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Simcenter Flotherm Release Highlights

Software Version 2019.1

June 2019

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Introduction

This document provides a high-level summary of this release. It includes a summary of the new features in this release, any authorization code changes required, any major installation changes, and any transitioning issues you should be aware of before installing.

This document is located on the CD and on Support Center. Changes may be added to this document after the release. Refer to the Release Highlights documents on Support Center for the most up-to-date release information

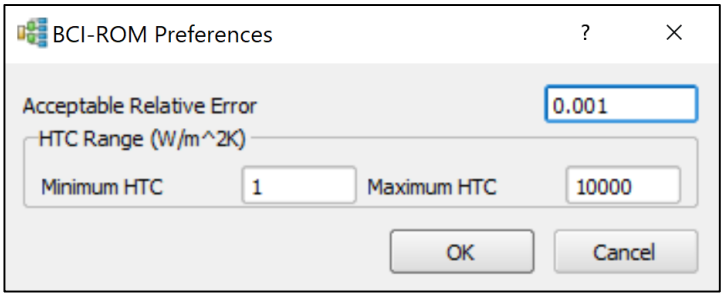
New Features

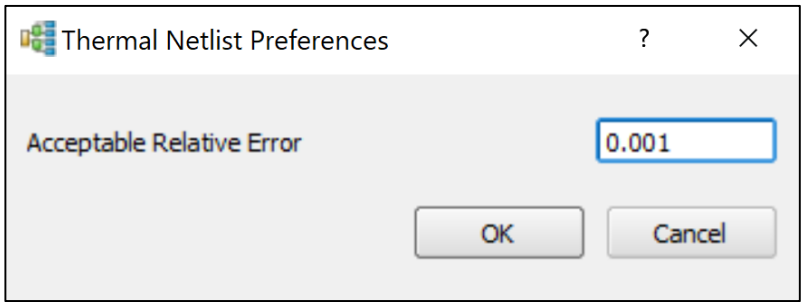
The following new features are available in this release.

Platform Support

Ref.	Title	Description
1.1	OS Support Changes	Linux: Red Hat 7.4 and 7.5 now supported Windows Server 2016 now supported Linux: Red Hat 6.6 is no longer supported Windows Server 2008 R2 is no longer supported. OS Roadmap Notes: • Simcenter Flotherm™ software 2019.1 is the final release that will support Windows 8/8.1 and Windows Server 2012. • The next release of Simcenter Flotherm will be the last that supports Windows 7.
1.2	Licensing Version	Simcenter Flotherm 2019.1 requires updating FLEXnet license server to version v11.16.0.0 or higher.
1.3	Flovolunteer GUI	The Flovolunteer GUI will be retired in the next release of Simcenter Flotherm. The Flovolunteer service will continue to be supported.

