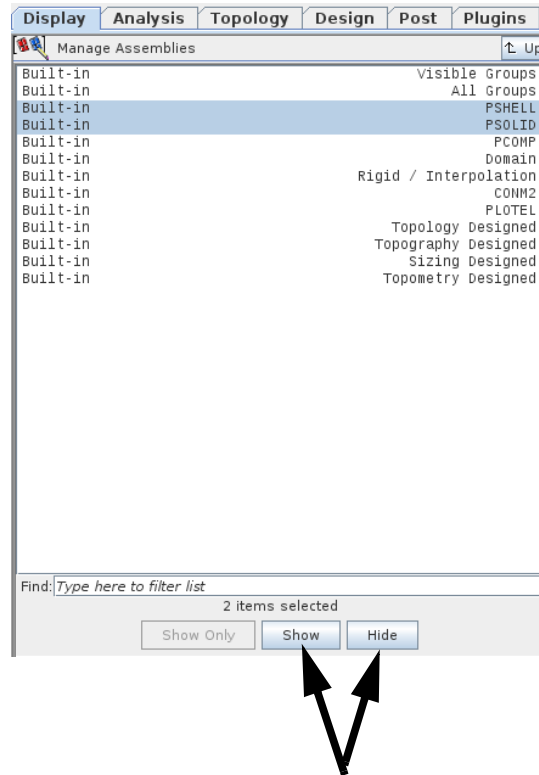
Version 15.0 highlight style

New Features

- Enhanced Show/Hide Elements. A new button in the show/hide elements panel can show elements connected to the currently shown elements. This option can “bring back” hidden elements that are connected to a shown element. Note that if connected elements are in a hidden group, the group (and hence those elements) will remain hidden.

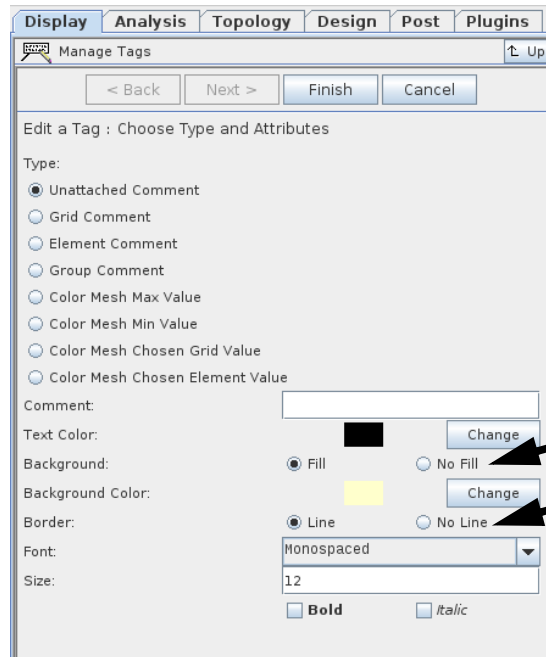


- Enhanced Assembly Control. The Assembly panel now allows multiple assemblies to be shown or hidden with one button click. Previously, when multiple assemblies were selected, the Show and Hide buttons were disabled.



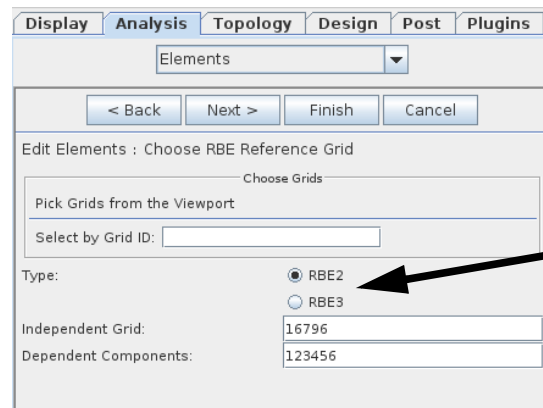
New Features

5. Enhanced Annotation Tags. Tags used to annotate grids, elements or groups have new options to be drawn with or without a filled color background and with or without a border outline.



