Altair® FluxMotor® 2026

Release Notes

Updated: 11/17/2025

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Contents

Introduction

1

This chapter covers the following:

1.1 What's new in Altair® FluxMotor® 2026

This document provides the major information about Altair® FluxMotor® 2026. The main highlights of this new version are described below.

For more detailed information, please refer to the user help guides. The list of documents to read is presented below.

Highlights of the new version

1. **Thermal modeling of SMWF in FluxMotor**
    - New design context
    - Two new tests: Thermal steady state and thermal transient
    - Two new Flow Simulator exports: Thermal steady state and thermal transient
2. **New thermal cooling method – shaft cooling**
    - Available for SMPM, RSM, SMWF and IMSQ topologies
    - Two cooling circuit topologies: hollow shaft and ring
3. **SimLab export**
    - Non-parametric FEA export from FluxMotor to SimLab
    - Available for all the tests where Flux export is available (MH, MS, MT back EMF and working point)
    - Available for all machine topologies
        - SMPM IR and OR (3 phases and n phases)
        - RSM
        - SMWF
        - IMSQ IR and OR
        - DC machine
    - Available for 2D and 3D geometries
4. **Part import from SimLab (inner salient pole)**
    - For inner salient pole parts
5. **AMESIM export**
    - System level export to AMESIM
6. **Enhanced GUI and workflows**
    - Improved supervisor
    - Lighter / improved view for Motor Factory
    - Simplified menu trees
    - New icons
7. **Machine 3D view**
    - Available for all machine topologies

8. **Time estimation bar**
    - Available for SMPM machine
    - Available for efficiency map tests
9. **Correction of issues**

All the added new features are briefly described below, followed by an update on issues and bugs.

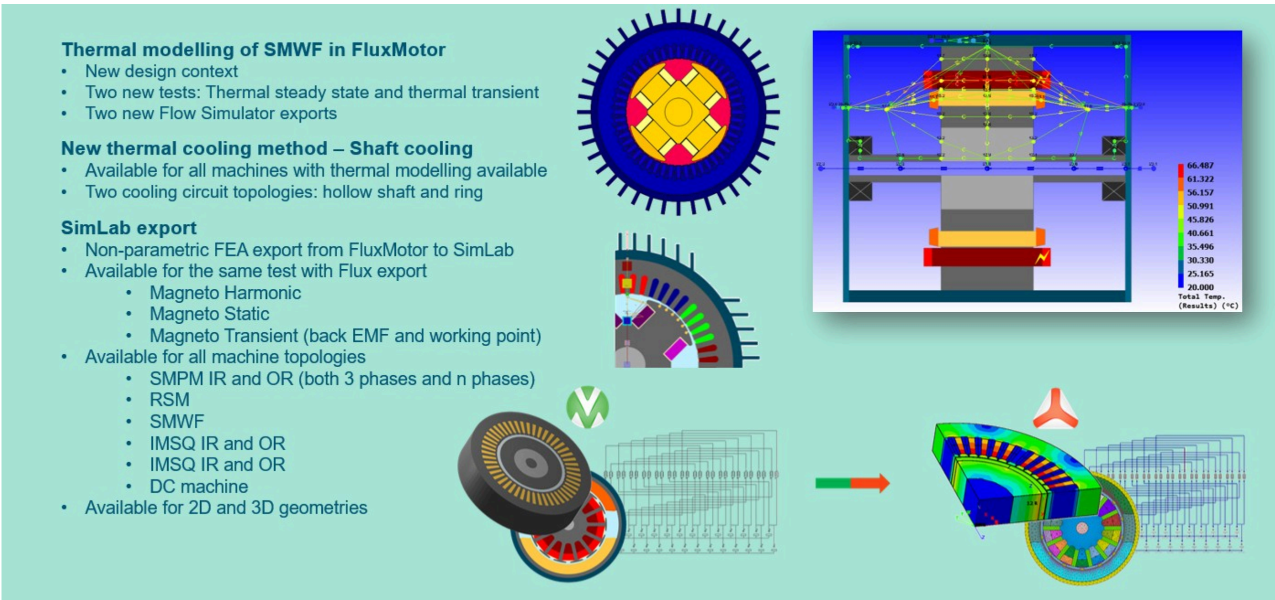


Figure 1: FluxMotor 2026 – The key features - part 1

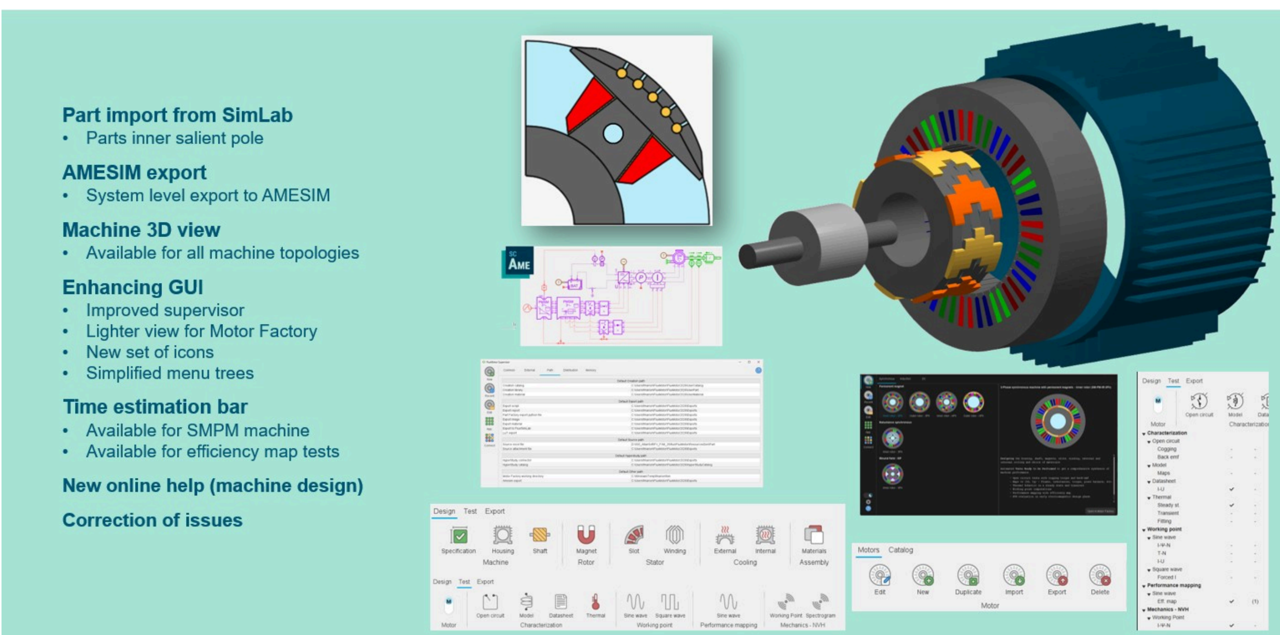


Figure 2: FluxMotor 2026 – The key features - part 2

1.2 Documents to read

It is highly recommended to read the user guides given below before using Altair® FluxMotor®. Each user help document can be downloaded from online user help.

