



AUTOMATED DESIGN ANALYSIS

Release Notes

Version 5

Version 5.0 (2016-07-25)

- **NX Nastran Support**
 - Added support for the NX Nastran FEA engine, allowing Sherlock to perform FEA analysis tasks using that engine and to export mesh models to that engine using the NX Nastran Bulk Data File (BDF) format. *Support for NX Nastran requires a Sherlock license option to be enabled. If you would like to use it, please contact your DfR Solutions sales representative.*
- **Modeling Regions**
 - Added support for user-defined PCB modeling regions for FEA analysis or model export. Modeling regions allow users to specify different meshing properties for different PCB areas which can be used, for example, to increase model accuracy in certain areas without significantly increasing the overall FEA model complexity. See the *Modeling Regions* user guide section for details and examples.
- **FEA Model Export**
 - Users can now export FEA models containing elements generated by the Sherlock meshing algorithm to Abaqus and Ansys Mechanical. Abaqus models are exported as a Python script that defines the mesh elements and then creates individual Abaqus parts from those mesh elements. Ansys Mechanical models can be exported as either a pair of APDL/CDB files that defines a model that can be imported using the “Read Input From ...” GUI menu option or a single CDB file that can be imported using the “cdread” command.
 - Users can now export “hybrid” FEA models to Abaqus or Ansys Mechanical that use elements generated by both Sherlock's meshing algorithm and the native FEA tool meshing algorithm. See the *Modeling Regions* user guide section for details and examples.
- **Heat Sinks**
 - Added the ability to create attachment points for heat sinks from mount points. See the *Heat Sinks* user guide section for more details.
 - Modified the *Heat Sink Editor* to allow properties for multiple heat sinks to be modified at the same time.
- **Mechanical Parts**
 - Added the ability to create attachment points for mechanical parts from mount points. See the *Mechanical Parts* user guide section for more details.

- Modified the *Mechanical Part Editor* to allow properties for multiple mechanical parts to be modified at the same time. Mechanical part multi-edit is only allowed when the selected mechanical parts all have the same shape type.
- **Mount Points and Fixtures**
 - Modified the *Mount Point Editor* and *Fixture Editor* to allow properties for multiple mount points to be modified at the same time. Mount point multi-edit is only allowed when the selected mount points are of the same mount and shape type.
- **Lead Modeling**
 - Added the “Leads” filter to the 2D Layer Viewer to allow users to display lead outlines for parts which have the “Lead Modeling” or “Ball Modeling” part properties enabled. This can be used to more accurately align components with underlying solder masks, pads or traces. See the “*2D Lead Viewing*” sub-section of the **Lead Modeling** user guide section for details and examples.
- **ODB++ Support**
 - Added an option in the file properties dialog for Pick & Place (ODB++) files to indicate from which direction the rotation values for bottom side components are relative to. By default, Sherlock assumes the rotation value is as if looking down from the top side of the board. By changing the “**Bottom Rotation View**” property to a value of “**BOTTOM**”, Sherlock will take the values as if the observer is looking at the bottom components from the bottom of the board.
- **Potting Regions**
 - Added support for potting through-hole parts with 90 degree bent leads.
 - Added support to the Ansys Plugin for assigning potting region materials.
- **Part and Package Editor**
 - Modified the Part and Package editors to gray out part properties / tabs that are not applicable because of other property settings instead of disabling them. This allows users to view and/or edit such properties even though they are currently unused. Users who prefer to have such properties / tabs disabled should use the “**disableUnusedPartProperties**” debug setting.
 - Added a read-only Package Type field to the Part Editor to indicate which package type is chosen by Sherlock for the selected part package. The Solder Fatigue Model chosen by Sherlock may also be displayed by adding the “**includePackageTypeSolderModel**” debug setting.
- **Package Library**
 - Added *Die Material* package property to allow specific materials other to be specified for the die instead of the default of silicon which is used during Solder Joint Fatigue analysis.

- **Plated Through-hole Analysis**

- Plated through-hole analysis now allows the IMEC Plated Through-hole Fatigue model to be used for analysis and with the PTH Fatigue calculator in addition to the existing default IPC-TR-579 model.
- Updated Plated through-hole analysis for the IPC model to include elastic strain range.

- **Shared Data Files**

- The location of Sherlock data files for managing items like materials, laminates, packages, and others may now be specified so that these files may be shared amongst users by using a network shared drive. See the *User Data Files* user guide section for more information.

- **User Interface**

- Added a “Show File Location” menu option to the popup menu of the Files listed for a CCA and for saved results to make it convenient to quickly find the files on the file system.
- The FEA analysis property dialogs are now displayed when selecting “Run Analysis Task” similar to the “Edit Properties” option to allow the user to verify that everything is correct before starting an analysis task.
- The FEA analysis property dialogs now include “Select All” and “Clear All” convenience buttons in the event list panel if more than one event is defined.

- **Bug Fixes**

- Corrected Harmonic and Random Vibration results with Abaqus where only the real component was used for determining the displacement and strain instead of using the complex component.
- Fixed a bug in the Ansys Plugin that prevented materials from being assigned properly to leaded parts in some cases.
- Fixed a bug with the editor dialog of circular shaped objects such as mount points, ICT fixtures, mechanical parts, and potting segments that would display a diameter value that was smaller than the actual diameter of the circle when a small number of nodes was selected for the circular object.
- Corrected exported geometry models that contained mount holes that weren't circular from always making those mount holes as a circular shape.
- Fixed a bug in the test point editor where test point layers weren't properly selected when starting the editor and test points could be selected from inside the editor even if the side they were on wasn't selected.
- Updated the part library export to remove leading and trailing spaces around the part manufacturer and part numbers in the resulting XML file to prevent issues during import with values that have leading escape sequences.
- Corrected a problem with importing ODB++ Pad (P) records that specified a specific

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rotation value for pad definitions 8 and 9 which caused the specified rotation to be rounded to the nearest 90 degrees.

- Fixed a bug that prevented the layer viewer from working when an ODB++ surface definition does not contain at least one polygon definition. Such surface definitions are now ignored and indicated as errors when parsing the file.
- Corrected 3D PDF generation to display Potting elements in a transparent color.
- Fixed a problem with the **3D Viewer** which caused the viewer application to abort if the window was re-sized multiple times.
- Fixed a problem with report generation where any image related to the bottom side of the CCA always showed the silk screen, solder mask, or copper layer from the top side.