



# FloTHERM<sup>®</sup> XT Release Highlights

Software Version ftxt2.1

March 2015

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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. Additionally, any last minute issues found in the final stages of testing are included.

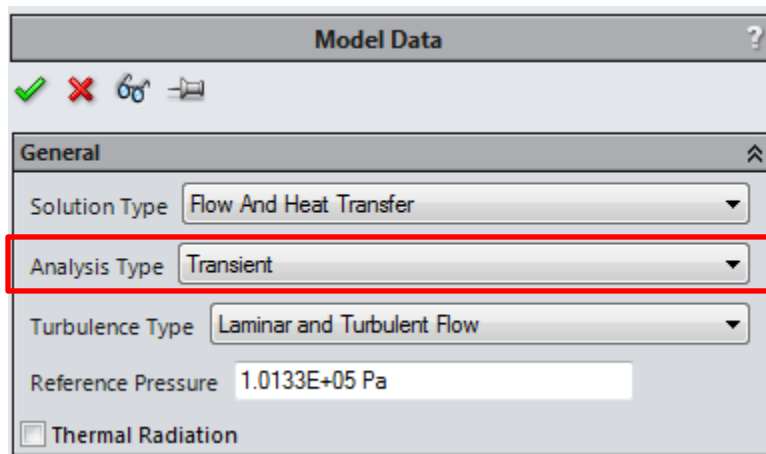
This document is located on the CD and on SupportNet. Changes may be added to this document after the release. Refer to the Release Highlights documents on SupportNet for the most up-to-date release information

## New Features

V2.1 is a major update to V1.2.1, and includes a number of important functional improvements and enhancements:

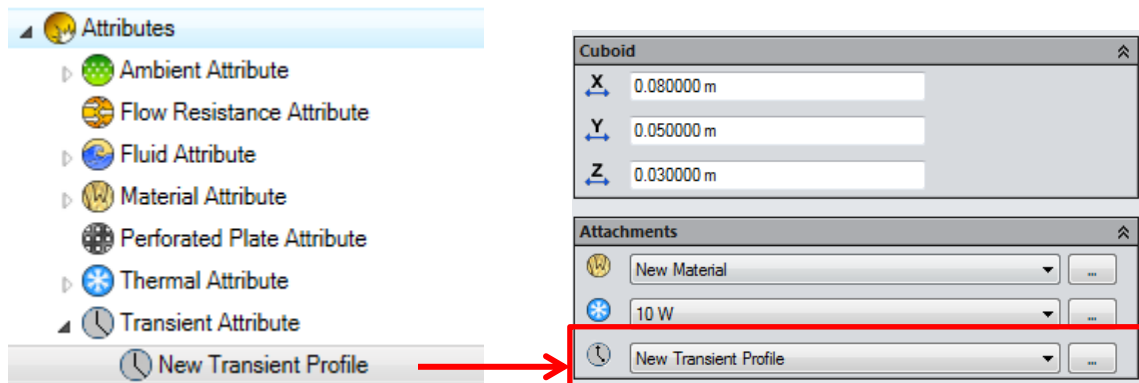
### Transient Support

- Transients are activated by changing the Analysis Type under Model/Model Data or via the Project Wizard:

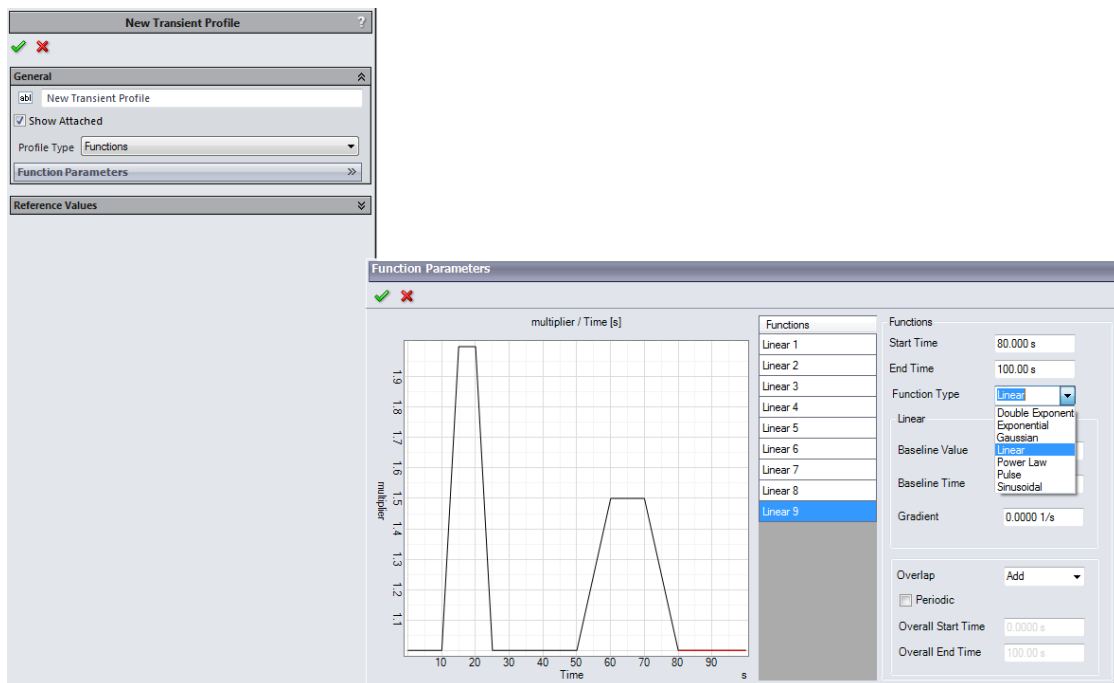
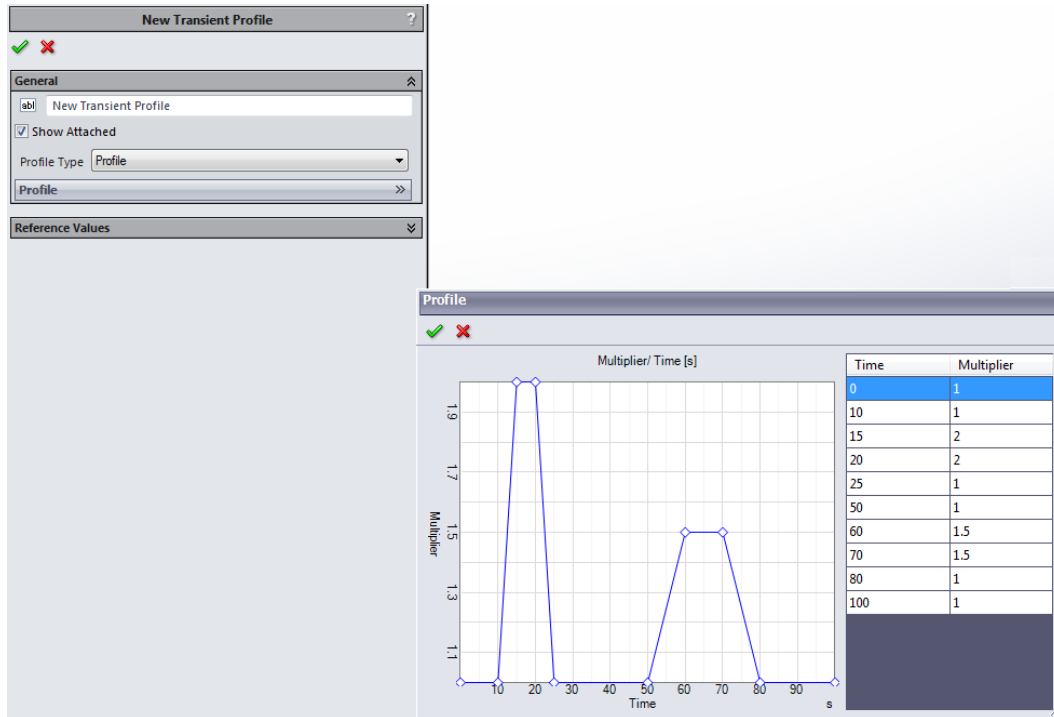