Below is a list of documents that are available.

Installation Guide

- InstallationGuide_Flux_FluxMotor_2026.pdf

General user guides for any type of machine

- Supervisor_2026.pdf
- MotorCatalog_2026.pdf
- PartLibrary_2026.pdf
- PartFactory_2026.pdf
- Materials_2026.pdf
- ScriptFactory_2026.pdf
- MotorFactory_2026_Introduction.pdf
- MotorFactory_2026_Test_BestPractices.pdf
- MotorFactory_2026_Windings.pdf

User guides dedicated to Synchronous Machines with Permanent Magnets - Inner and Outer Rotor

- MotorFactory_2026_SMPM_IOR_3PH_Test_Introduction.pdf
- MotorFactory_2026_SMPM_IOR_3PH_Test_Characterization.pdf
- MotorFactory_2026_SMPM_IOR_3PH_Test_WorkingPoint.pdf
- MotorFactory_2026_SMPM_IOR_3PH_Test_PerformanceMapping.pdf
- MotorFactory_2026_SMPM_IR_3PH_Test_Mechanics.pdf

User guides dedicated to Reluctance Synchronous Machines - Inner Rotor

- MotorFactory_2026_SMRSM_IR_3PH_Test_Introduction.pdf
- MotorFactory_2026_SMRSM_IR_3PH_Test_Characterization.pdf
- MotorFactory_2026_SMRSM_IR_3PH_Test_WorkingPoint.pdf
- MotorFactory_2026_SMRSM_IR_3PH_Test_PerformanceMapping.pdf
- MotorFactory_2026_SMRSM_IR_3PH_Test_Mechanics.pdf

User guides dedicated to Wound Field Synchronous Machines - Inner Salient Poles - Inner Rotor

- MotorFactory_2026_SMWF_ISP_IR_3PH_Test_Introduction.pdf
- MotorFactory_2026_SMWF_ISP_IR_3PH_Test_Characterization.pdf
- MotorFactory_2026_SMWF_ISP_IR_3PH_Test_WorkingPoint.pdf
- MotorFactory_2026_SMWF_ISP_IR_3PH_Test_PerformanceMapping.pdf
- MotorFactory_2026_SMWF_ISP_IR_3PH_Test_Mechanics.pdf

User guides dedicated to Induction Machines with Squirrel Cage - Inner and Outer Rotor

- MotorFactory_2026_IMSQ_IOR_3PH_Test_Introduction.pdf
- MotorFactory_2026_IMSQ_IOR_3PH_Test_Characterization.pdf
- MotorFactory_2026_IMSQ_IOR_3PH_Test_WorkingPoint.pdf
- MotorFactory_2026_IMSQ_IOR_3PH_Test_PerformanceMapping.pdf
- MotorFactory_2026_IMSQ_IR_3PH_Test_Mechanics.pdf

User guides dedicated to DC Permanent Magnet machines - Inner Rotor

- MotorFactory_2026_DCPM_IR_Test_Introduction.pdf
- MotorFactory_2026_DCPM_IR_Test_WorkingPoint.pdf

List of new features

2

This chapter covers the following:

2.1 Thermal modeling of SMWF

Thermal modeling of SMWF

This release marks the first time users can perform detailed thermal analysis for Wound Field Synchronous Machines (SMWFs) directly within FluxMotor, enabling more accurate design, optimization, and validation of these critical components.

This new functionality provides a robust framework for understanding and managing the thermal behavior of SMWFs, from defining intricate cooling systems to performing advanced steady-state and transient thermal tests and even exporting for further detailed analysis.

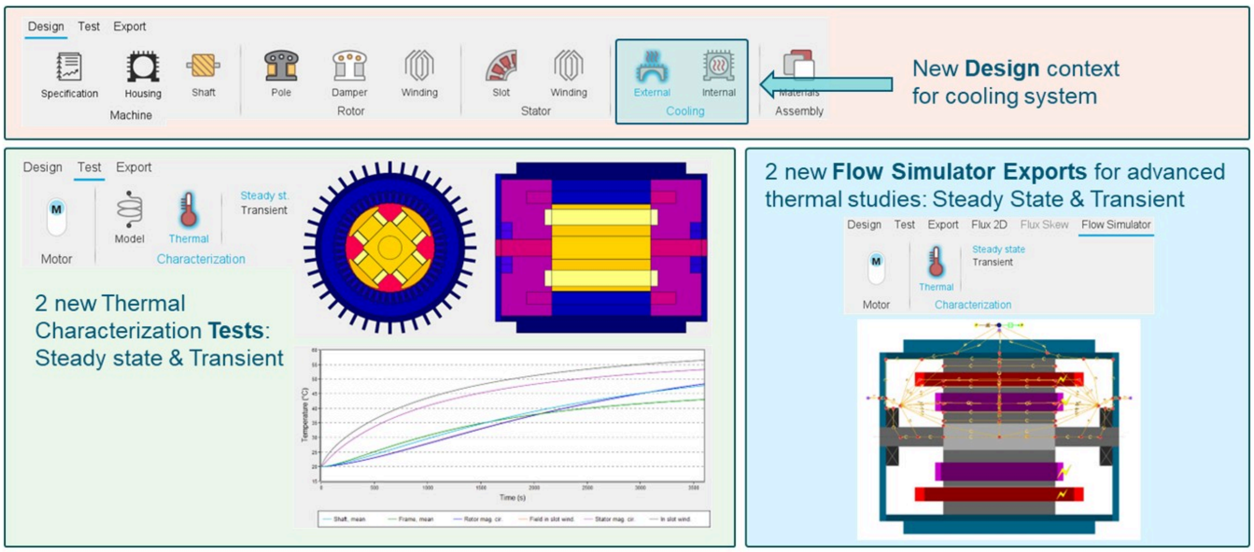


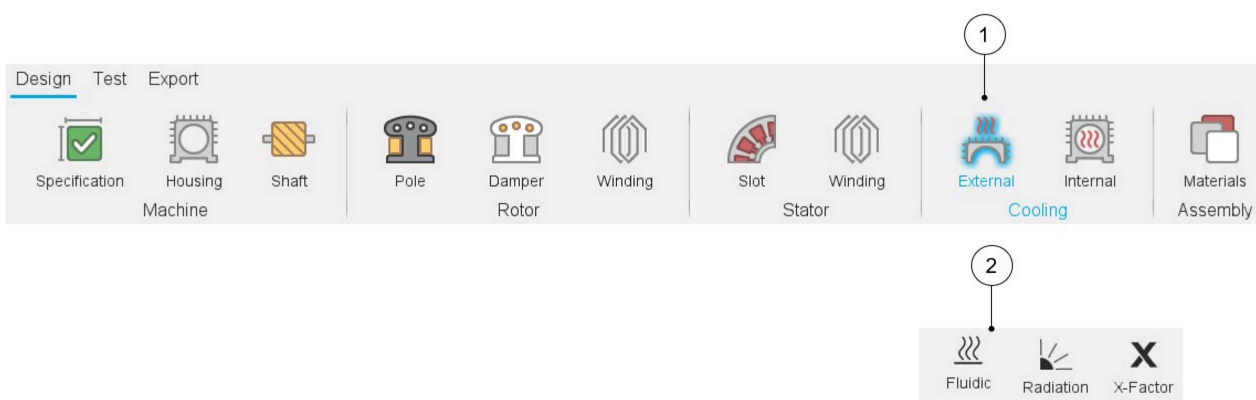
Figure 3: Thermal Design, Test and Export of SMWF in FluxMotor

2.1.1 Advanced Cooling Design Contexts

This release unlocks control over defining both the internal and external cooling mechanisms of your SMWF.

