Simcenter™ FLOEFD™ Release Highlights

Software Version 2205
June 2022

SIEMENS

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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.

New Features

The following new features are available in this release:

- **Mesh Boolean Operation (MBO)**. A new “Mesh Boolean” technology enables handling of complex and extremely bad geometry even faster and easier. When CAD cannot conduct Boolean operations successfully because of bad or dirty geometry (bad topology with missing entities, self-intersecting faces, etc.), the Mesh Boolean option can be used, which first meshes bodies separately and then conducts Boolean operations of the meshed bodies without using any CAD Boolean operations. This technology can prepare and mesh even very dirty models 5-15 times faster and easier without any user prior adjustments or healing of the model, i.e., automatically. The Mesh Boolean technology can be used together with the CAD Boolean diagnostic, combining the power of Mesh Boolean and the convenience of getting additional information, such as a diagnostic of the fluid domain. If the CAD Boolean diagnostic fails to detect the fluid domain, you still can proceed and mesh the model with Mesh Boolean. In that case additional subdomain diagnostics will be displayed in the Solver Monitor dialog. You are free to choose the default way of handling the geometry (CAD Boolean, Preprocessor Boolean (formerly called “Improved Geometry Handling” mode) or Mesh Boolean, as well as you can disable the CAD Boolean diagnostics.

- **Xcelerator Share access from Simcenter™ FLOEFD™ software**. Xcelerator Share is all about assisting collaboration, especially in distributed working environments. It allows you to synchronize files to cloud storage directly from Simcenter FLOEFD with the embedded browser. Please note that Xcelerator Share requires the new XaaS enabled Simcenter FLOEFD License type.

- **EDA Bridge: Layered Thermal Territory**. The Thermal Territory around a package can now be represented in Layered (former called Detailed) mode in addition to the already existing Explicit mode. In Layered mode each layer is given an effective thermal conductivity. You can easily define precedence of the overlapped Thermal Territory, so the territory with higher precedence will be applied in the overlapping region.

- **EDA Bridge: Solder mask support**. The solder mask is added as solder top (smt) and solder bottom (smb) layers. You can define solder mask thickness and material.

- **EDA Bridge: Via Filler and Pin Filler Material definition for Explicit and Layered mode**. You can set material for Via Filler and Pin Filler. Currently you can define up to 4 different materials for Explicit or Layered modes. In Smart PCB mode, filler materials and via and pin groups can be adjusted after importing and the number of materials is not limited.

- **EDA Bridge: better UI**. The “Material map” mode is renamed to “Smart PCB”. This is now consistent with the “Smart PCB” name already used in Simcenter FLOEFD after the transfer from Simcenter FLOEFD EDA Bridge.
- **Smart PCB: Automatic merge of the few adjacent identical layers**. For manufacturing reasons, a thick dielectric layer can be split into a few dielectric layers with the same properties. Such layers will be automatically merged in Smart PCB into one layer.
- **Smart PCB: Plating Direction property**. For a via group with plating you can define whether the obtained via diameter is the hole diameter before plating (so the final hole diameter after plating will be smaller for the double thickness of plating) or after the plating (so the obtained diameter is the final hole diameter after plating).
- **Smart PCB: Improved memory requirements**. Memory requirements for thermal simulations are significantly decreased. For example, a PCB with 30 million tiles can be simulated with a 64 Gb memory machine.
- **Smart PCB/Structural: Homogenization performance is significantly improved**. The memory requirement for PCB homogenization was significantly reduced by 2 to 30 times and accelerated. This allows making structural simulations of extremely large (hundred layers) and complex PCBs on desktop computers feasible.
- **Structural: Non-penetrating contact**. New type of contact allows simulating loosening contact (in terms of linear approach): if the gap width between bodies is much less than the element size then the contact is treated as a “Sliding” contact in the portion of the contact area where surfaces are pressed together. Otherwise, the contact is not applied and the bodies are disconnected. The originally non-deformed surfaces in contact must coincide or overlap.
- **Structural: Multi-edit support for conditions**. You can now edit several Structural conditions at once.
- **Structural/EMAG: Disabled body support**. Disabled solid bodies (treated as fluid volumes) are supported for Structural and EMAG simulations.
- **EMAG: Improved results visualization**. A new electromagnetics data mapping method eliminates spotting.
- **EMAG: New visualization Parameters**. New parameters are added, among them Electric Field Strength (E) and Magnetic Field Strength (H).
- **EMAG: Flux plot support**. Electromagnetic Loss is added to Flux plots.
- **Lighting/Radiation: Ray Visualization is added to the Compare tool**. Ray plots can now be compared with the Compare tool or in Parametric Study’s built-in comparison functionality.
- **1D Elements: Multichain**. You can now add more than one pipe (chain). In addition, Gravity is now taken into account, and solving projects with 1D elements on Linux is possible.
- **Goals: New goals are added**. The Total Energy Balance is added. The Volumetric Heat Generation Rate and the Heat Generation Rate, Mass of Solid parameters and goals are added.

- **Solver Monitor: Speed up of last iteration**. The completing of mesher and solver operations takes much less time due to optimizations of memory freeing.
- **Film: Improved visualization on angled surfaces**. Film mass flux visualization on angled surfaces is now more uniform.
- **CGNS Export**. You can export static and transient results into CGNS format in two ways: CGNS file is created by Simcenter FLOEFD or CGNS file is created by another tool, imported into Simcenter FLOEFD and Simcenter FLOEFD outputs results values into the originally created CGNS file. The latter approach is recommended.
- **Export results: Transient Explorer support**. In Transient Explorer mode, you can now export results for a specified time range with the given time step or for the active time moment.
- **Load results after calculation default option**. You can set not to load results after calculation by default.
- **Documentation: HTML based User Guide**. The Simcenter FLOEFD Help is now available in HTML format.

For a detailed list of new features, refer to Installation Instructions manual, available in the installed software tree or on Support Center.

Licensing

This release uses the Mentor Standard Licensing v2019_3. v2019_3 requires a FLEXnet license server running at version 11.16.4 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

Access to Xcelerator Share requires a new XaaS enabled Simcenter FLOEFD License type - the standard version that is still available does not give the appropriate access.

You can download your existing authorization codes from Support Center -> Account Center -> Licenses:

`account.sw.siemens.com/licenses`

For additional information on licensing, refer to the *Mentor Standard Licensing* Manual.

Supported Platforms

- Microsoft Windows 10 Pro or Enterprise 64-bit (tested with v1909)
- For solver: Microsoft Windows Server 2012, Microsoft Windows Server 2012 R2, Microsoft Windows Server 2016, Microsoft Windows Server 2019, Microsoft Windows

Server 2016 with HPC Pack 2016, Microsoft Windows Server 2019 with HPC Pack 2019, RHEL 7.3, RHEL 7.6, RHEL 7.9, RHEL 8.4, SUSE SLES 11 SP4, SUSE SLES 12 SP5

- Microsoft Office 365, Microsoft Office 2019, Microsoft Office 2016, Microsoft Office 2013
- HyperLynx SI PI Thermal v2.8.1 and newer
- 8 GB RAM minimum, more recommended
- 8 GB of free hard disk space, more required for simulation models
- Localized languages: French, German, Japanese, Korean, Turkish, Simplified Chinese, Russian

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