- A new transient attribute is now available for attachment to the following object and attribute types:

Object/Attribute	Implemented for V2.0/V2.1
Cuboid	Thermal power & fixed temperature
Cylinder	Thermal power & fixed temperature
Fan	External inlet, ambient temperature only
Prism	Thermal power & fixed temp
Electrical Condition	Current
External Wall	Ambient temperature only
Fixed Flow	Ambient temperature only
Flow Device	External inlet, ambient temp only
Network Assembly	Single attachment applied to all powered nodes
Planar Thermal Source	Thermal power, fixed temp & heat flux
Pressure	Ambient temperature only
Overall Ambient	Temperature only

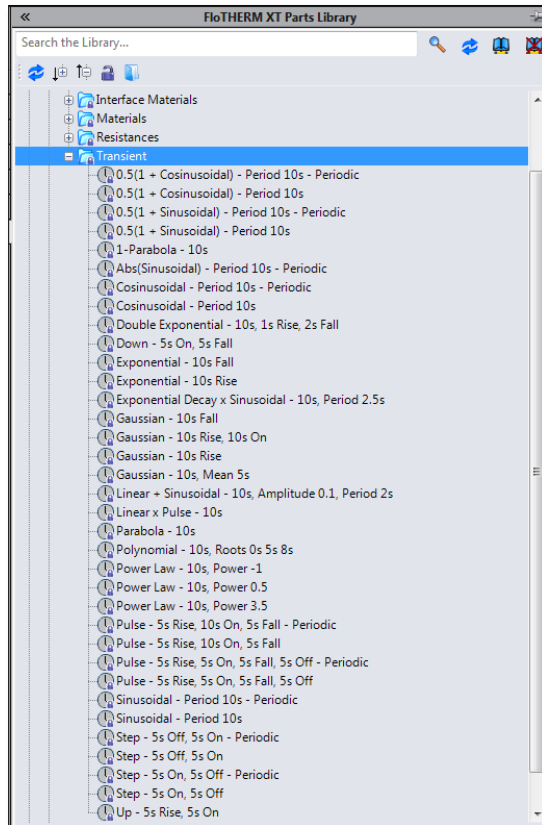


- Both Profile and Function definitions are available for defining transient variations:

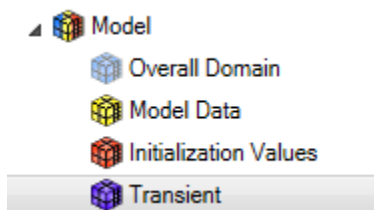


- The Profile mode also supports the import and export of CSV data.

- Transient function examples have been added to the Parts Library:



- Time step definition is accessed from the Transient node in the FloTHERM XT feature tree:



**General**

Total Transient Time

Time Step Type

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**Transient**

**Transient Table** >>

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**Save During Solution**

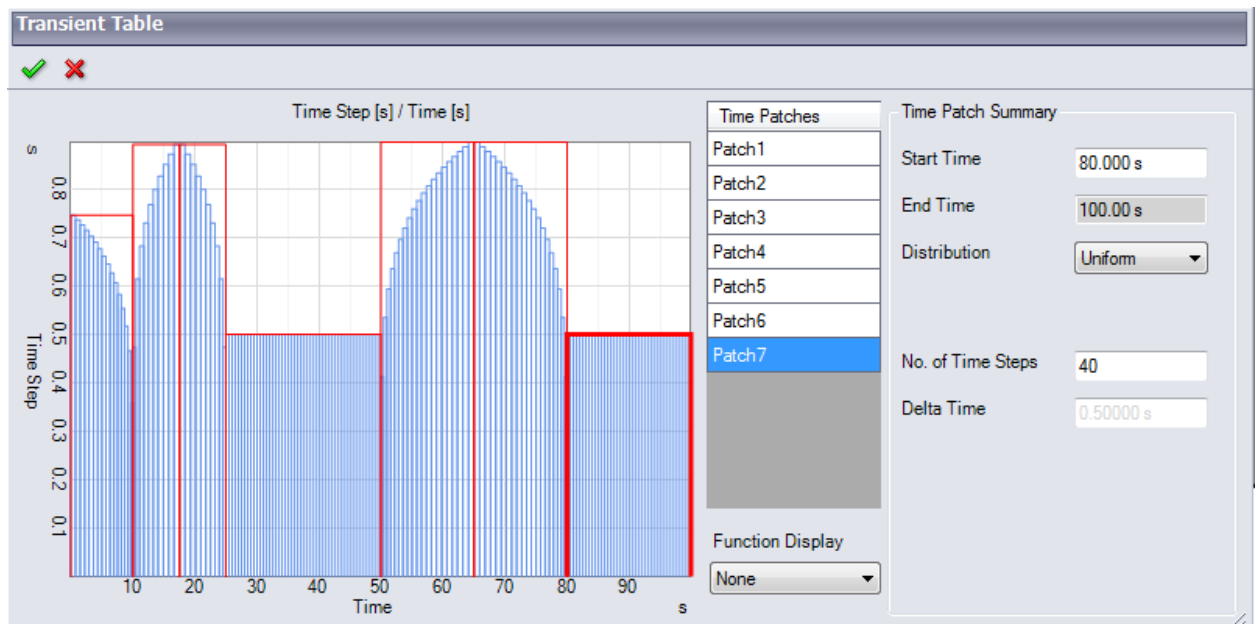
☒ Save During Solution

Transient Save Type

Save Start

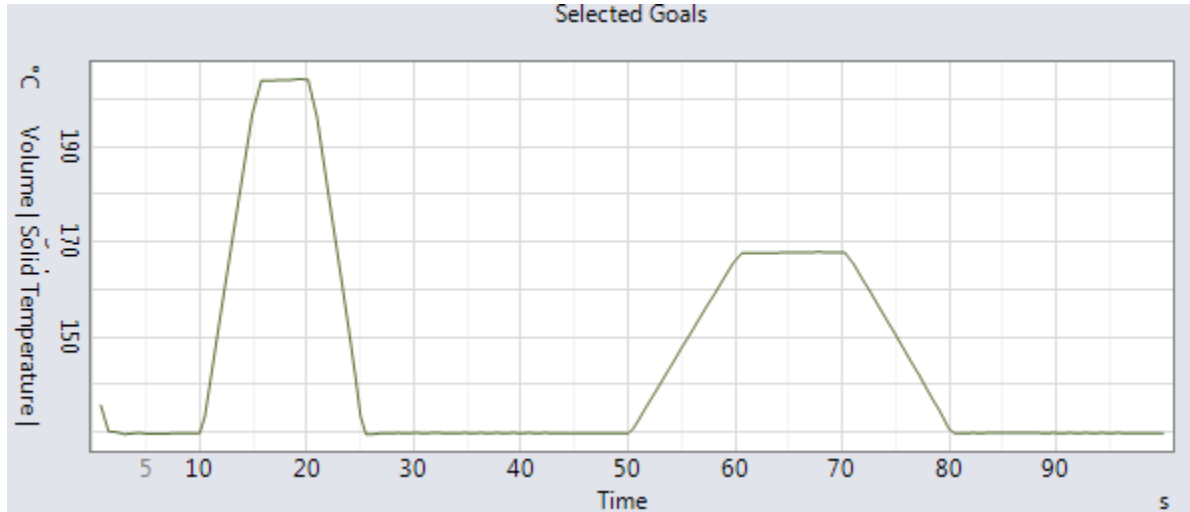
Save Period

- The software supports both Automatic and Manual time step definition.
- Transient save times for the solution data can be set on an ad hoc or periodic basis. Note – the software will provide results at the nearest solved time value to that requested, which may or may not be the same depending on the project definition.
- Time patches can be defined by accessing the Transient Table feature, with uniform, increasing and decreasing distribution options available:



- A Function Display feature to overlay any defined transient variations is also available.

- On solve, Goals will be automatically displayed on a time scale.



- Four transient solver controls are available under the Advanced Options in Solution Control:

**Solution Control** ?

✓
✗

**Solver Configuration** ^

Number Of CPUs   
 Maximum Simultaneous Solves

**Advanced Options** ^

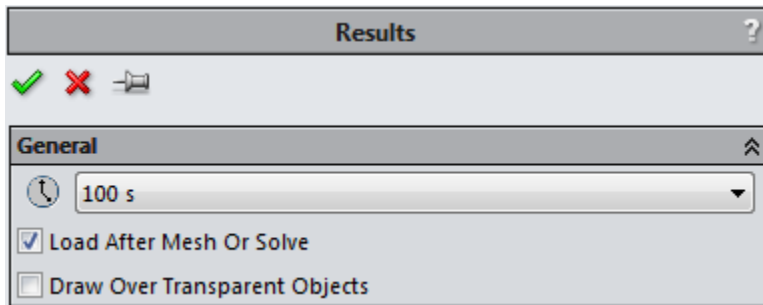
☐ Freeze Flow  
 Radiation View Factor Resolution   

Max Iterations per time step   
 Mass Residual Tolerance   
 Energy Residual Tolerance   
 Momentum Residual Tolerance

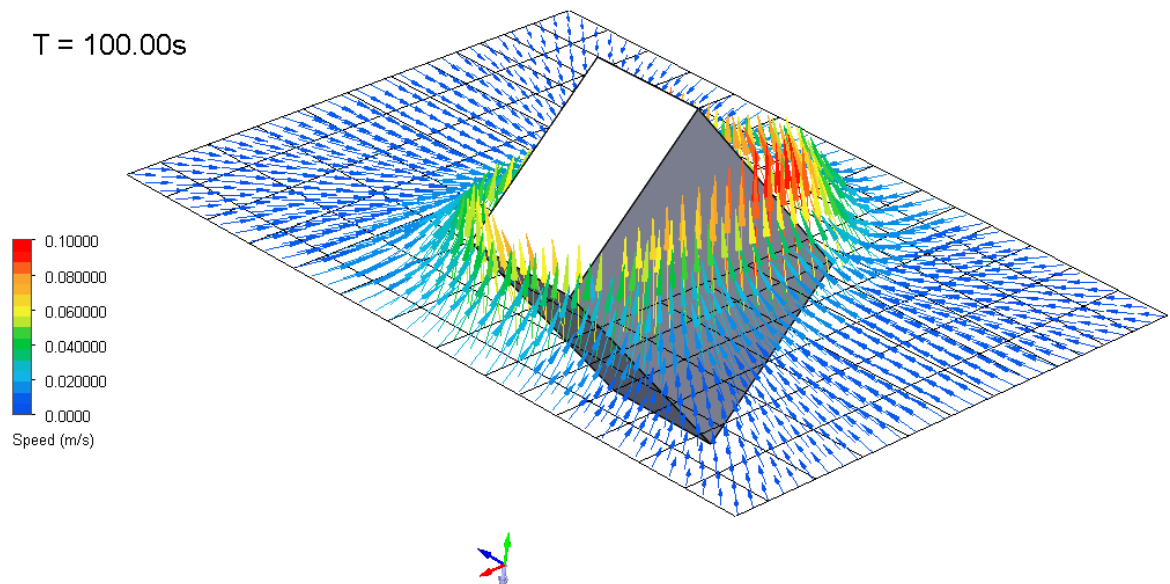
**NB: The recommendation at this time is to leave these at default settings for most applications.**