1. **External Cooling: Mastering Heat Dissipation to the Environment**
    - Forced and Natural Convection: Users can model heat transfer to the ambience through both natural convection (passive cooling) and forced convection (e.g., fan-driven air flow), or specific cooling channels, allowing for realistic representation of various operating environments.
    - Radiation to the Ambient: The model accounts for thermal radiation from the machine's external surfaces to the surrounding environment, providing a more complete picture of heat loss.
    - X-Factor for LPN Calibration: To fine-tune the Lumped Parameter Network (LPN) circuit for external heat exchange, "X-factor" has been introduced. This calibration factor allows engineers to adjust the thermal resistances to better match experimental data or more detailed CFD results.

Table 1: External cooling design

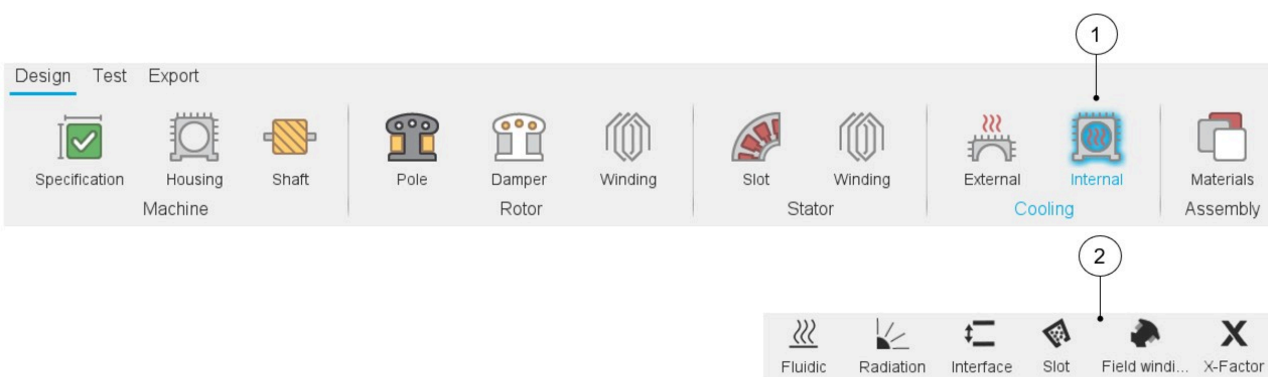


1	Main entry to the External cooling design context
2	Buttons to switch between external cooling design options

2. Internal Cooling: Optimizing Heat Management Within the Machine

- Forced and Natural Cooling: Like external cooling, internal cooling mechanisms, such as air circulation within the machine, can be defined for both forced and natural convection.
- Radiation Between Machine Components: Heat exchange through radiation between various internal components (e.g., rotor to stator, windings to housing) is considered, enhancing the accuracy of temperature predictions.
- Interface: Parasitic airgap thickness between machine components can be modeled in this section via Auto values or User provided values.
- Conduction Model for Slot and Field Winding: A sophisticated conduction model has been implemented for the slot and field winding regions. This includes:
    - Auto Mode: Automatically calculates conduction paths based on material properties and geometry.
    - User Mode: Provides flexibility for advanced users to manually define specific conduction parameters, allowing for highly customized thermal modeling.
- Internal X-Factor for Calibration: An additional X-factor is available for calibrating the internal LPN circuit, enabling precise adjustment of internal thermal resistances for improved model accuracy.

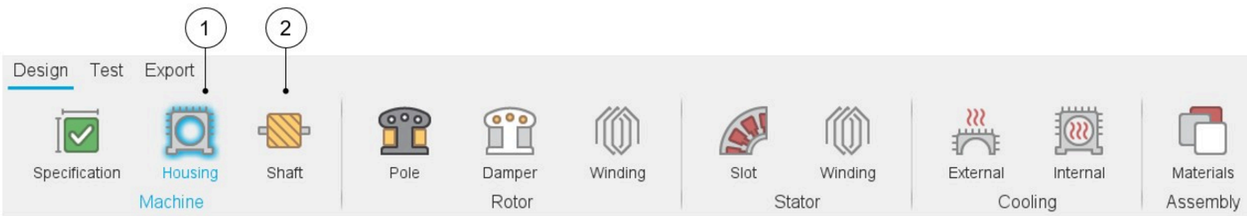
Table 2: Internal cooling design



1	Main entry to the Internal cooling design context
2	Buttons to switch between internal cooling design options

3. **Integrated Cooling Circuit Adjustments in Machine Context**: The machine context now allows for direct adjustment and definition of physical cooling features, including:
   - Housing and Fins: Model the thermal impact of external housing with or without fins for enhanced heat dissipation.
   - Dedicated Cooling Circuits: Define specific cooling circuits within the machine housing.

Table 3: Machine design with new options for housing and shaft design



1	Main entry to the Housing design context
2	Main entry to the Shaft design context

2.1.2 Two New Thermal Tests for SMWF

With the detailed cooling definitions in place, FluxMotor now offers dedicated thermal test capabilities for SMWFs. While the general principle of these tests aligns with those for other machine types, they are specifically adapted with SMWF-specific LPNs to ensure accurate results.