Reduced Order Model Creation

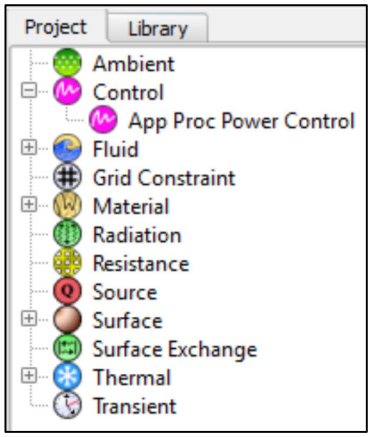
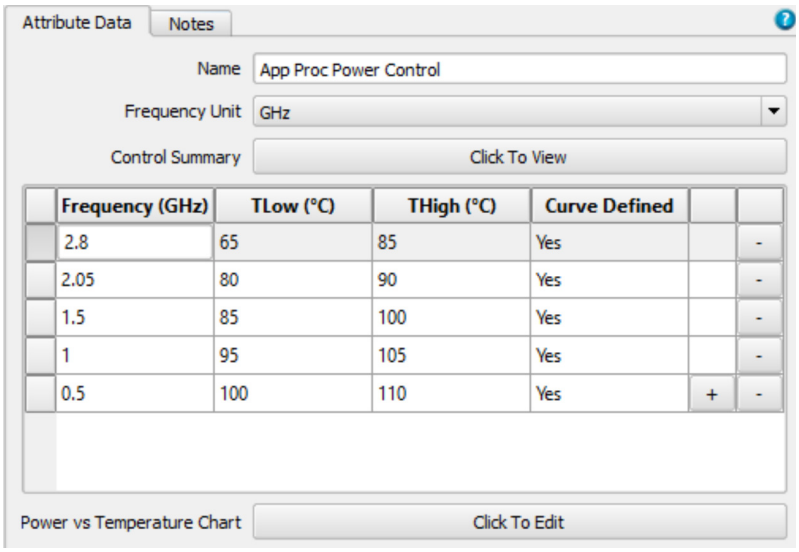
Ref.	Title	Description
2.1	BCI-ROM Export	For linear, conduction only models, a Boundary Condition Independent Reduced Order Model (BCI-ROM) can be created to a user requested level of relative error, ϵ. The BCI-ROM is extracted using the FANTASTIC method[1]. The BCI-ROM is created in the form of a zip file containing matrices compatible with analysis in Matlab, Octave, and similar tools. Please refer to Support Center content for tutorials and examples of usage in those tools. Inputs: Acceptable relative error Heat Transfer Coefficient Range  **Note:** This feature requires a 'BCI-ROM+Thermal Netlist Extraction' license.

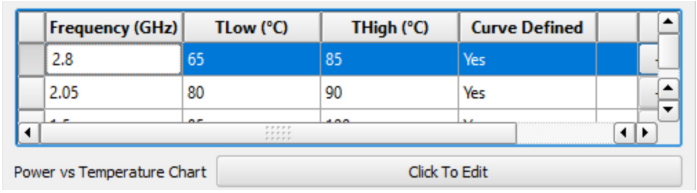
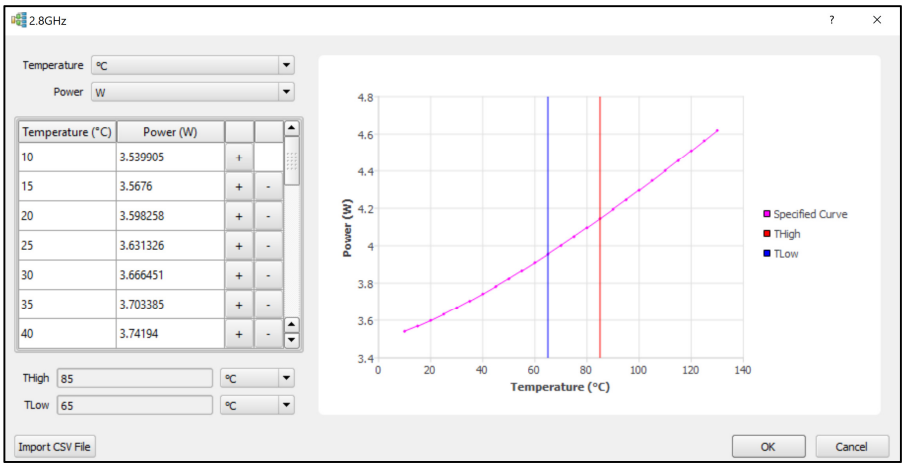
Ref.	Title	Description
2.2	Thermal Netlist file export.	For linear, conduction only models, a thermal netlist file (also known as a thermal spice file) can be can be created to a user requested level of relative error, ϵ. The thermal netlist is extracted using the FANTASTIC method[1]. This will export a .sp file compatible with electrothermal analysis in Mentor Eldo. Please refer to Support Center content for tutorials and examples of usage in this tool. Inputs: Acceptable Relative Error  **Note:** This feature requires a 'BCI-ROM+Thermal Netlist Extraction' license.