- After solve, results for any saved time can be accessed via the Results node property page:

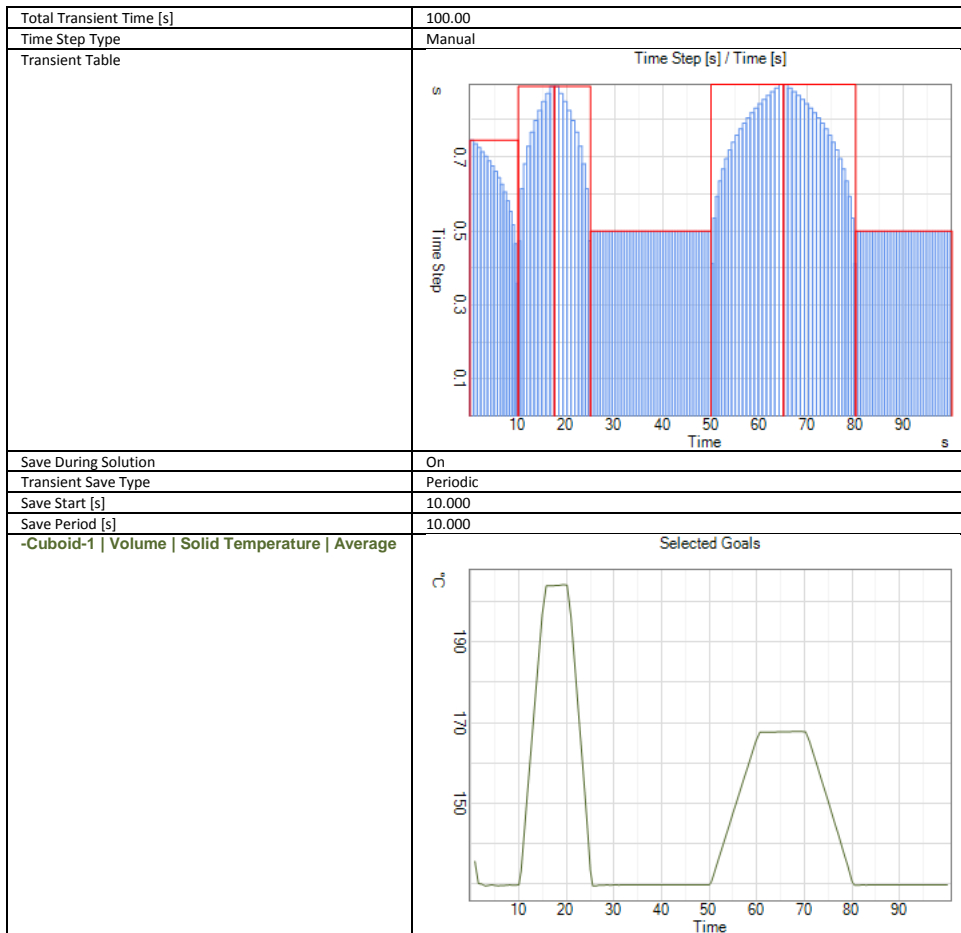


- The current selected time is shown automatically in the graphics display area:



- The surface and volume data inspectors will also interrogate the solution data at the currently selected time.

- Report Generation has been updated to show both the project set-up data for transients, solution goals and the results for the currently selected time:



## Results ( Transient = 100 s )

### Cuboid

#### Cuboid-1

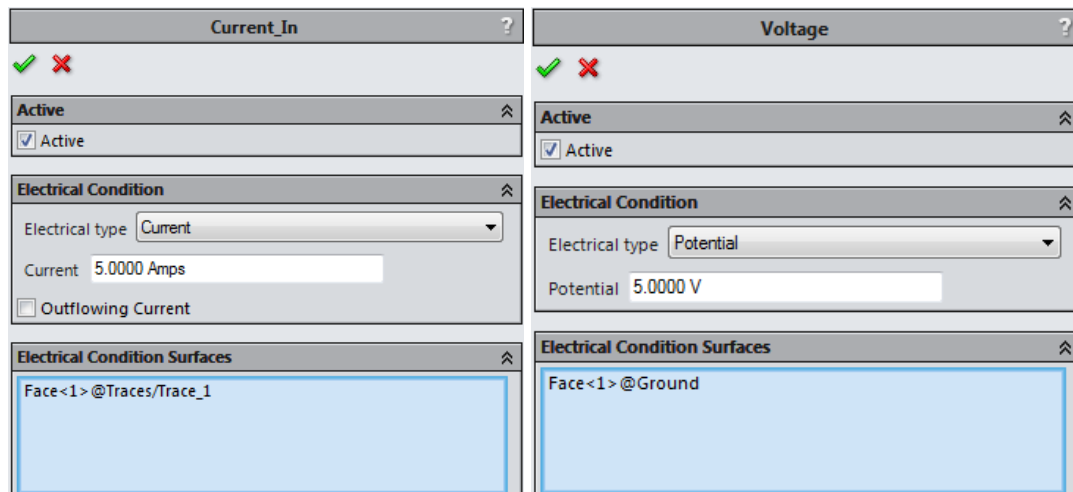
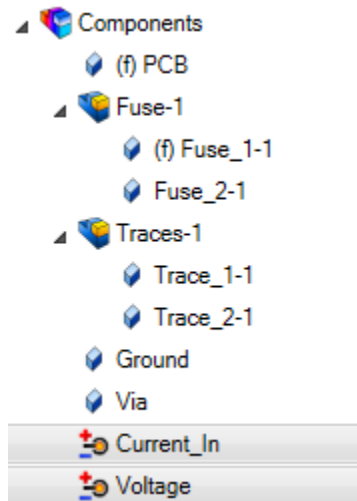
##### Surface Parameters