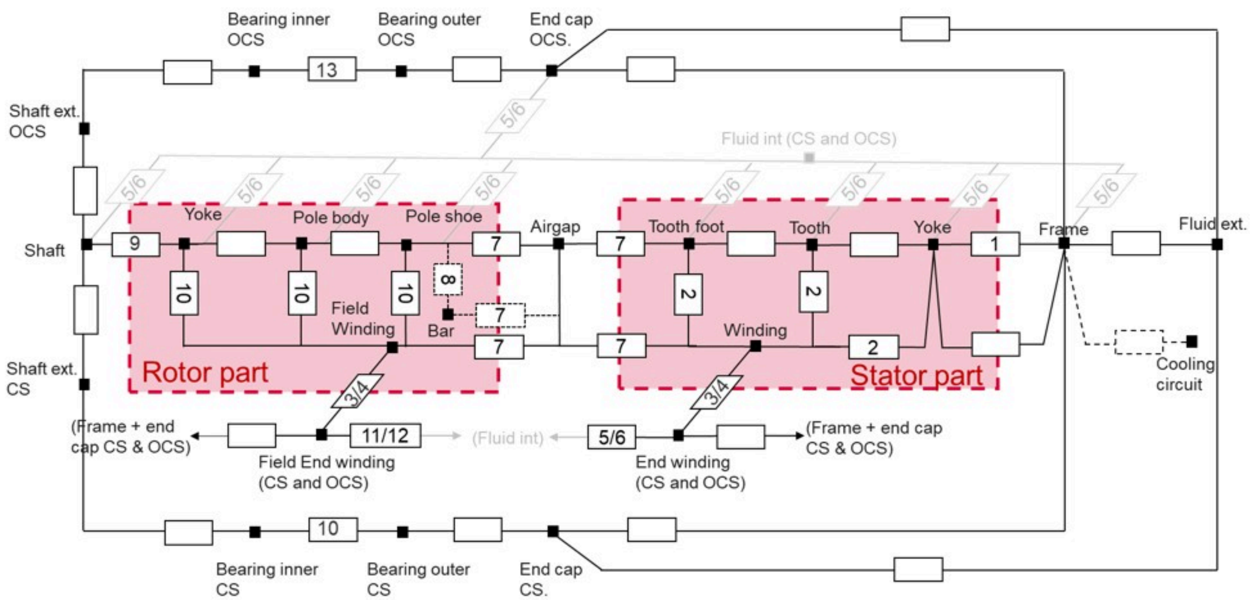


Figure 4: Specific thermal LPN scheme of SMWF

1. Steady State Thermal Analysis

This test simulates the SMWF's thermal behavior at thermal equilibrium, predicting the stable temperature distribution across all components (windings, rotor yoke, stator yoke, shaft, etc.) under continuous operating conditions.

This test is essential for determining the continuous power rating, identifying critical hot spots, and ensuring that component temperatures remain within their permissible limits for long-term reliability and compliance with insulation classes.

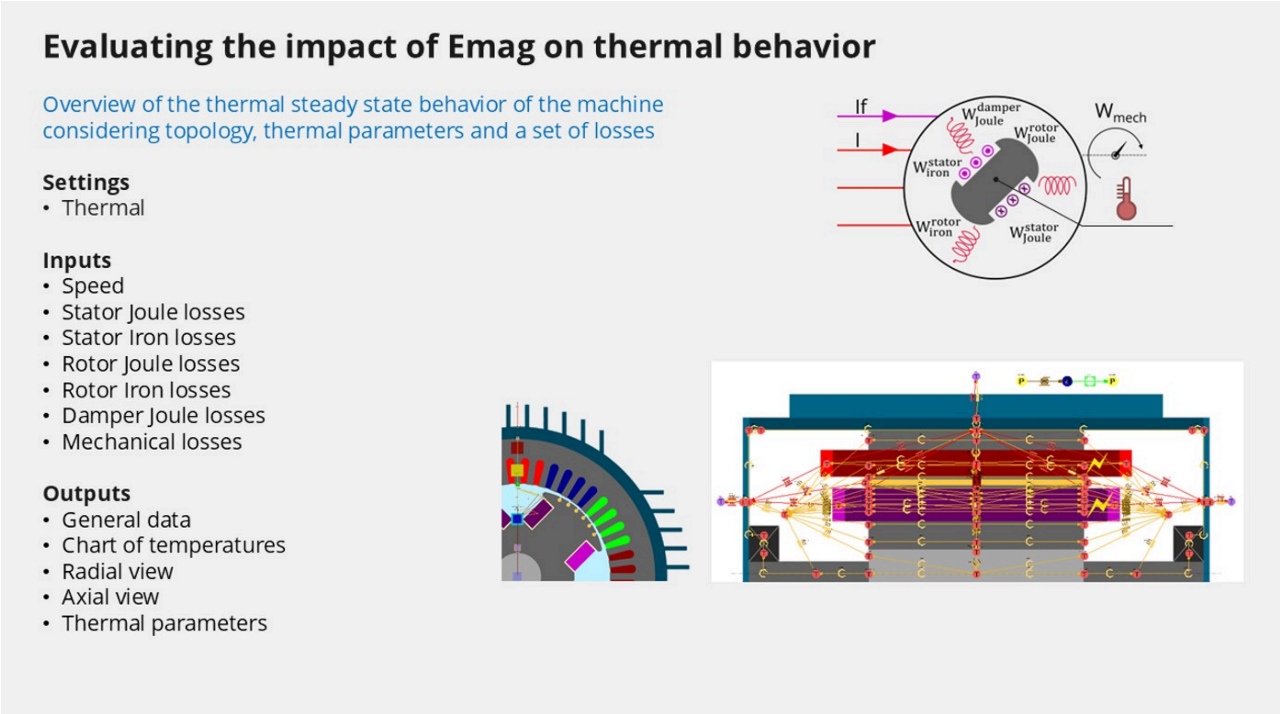


Figure 5: The Steady state thermal test of SMWF

2. **Transient Thermal Analysis**

   This test simulates the dynamic thermal response of the SMWF over time, modeling how temperatures evolve during start-up, load changes, or intermittent operation.

   This test is crucial for evaluating overload capabilities, understanding thermal cycling effects, predicting peak temperatures during dynamic events, and optimizing duty cycles to prevent thermal damage.