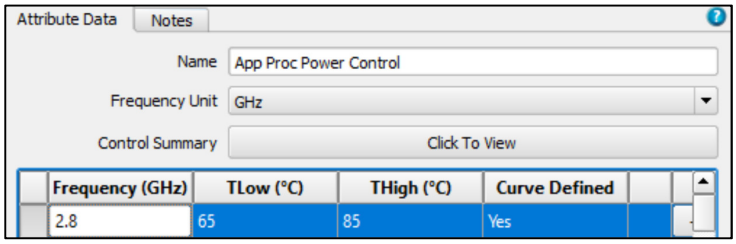
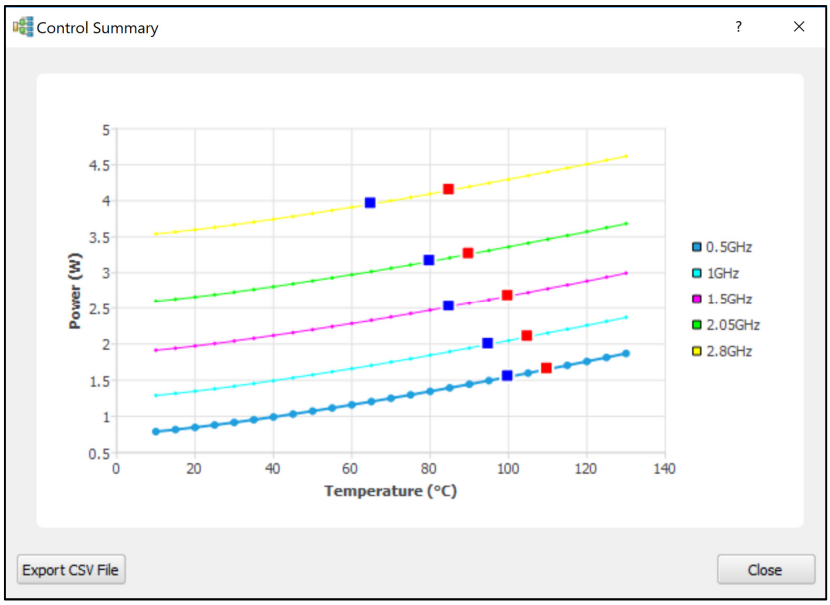
Reference:

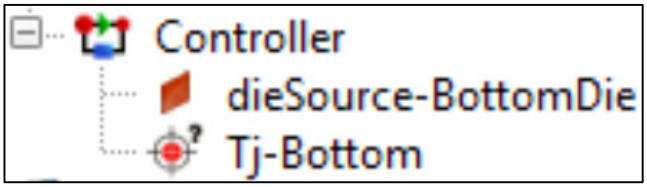
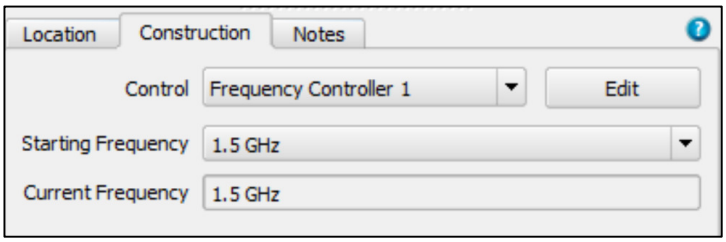
1. L. Codecasa, V. D'Alessandro, A. Magnani, N. Rinaldi, "Fast novel thermal analysis simulation tool for integrated circuits (FANTASTIC)", *20th International Workshop on Thermal Investigations of ICs and Systems (THERMINIC) article 6972507 United Kingdom*, 2014.