Parameter	Minimum	Maximum	Average/Total	Surface [m <sup>2</sup> ]
Pressure [Pa]	-6.3704	-5.3472	-5.8618	0.015800
Heat Transfer Coefficient [W/(m <sup>2</sup> K)]	2.8354	17.369	6.8095	0.015800
Convective/Conductive Heat Flux [W/m <sup>2</sup> ]	259.30	1488.9	632.85	0.015800
Temperature (Fluid) [°C]	129.81	129.85	129.84	0.015800
Temperature (Solid) [°C]	129.81	129.85	129.84	0.015800
Convective/Conductive Heat Transfer Rate [W]			9.9990	0.015800

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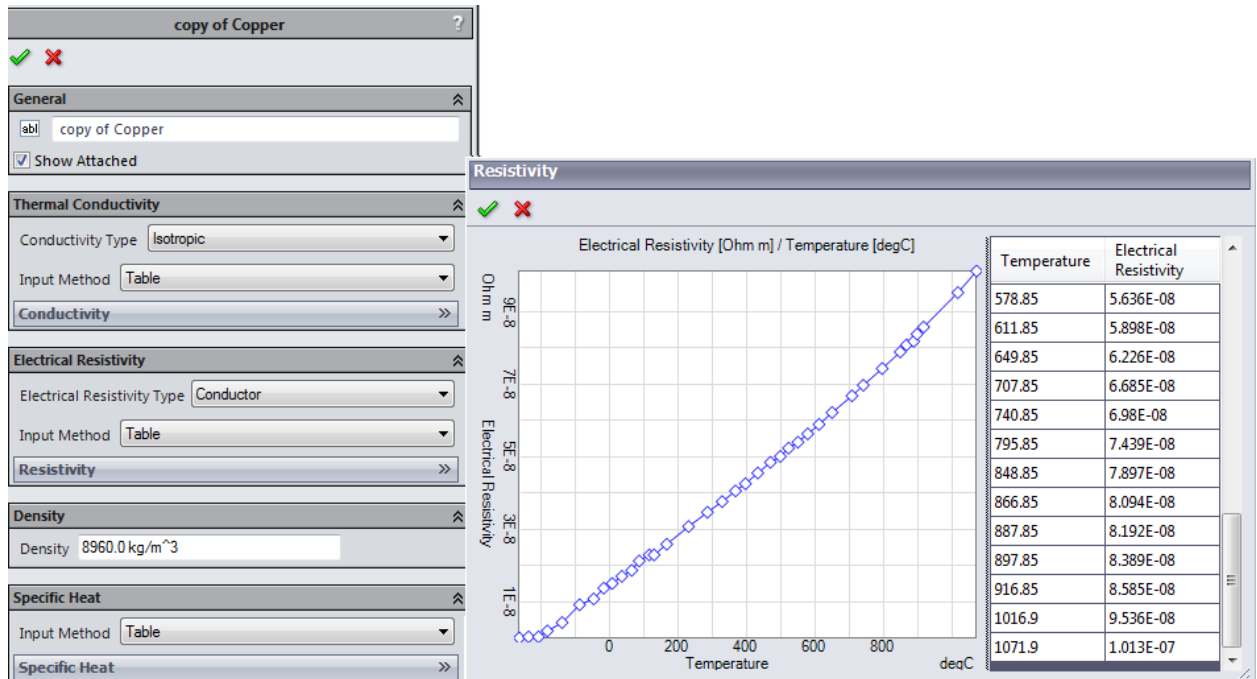
## Joule Heating Support

- Joule heating is automatically activated with any valid definition of an electrical circuit on electrically conducting solid objects.

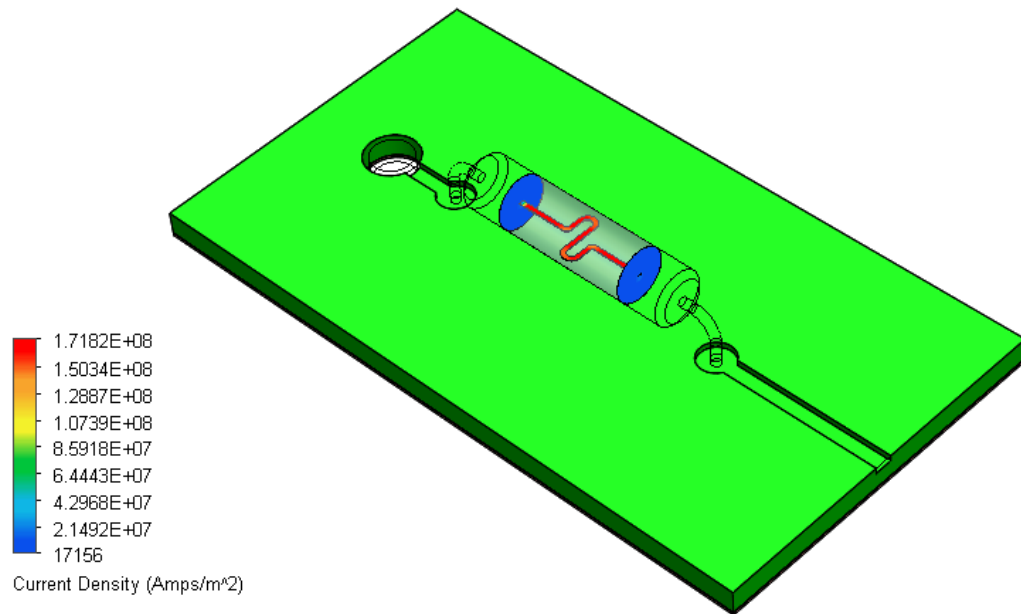


Note: It is also possible to set selected objects faces with an electrical resistance in the same property page.