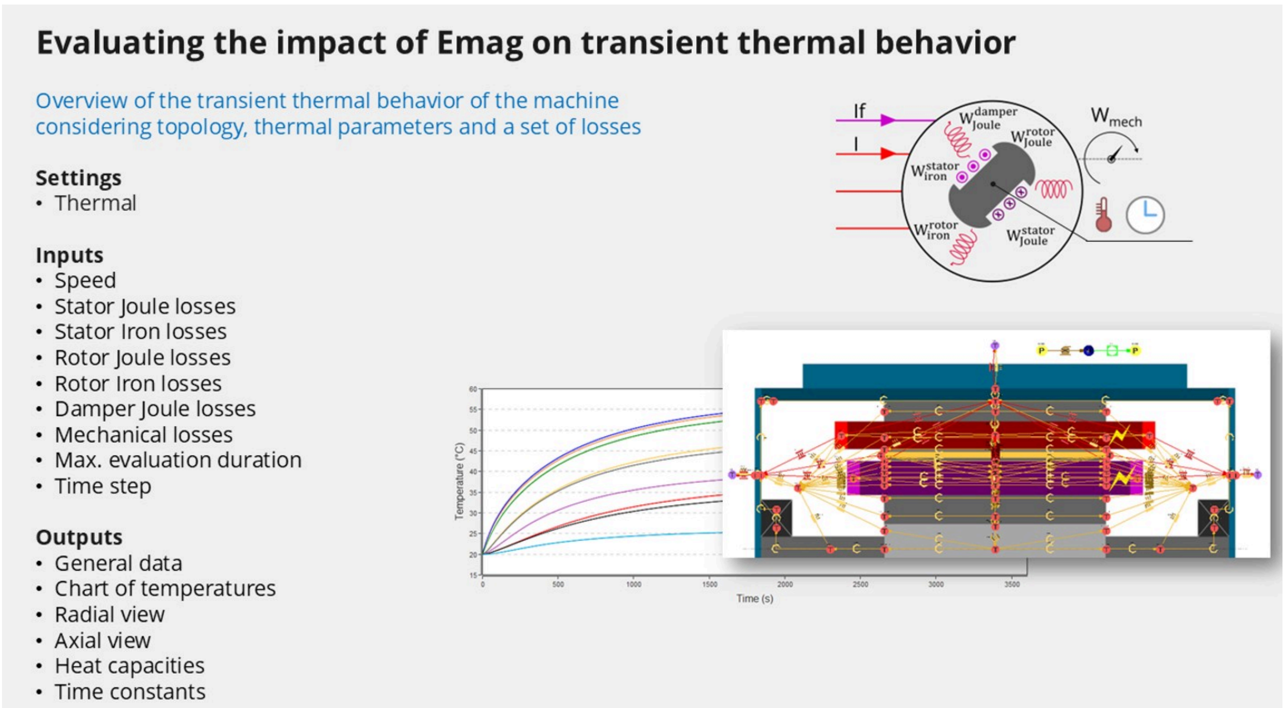


Figure 6: The Transient thermal test of SMWF

2.1.3 Export to Flow Simulator for Advanced Thermal Studies

For users requiring an even deeper dive into thermal phenomena or needing to integrate the machine into a larger system-level thermal analysis, this release introduces two types of export to Altair Flow Simulator.

Users can now export their SMWF model, including the detailed thermal LPN, directly to Altair Flow Simulator. This allows for the addition of more intricate details to the thermal network that might be beyond the scope of FluxMotor's LPN.

To streamline the process, two specialized templates are provided for Flow Simulator export:

- Steady-State Template: Configured for comprehensive steady-state thermal simulations in Flow Simulator.
- Transient Template: Set up for detailed transient thermal analysis, enabling the study of dynamic thermal behavior.

This seamless integration empowers engineers to perform highly detailed thermal validation, incorporate complex fluid dynamics, and conduct system-level thermal analysis, ensuring robust thermal performance under the most demanding conditions.

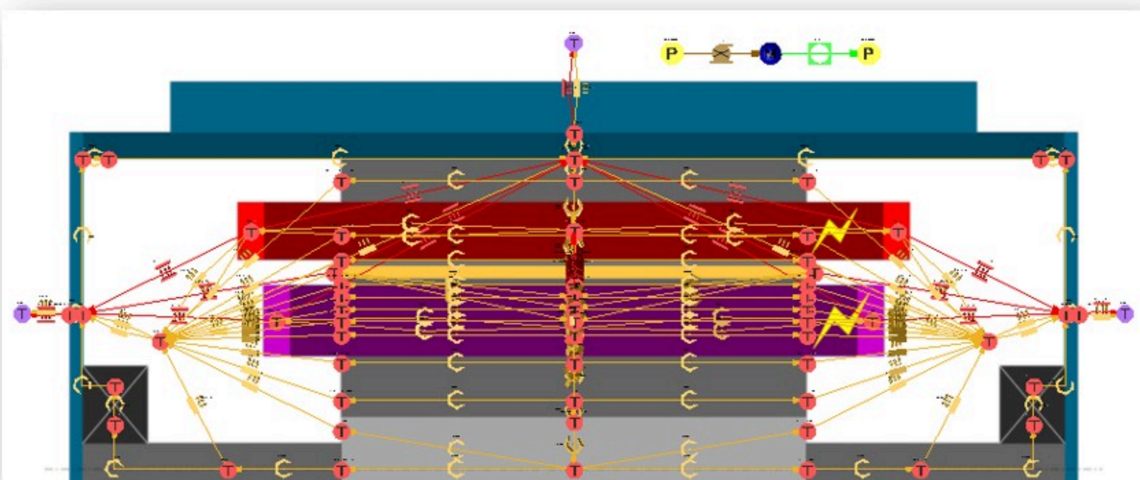


Figure 7: Thermal Lumped Parameter Network of a SMWF in Flow Simulator

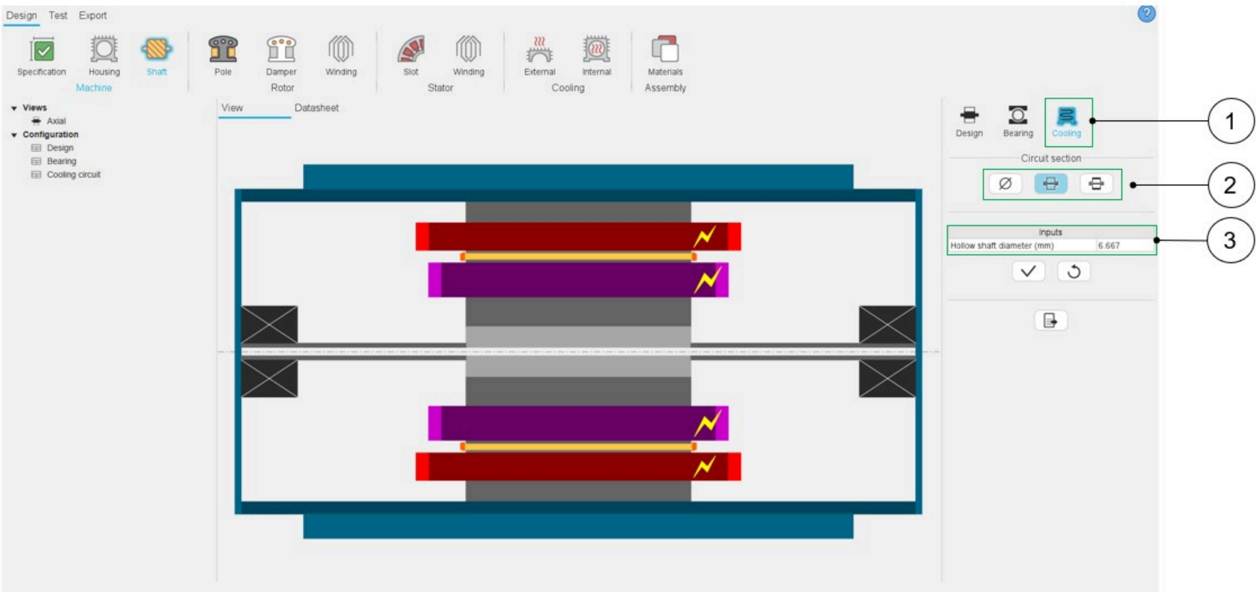
2.2 New thermal cooling method - Shaft cooling

A new cooling technique was implemented for all inner rotor (IR) machines currently available at FluxMotor. The shaft-cooling feature allows users to specify a cooling circuit that flows within the shaft section of the machine.