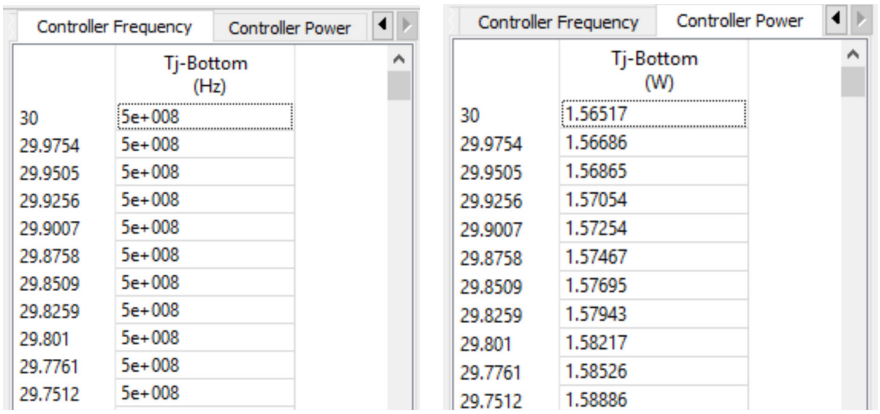
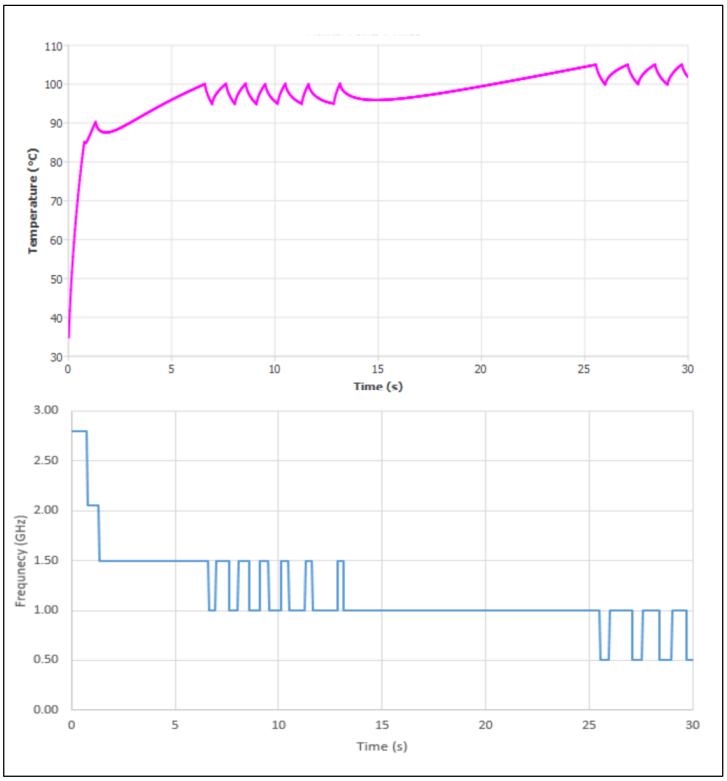
Power Control

Ref.	Title	Description
3.1	Control Attribute	Contains thermal definitions of operating frequencies: • Frequency • Power vs Temperature data • Minimum Temperature • Maximum Temperature  

Ref.	Title	Description
3.2	Frequency – Power vs Temperature	Power vs Temperature data is entered for individual frequencies. Note: The 'Curve Defined' column indicates if this data is present for each frequency.   Power vs Temperature curve can be entered manually within the table, or by importing a CSV file. The temperature limits for this frequency are displayed on the chart. The values are read only in this window.

Ref.	Title	Description
3.3	Control Summary	The ‘Control Summary’ command is used to visualize all defined power vs temperature curves on the same chart.   The entire controller definition can be exported from this chart as well in CSV format.