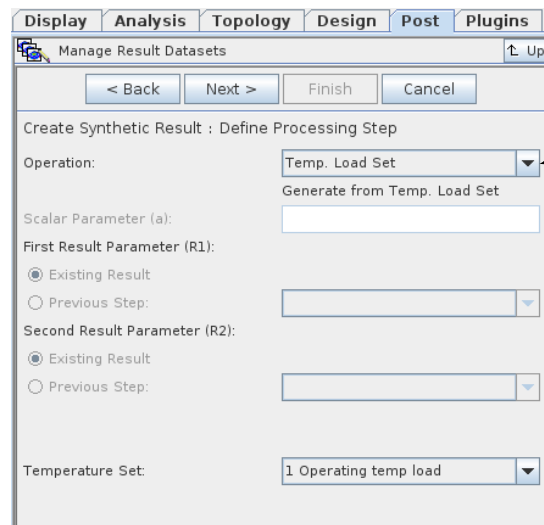
4 Analysis Preprocessing Enhancements

1. Element Editing Enhancements. Now RBE2 elements can be converted into RBE3 elements and vice versa.



5 Postprocessing Enhancements

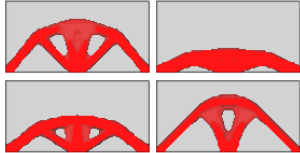

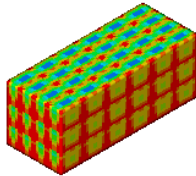
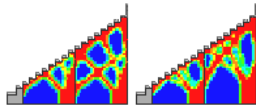
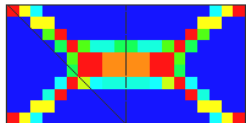
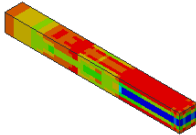
1. Enhanced Synthetic Results. Now a synthetic result can be created from a temperature load. This can allow easy visualization of applied temperatures of static loadcases.



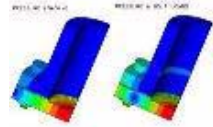
2. Compressed File Import. To support the new compressed OUTPUT2 files produced by *GENESIS*, Design Studio now has the ability to open/import any file compressed in the standard `gzip` format (`*.gz`). Compressed files selected for open/import will be transparently uncompressed while reading.

6 New Example Problems

The following table describes new examples and their corresponding input file names. The listed files are provided with the installation:

Name	Problem	Special Features	Figure
TPDSG029 .dat	Topology Optimization with Different Material Types	<ul style="list-style-type: none"> Using different types of materials Compare designs from the multiple runs 	
TPDSG030 .dat	Fabrication Constraints - Periodic and Mirror Symmetry	<ul style="list-style-type: none"> Using mirrored periodic fabrication constraints 	
TPDSG031 .dat	Fabrication Constraints - Pattern Repetitions	<ul style="list-style-type: none"> Using pattern repetition fabrication constraints in three directions simultaneously 	
TPDSG032 .dat	Cloning Topology Design Over Multiple Regions	<ul style="list-style-type: none"> Cloning topology design across regions Cloning with and without scaling 	
TMDSG014 .dat	Coarse Topometry Optimization - Mesh-independent Symmetry Constraints	<ul style="list-style-type: none"> Coarse topometry with the cell size option Mesh independent symmetric design 	
FRDSG010 .dat	Optimizing Equivalent Radiated Power (ERP)	<ul style="list-style-type: none"> Defining panel to compute ERP Topology optimization for ERP reduction 	

New Features

ASDSG009 .dat	Static Analysis with Bolt Preloading	<ul style="list-style-type: none">• Defining bolt pre-loads in model• Perform analysis with and without bolt loads	
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7 Compatibility with Previous Versions

1. Design Studio database files (*.dsg) written with version 14.0 or earlier are compatible with version 15.0. However, database files written with version 15.0 are not compatible with previous versions.