- Materials can be defined with an Electrical Resistivity Type, Conductor or Dielectric. If, electrically conducting, either a constant or temperature-dependent resistivity can be set:



- After solution, several new data fields are available for post-processing graphically, via the data inspectors and report generation: electrical potential, current density, joule heating and electrical resistivity.



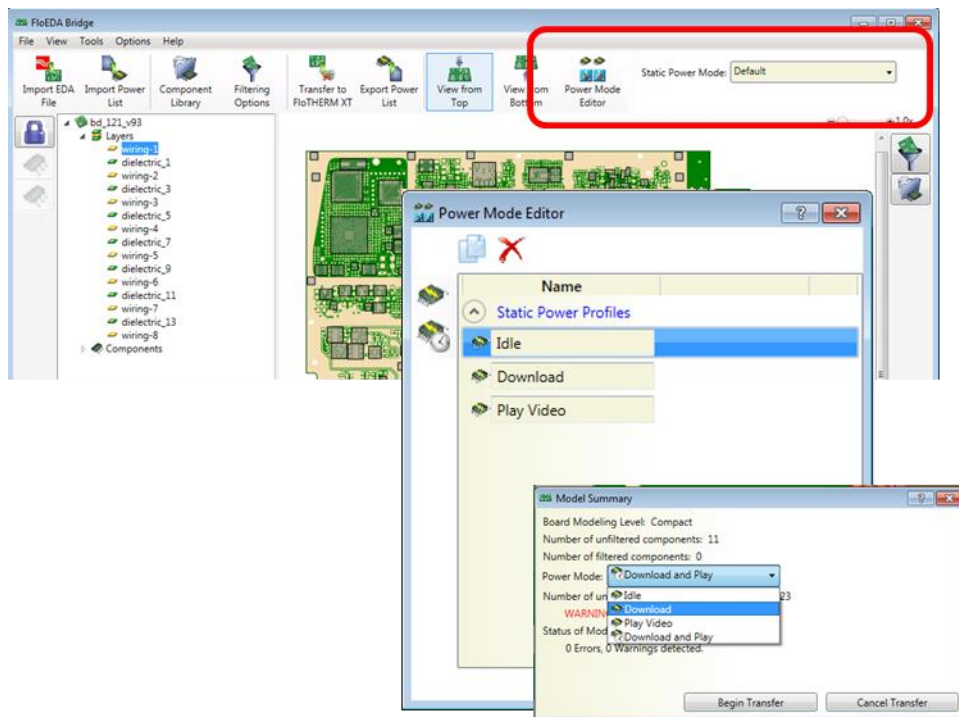
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### *Volumetric Parameters*

<i>Parameter</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Average/Total</i>	<i>Volume [m<sup>3</sup>]</i>
Temperature (Solid) [°C]	40.748	322.44	79.395	1.28E-07
Joule Heating Rate [W]			0.77860	1.28E-07

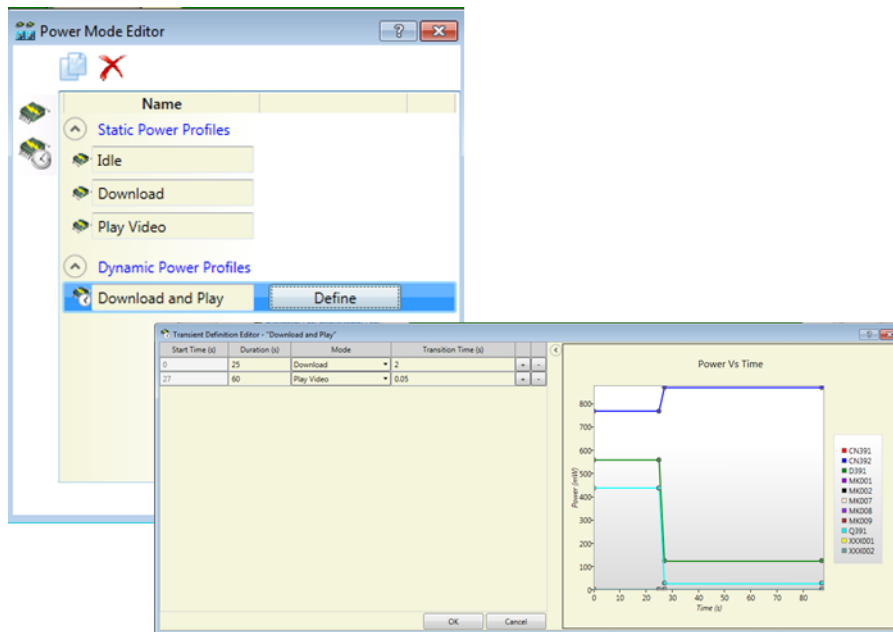
## FloEDA Bridge

- ODB++ Import, offering interfacing options for non-MGC layout tools, such as Cadence, Zuken, and Altium.
- Supports the same core content as CCE: Board Outline, Component Layout, Layer Stack Up and Metallic Distribution on all layers.
- Power Mode Editor, including a Multiple Static Power Modes feature to capture operational modes the board may be in, e.g.:
  - Mobile Apps: ‘Download’, ‘Play Video’, Talking, Etc.
  - Automotive: Idle, Accelerating, Cruise, Etc.

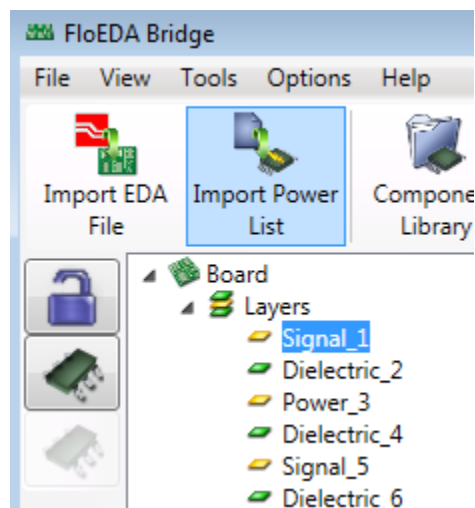


- User defines the component power sets for each mode, and switches between modes as needed. Upon Transfer to XT, any defined power mode can then be selected.