Ref.	Title	Description
3.4	Controller Object	A controller object contains: • One Heat Source [Controlled Power] • One Monitor Point [Temperature Sensor]  The behaviour of the controller object is fully defined by the attached Control attribute.  The frequency at the beginning of the transient simulation is set with the 'Starting Frequency' field.
3.5	Controller Behavior	<u>Transient models:</u> The operational frequency of the controller will automatically change during the transient solution as follows: • **Sensor Temperature > Frequency Maximum Temperature**, then the Controller switches to the next lowest defined frequency. • **Sensor Temperature < Frequency Minimum Temperature**, then the Controller switches to the next highest defined frequency. <u>Steady State models:</u> The frequency does not change. The 'Starting Frequency' is used for the entire simulation.

Ref.	Title	Description
3.6	Results Output	Monitor Points within Controller objects have power, frequency, and temperature history available in the Tables window.  This data can be copied into spreadsheet tools for further analysis. 

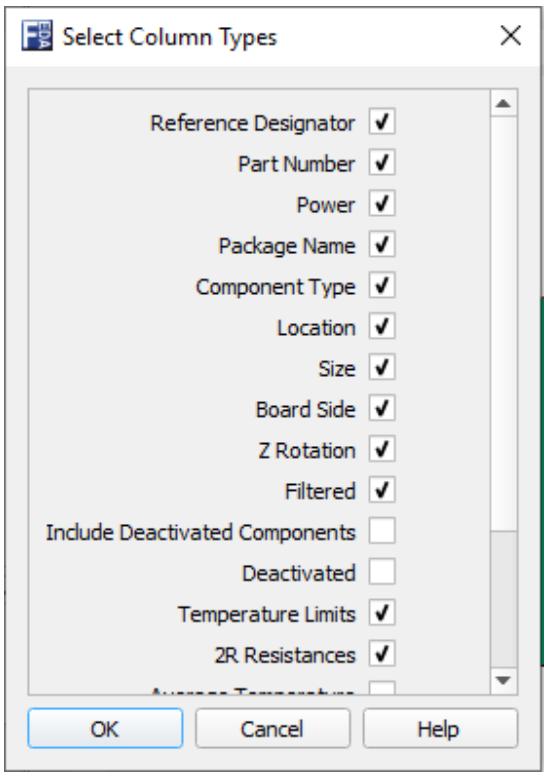
Controller Frequency | Controller Power

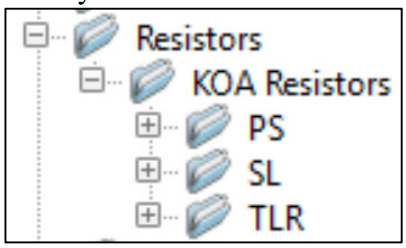
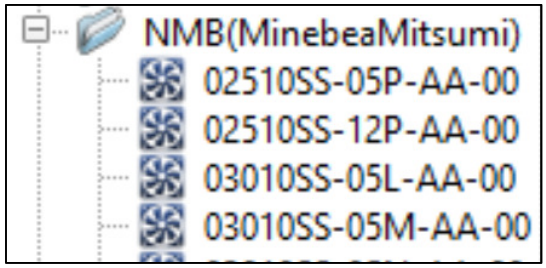
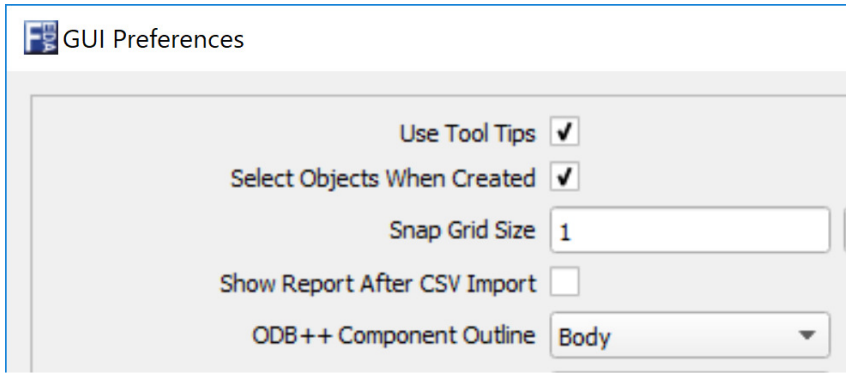
	Tj-Bottom (Hz)
30	5e+008
29.9754	5e+008
29.9505	5e+008
29.9256	5e+008
29.9007	5e+008
29.8758	5e+008
29.8509	5e+008
29.8259	5e+008
29.801	5e+008
29.7761	5e+008
29.7512	5e+008