- The flow network modeling and coupling of the shaft-cooling with the existing thermal network of the machine makes use of the integration of Altair Flow Simulator capabilities and the solver in the backend process of FluxMotor.
- The shaft-cooling feature has an impact on the thermal and coupled solutions of the following tests in MotorFactory area:
    - Test - Characterization - Thermal - Steady State
    - Test - Characterization - Thermal - Transient
    - Test - Characterization - Thermal - Fitting (except for SM_WFISP_IR_3Ph Machines)
    - Test - Working Point - Sine wave - Working Point I-Psi-N (for SM_PM_IR_3Ph and SM_RSM_IR_3Ph Machines)
    - Test - Working Point - Sine wave - Working Point If-I-Psi-N (for SM_WFISP_IR_3Ph Machines)
    - Test - Working Point - Sine wave - Working Point U-f-N (for IM_SQ_IR_3Ph Machines)
    - Test - Performance mapping - Sine wave > Eff. map (for SM_PM_IR_3Ph, SM_RSM_IR_3Ph, and SM_WFISP_IR_3Ph Machines)

- The configuration follows the same workflow as the Housing - Cooling feature and is illustrated below:

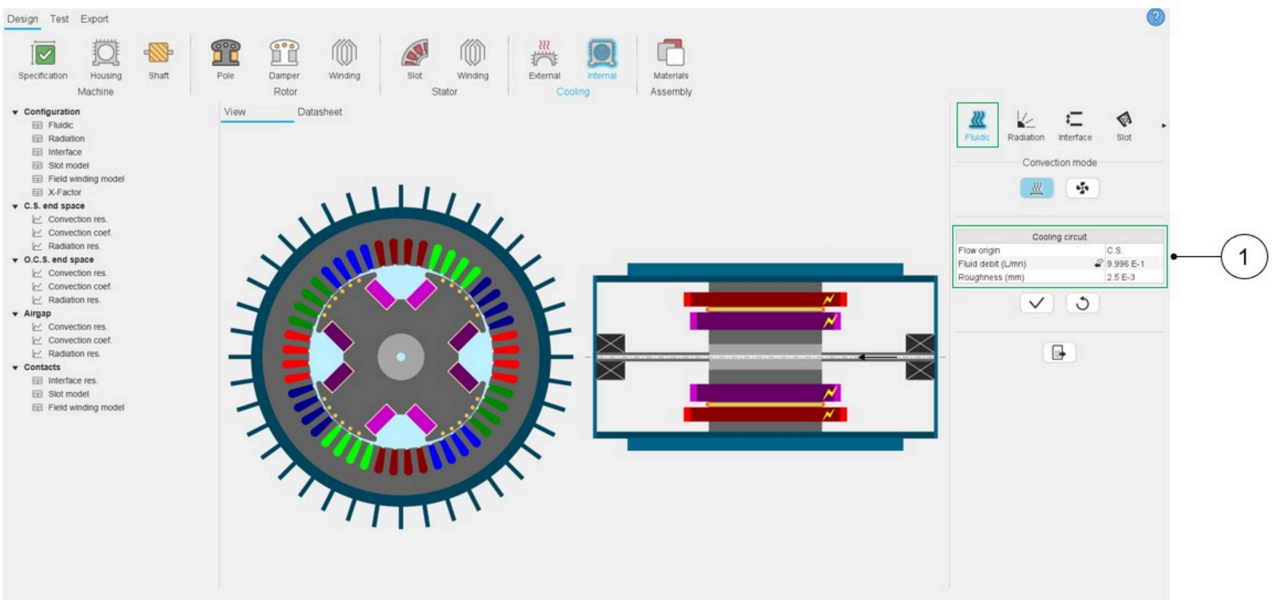
Table 4: Motor Factory – Design – Shaft – Cooling Configuration Example



1	Entry for shaft-cooling settings
2	Shaft-cooling circuit selection: ◦ None (no shaft-cooling) ◦ Cooling – Hollow shaft ◦ Cooling – Ring shaft
3	Shaft-cooling circuit dimension settings: ◦ Hollow shaft diameter (for hollow shaft) ◦ Ring inner diameter (for ring shaft) ◦ Ring outer diameter (for ring shaft)

When a housing design is defined by users, and the Cooling – Internal section becomes available, the shaft-cooling fluidic configuration can be defined, as illustrated below:

Table 5: Motor Factory – Design – Cooling – Internal – Fluidic Configuration Example



<table>
<tr><td>1</td><td>Cooling circuit settings:

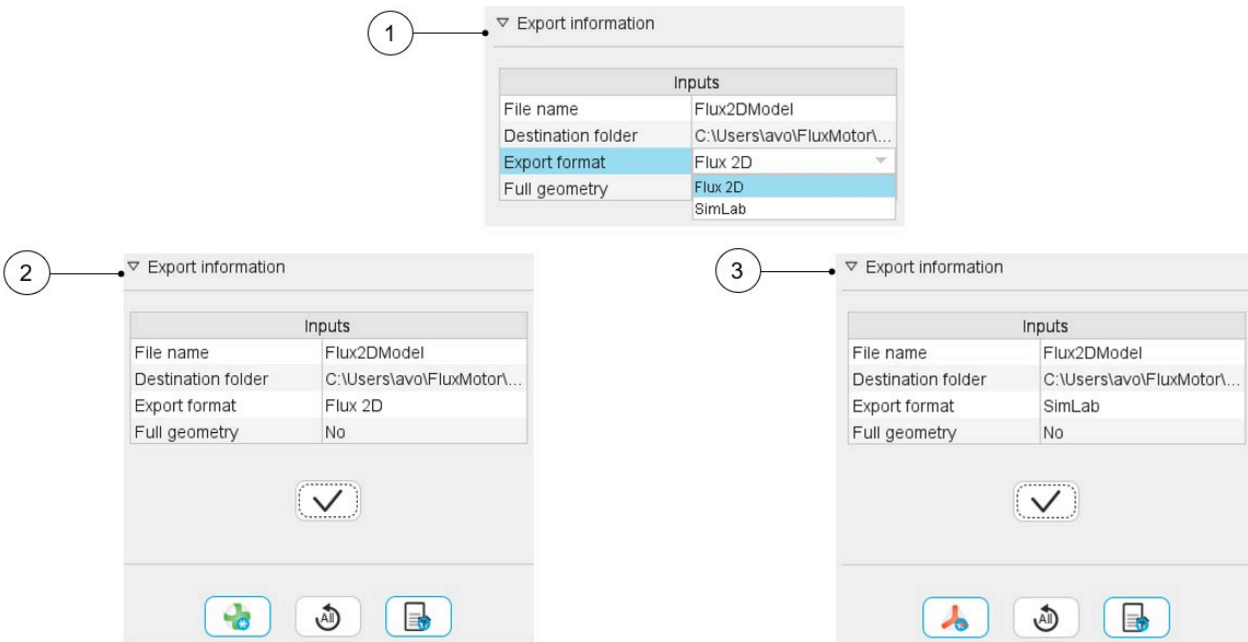
Coolant flow origin, either:
C.S. (connection side)
O.C.S. (opposite connection side)
Coolant flow input, either:
Fluid debit (L/min)
Fluid velocity (m/s)
Convection coefficient (W/K/m^2)
Shaft-cooling roughness (mm)
</td></tr>
</table>

2.3 SimLab export

From this version, we can directly export motor models to Altair SimLab. This new feature aligns with the ongoing migration of Flux functionalities to SimLab, providing a streamlined workflow for advanced electromagnetic simulations.