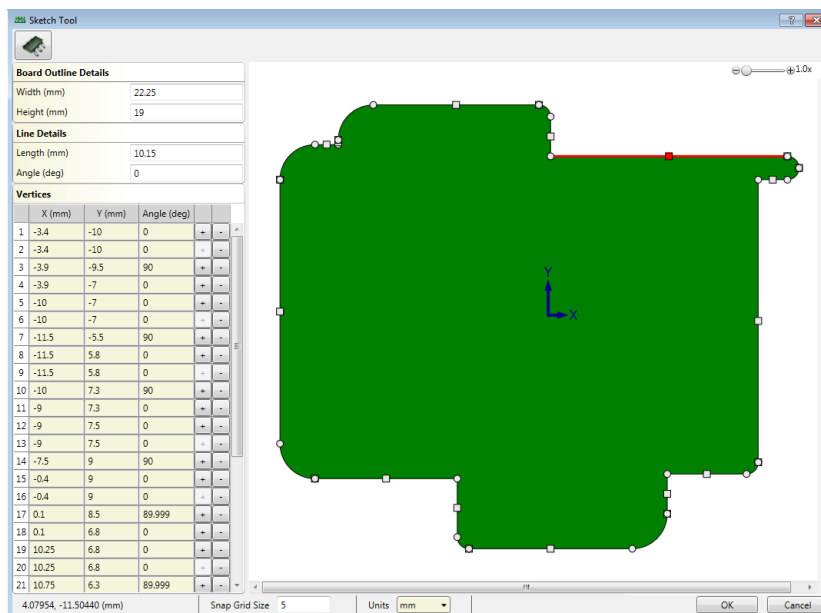
- A Multiple Transient Power Mode feature is also available to capture operational use cases defined as a sequence of static power modes, e.g.:
  - Mobile: 'Download' for 25 seconds, then 'Play Video' for 60 seconds. A transition time is also defined for how long it takes to switch modes.



- Board layouts can now be locked or unlocked to control the ability to modify the component position and sizes:
  - Layout is always locked immediately after an EDA file import;
  - Layout is always unlocked when launching EDA Bridge;



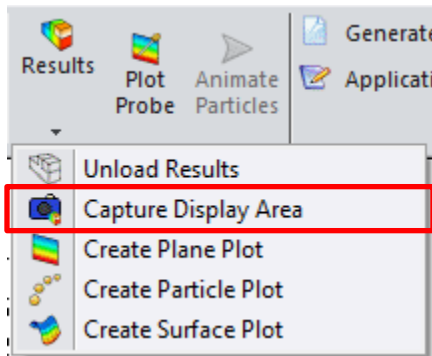
- When unlocked, components can be:
  - Translated with the mouse or property sheet;
  - Rotated with the mouse or property sheet;
  - Resized with the mouse or property sheet;
  - Moved to the Top or Bottom side of the board.
- Library components are now drawn with the library item footprint.
- FloEDA Bridge now launches with a default rectangular board and a new Board Outline Editor is optionally available to modify:
  - Defined Table of ordered X, Y points, connected by a line or arc;
  - Add or Delete Points from the Table;
  - Graphically translate a selected vertex or a line;
  - Add a new vertex by CTRL dragging a selected vertex or line;
  - Shift key constrains translation to X or Y direction.



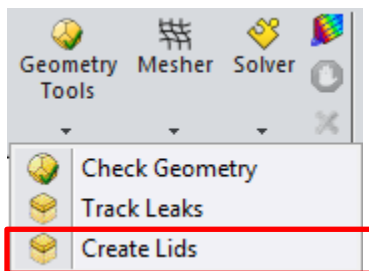
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## Miscellaneous

- Support for abutting Network Assemblies.
- Background Solve – this means that the graphical UI can now be closed after a solution has been started.
- Capture Display Area – a new screen grab feature available in the Results node of the Thermal Analysis ribbon tool bar:



- Create Lids – auto-creation of lids for selected planar faces and accessible from the Geometry Tools node in the Thermal Analysis ribbon toolbar:



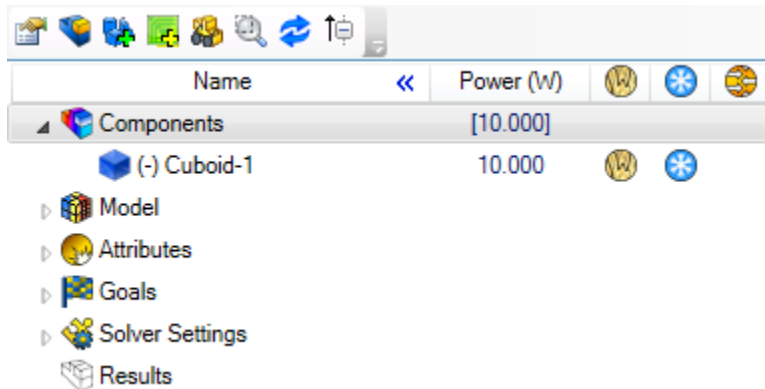
- Goals redesign with filtering and column ordering:

Name	Type	Parameter	Calculation	Value	Unit	%
Glo   Convective/Conductive Heat Transfer Rate	(All) Glo	Convective...		0.80085	W	
Glo   Solid Temp   Ave		Solid Temp	Ave	37.134	°C	✓
Glo   Solid Temp   Max		Solid Temp	Max	322.44	°C	

- Leak Tracking – accessible from the Geometry Tools node in the Thermal Analysis ribbon toolbar as shown above. Provides functionality to identify the location of small holes and leaks in complex geometric applications.



- New Project Tree, including column based informational feedback on powers and attribute attachments:



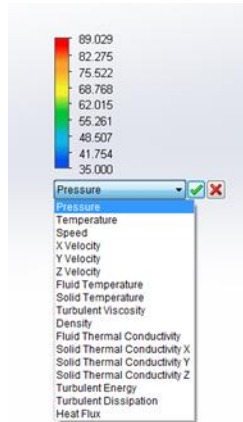
Name	Power (W)	Attributes	Goals	Solver Settings	Results
Components	[10.000]				
(-) Cuboid-1	10.000				
Model					
Attributes					
Goals					
Solver Settings					
Results					

- Pack Project (with or without results).
- Prepare Batch → Command-Line Solve support with the following syntax:

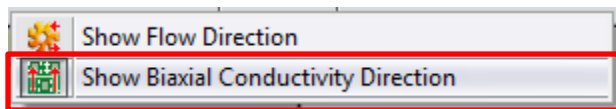
FTXTBatch.exe /m /s /continue /silent /processors:# /path:"project\_path"  
/configDir:F#/T#

- /m creates a computational mesh for a project;
- /s solves a project that is already meshed;
- /continue continues the calculation from the point where the solver was stopped;
- /silent solves with no feedback to the command window;
- /processors:# specifies the number of processors or processor cores to use for calculation. By default the number of processors equals 1. To use all available processors or processor cores, specify the following parameter /processors:max.
- /path is the absolute path to the projects folder;
- /configDir is the folder name (e.g. F1) identifying the configuration to be solved.