Controller Frequency | Controller Power

	Tj-Bottom (W)
30	1.56517
29.9754	1.56686
29.9505	1.56865
29.9256	1.57054
29.9007	1.57254
29.8758	1.57467
29.8509	1.57695
29.8259	1.57943
29.801	1.58217
29.7761	1.58526
29.7512	1.58886

General

Ref.	Title	Description
4.1	Export to previous version	Export models and assemblies as Simcenter Flotherm v12.2 PDML.
4.2	Z-Rotation support for CSV Layout	Z-rotation for components is now supported for Import and Export of CSV Layout files in FloEDA Bridge. 
4.3	ECXML import/export	ECXML import/export is now installed by default and no license is required.

Ref.	Title	Description
4.4	KOA Resistor Library	A library of KOA resistors is now installed by default into the Simcenter Flotherm library.  *Note: More information on how to use the KOA resistors can be found at KOA website following the link below;* *https://www.koaglobal.com/design_support_tools/flotherm*
4.5	NMB Fan Library Update	The NMB library of fans has been updated. 
4.6	Package Outline Control ODB++	The ODB++ component outline type to be used during import can be controlled with Preferences in FloEDA Bridge. Options: • Body: The outline specified during ODB++ creation • Envelope: The outline specified during ODB++ creation but expanded to include any peripheral pins. 

Ref.	Title	Description
4.7	FloSCRIPT relative path support	FloSCRIPT now supports the use of relative paths for all file export commands.

Licensing

This release uses the Mentor Standard Licensing v2018_2_patch2 for Windows and 2018_2_patch4 for Linux. v2018_2 requires a FLEXnet license server running at version v11.16.0.0 or higher. If you use floating licenses, you will need to update the license server accordingly. Download the latest licensing software from Support Center. Alternatively license server is available from product installation.

Authorization Codes

No changes to authorization codes are required for this release. You may request your existing authorization codes by opening a non-technical Service Request on Support Center.

Starting with Release 2019.1, a new authorization code feature line is required for Simcenter Flotherm to enable the new BCI-ROM and Thermal Netlist export feature with purchase of "277681 BCI ROM+Thermal Netlist Extraction Op SW" product. You may request your updated authorization codes by opening a non-technical Service Request on Support Center:

`https://support.mentor.com`

For additional information on licensing, refer to the *Licensing Mentor Graphics Software* manual.

Installation Information

For additional information on installation, refer to the *Simcenter_Flotherm_detailed_install.pdf* and the help system within the installation software. You can view this manual in the release_documents directory at the top level of the CD.

Support Information

If you have questions about this software release, please log in to Support Center. You may search thousands of technical solutions, view documentation, or open a Service Request here:

https://support.mentor.com/

If your site is under a current support contract but you do not have a Support Center login, register today:

https://support.mentor.com/register

Supported Configurations

This release has been validated as working on and supports the following operating system versions:

Windows 64-bit

- Windows 10 Update Version 1809 (Pro and Enterprise editions).
- Windows 8 and 8.1 (Core, Pro and Enterprise editions)
- Windows 7 (Business, Enterprise and Ultimate editions)
- Windows Server 2012, Standard edition
- Windows Server 2012 R2, Standard Edition
- Windows Server 2016 Version 1607, Standard Edition

Linux, 64-bit

- Red Hat Enterprise Linux 7.4 [Solver Only]
- Red Hat Enterprise Linux 7.5 [Solver Only]