When exporting your motor models for advanced electromagnetic studies, you will now find a new "Export format" option within the familiar Flux export interface. This allows you to seamlessly choose between exporting to the traditional Flux environment or directly to SimLab.

Table 6: New Export format option in Flux export allowing to export motors to SimLab

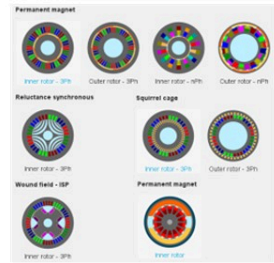


1	Export format with two choices: Flux 2D / SimLab
2	When the Flux2D format is selected, the export button is updated with the Flux icon
3	When the SimLab format is selected, the export button is updated with the SimLab icon

Models exported to SimLab are fully defined and ready for electromagnetic simulations using the Flux solver. This means all necessary material properties, boundary conditions, and solver settings are automatically configured, allowing you to quickly run your analyses with minimal setup.

This new SimLab export option supports all machine types and all existing Flux export scenarios previously available in FluxMotor (except Skew scenarios), ensuring comprehensive coverage for your electromagnetic analysis needs.

Machine	2D AC	2D MS Basic	2D MT Back EMF	2D MT Short Circuit	2D MT Working point	3D MS Basic
SMPM-IR3		Flux/SimLab	Flux/SimLab		Flux/SimLab	SimLab
SMPM-OR3		Flux/SimLab	Flux/SimLab		Flux/SimLab	
SMPM-Irn		Flux/SimLab	Flux/SimLab		Flux/SimLab	
SMPM-Orn		Flux/SimLab	Flux/SimLab		Flux/SimLab	
RSM		Flux/SimLab			Flux/SimLab	SimLab
SMWF		Flux/SimLab	Flux/SimLab	Flux/SimLab	Flux/SimLab	
IMSQ-IR3	Flux/SimLab				Flux/SimLab	
IMSQ-IOR3	Flux/SimLab				Flux/SimLab	
DC-IR					Flux/SimLab	



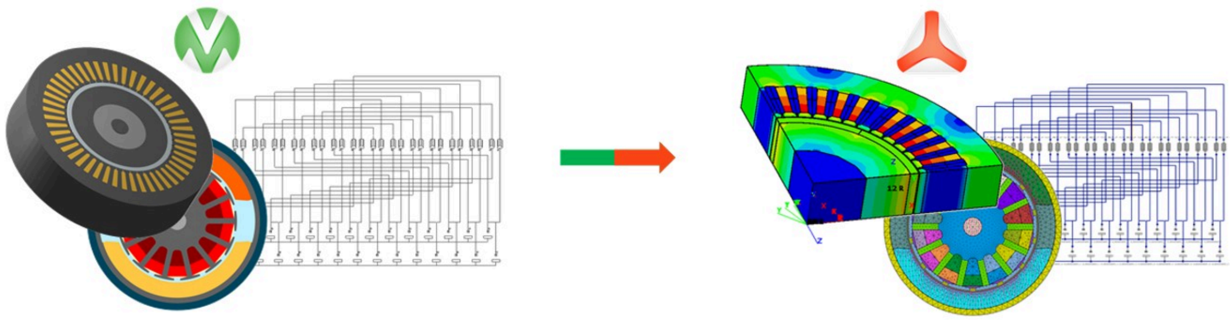


Figure 8: Export of motors from FluxMotor to SimLab

Note: As this is a brand-new export capability, some important limits can be listed as:

- Meshed Geometry: While the models are simulation-ready, the exported geometry in SimLab currently consists of meshed bodies and is not parameterized.
- Ongoing Improvements: This export is continuously being refined. Some models may exhibit instability in certain cases, as the Altair Flux and Altair SimLab teams are actively working to enhance the robustness and parameterization of these exported models.

2.4 Part import from SimLab - Inner salient pole

The creation of the Inner Salient Pole part type is now seamlessly integrated through the FluxMotor Solution in SimLab. This marks the first time users can directly design, customize in SimLab, and import Inner Salient Pole geometries for Wound Field Synchronous Machines (SMWF) with inner rotors, unlocking new design possibilities.

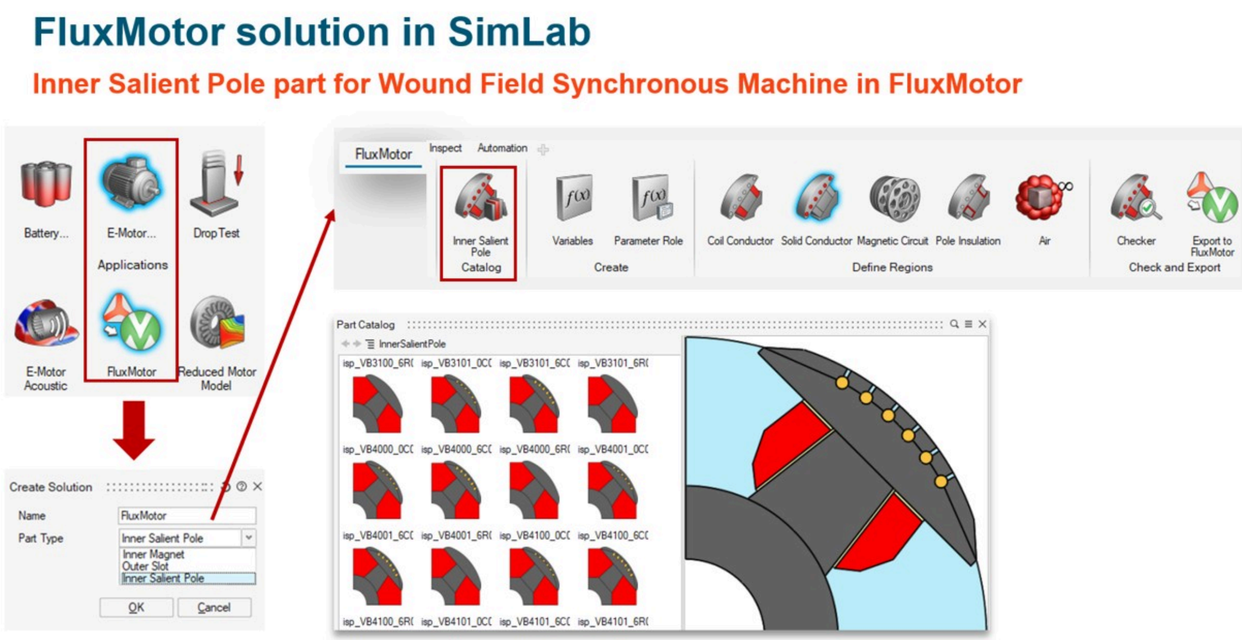


Figure 9: New type of part for FluxMotor solution in SimLab: Inner Salient Pole

With this new option for the FluxMotor solution in SimLab, you can:

- Create or Customize: Design Inner Salient Pole parts from scratch using a basic sector template, customize existing catalog parts, or import directly from CAD models.
- Key Parameters: Define essential structural parameters and design parameters.
- Region Assignment: Easily assign physical regions (e.g., Coil Conductor, Magnetic Circuit, Solid Conductor, Pole Insulation, Air) to your part's bodies, ensuring correct simulation behavior in FluxMotor.
- Seamless Export to FluxMotor for SMWF Analysis. Once your Inner Salient Pole part is designed and validated within SimLab, it can be seamlessly exported to be used in FluxMotor. This allows for immediate performance analysis within a 3-Phase Wound Field Synchronous Machine – Inner salient pole – Inner rotor setup.