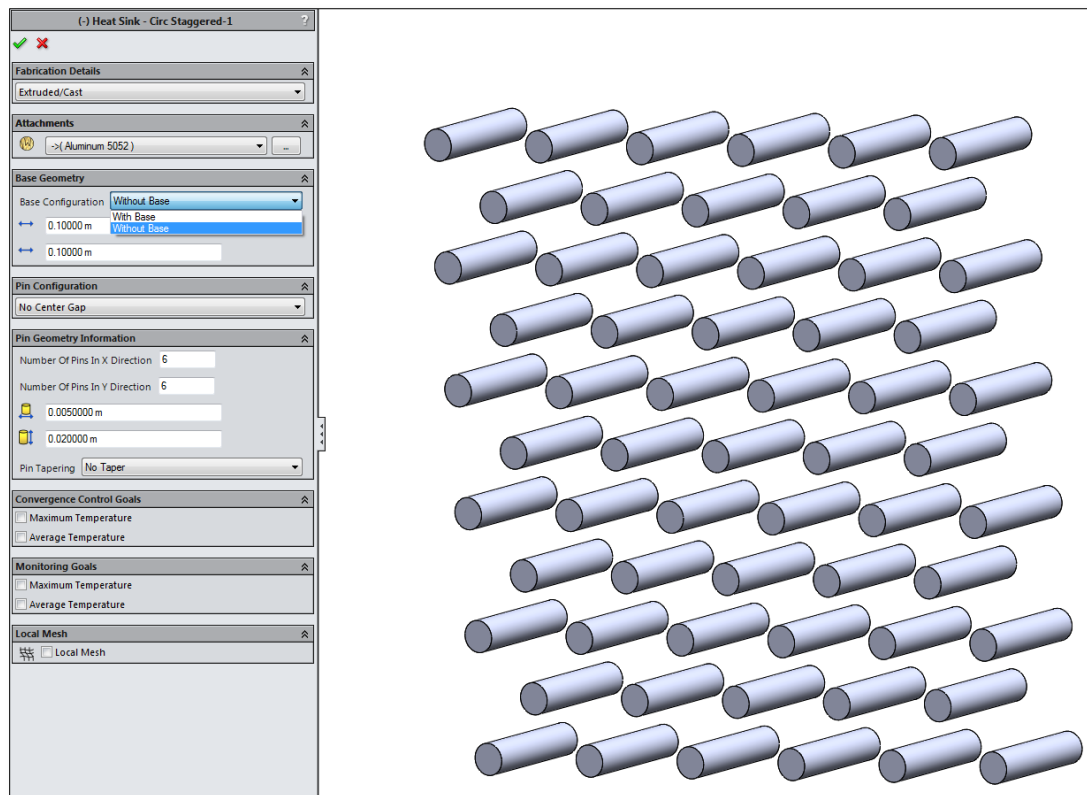
- Smart Legends providing direct access to change the variable, the number of displayed colours, and the plot or global min/max values:



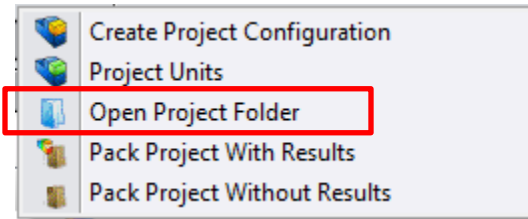
- A new option to display the Biaxial Conductivity direction on solid objects via Show Directions on the Thermal Analysis ribbon toolbar:



- All Heat Sink SmartParts now support a “no base” option:



- 
- The project folder for a loaded project can be accessed via Project Tools on the Thermal Analysis ribbon tool bar:



## Authorization Codes

You may request new authorization codes for FloTHERM XT by logging in to SupportNet at <http://supportnet.mentor.com> and opening a Service Request (remember to choose the "Other Request Type" radio button, then select "New License Request"), or by contacting your local Mentor Graphics office.

## Installation Information

This release uses an installer built using InstallShield 2012 Spring – Premier Edition. For additional information on installation, refer to the FloTHERM\_XT\_2\_1\_install.pdf document 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 SupportNet. You may search technical solutions, view documentation, or open a Service Request online at:

<http://supportnet.mentor.com/>

If your site is under current support and you do not have a SupportNet login, you may easily register for SupportNet by filling out the short form at:

<http://supportnet.mentor.com/user/register.cfm>

All customer support contact information can be found on our web site at:

<http://supportnet.mentor.com/contacts/supportcenters/>

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# Supported Configurations

## **Supported Operating Systems:**

- Microsoft Windows 7 Professional, Ultimate or Enterprise 64-bit edition latest SP.
- Microsoft Windows 8 Pro or Enterprise 64-bit edition latest SP.

## **Hardware and OS requirements:**

- x64 compatible PC.
- Ethernet network adapter.
- Mouse or other pointing device.
- DVD-ROM drive.
- 1024 MB RAM minimum, more recommended.
- Graphics card with OpenGL support minimum 64 MB memory and minimum XGA screen resolution (1024 x 768).
- Microsoft Office 2003 latest SP; Microsoft Office 2007 latest SP; Microsoft Office 2010 latest SP.
- Microsoft Windows Media Player 7.0 or higher.
- Minimum disk space requirements: 9 GB, which includes space necessary during installation and when modifying an existing installation. Note that 4 GB is always required on the default drive (C:\ or equivalent) whether installing to the default drive or a non-default drive.
- For a FLEX-Only 32-bit installation, 100 MB, which includes space necessary during installation and when modifying an existing installation.