Alongside this new part, we've also implemented key improvements to the overall SimLab part design workflow, making your experience more intuitive and efficient. Designing and customizing parts in SimLab for FluxMotor is now more user-friendly and efficient:

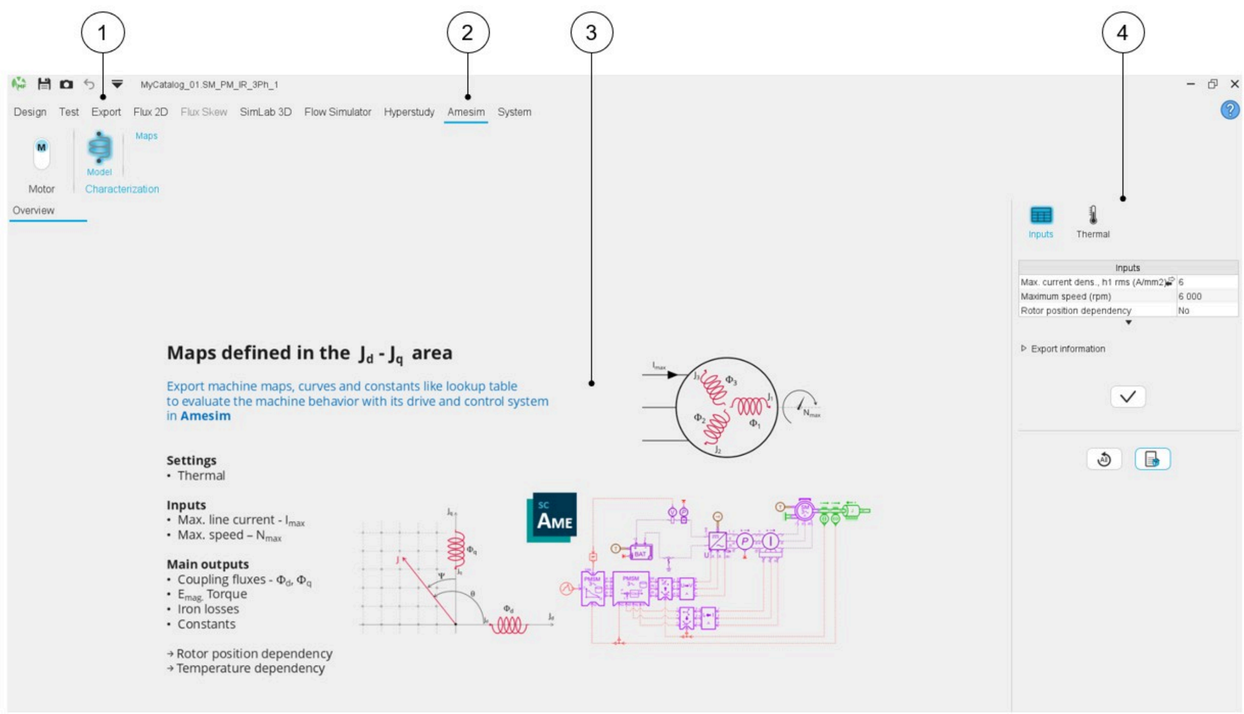
- Visual Parameter Guidance: In FluxMotor, parameters of a SimLab part are now visualized directly on your geometry with interactive arrows, providing clear visual feedback on which dimension you are adjusting.
- Accelerated Parameter Updates: Experience significantly faster response times when modifying design parameters, enabling quicker iterations and a smoother design process.

2.5 A new export from FluxMotor to Siemens Simcenter Amesim

One of our big targets is to develop and export more and more machine models, like lookup table (LUT), from FluxMotor to system software.

A new area is now dedicated to exporting maps from FluxMotor to Siemens Simcenter Amesim.

Table 7: FluxMotor – Motor Factory – Export maps to Siemens Simcenter Amesim

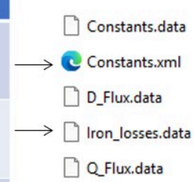


1	Export to external software
2	Export to external software: A new export is available to export maps to Siemens Simcenter Amesim
3	Overview to illustrate the test considered to be exported
4	User inputs to define the test conditions

Here are the four types of export available depending on the user inputs.

Table 8: FluxMotor – Motor Factory – Export maps to Siemens Simcenter Amesim

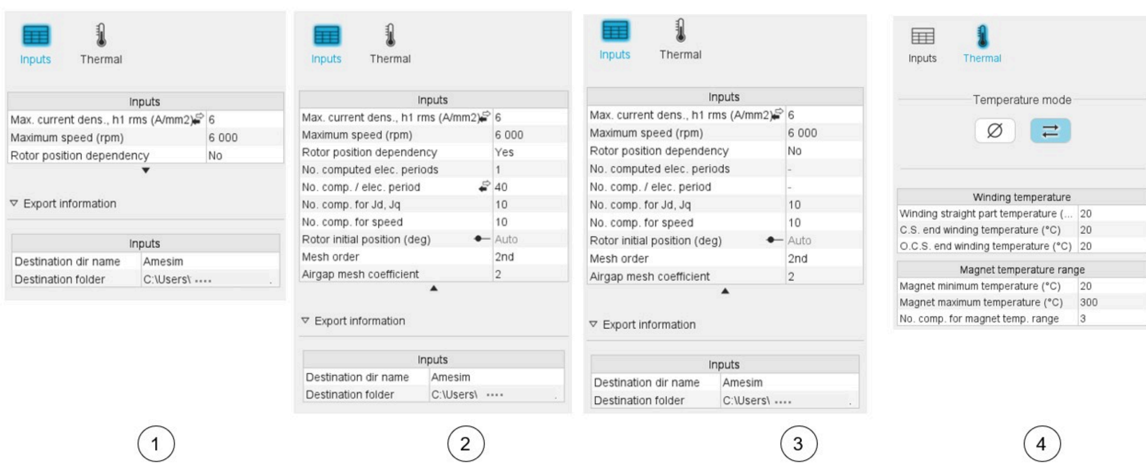
Rotor position dependency	Temperature dependency	Operating quadrants	Content
No	No	Q1 & Q2	D_Flux.data Q_Flux.data Iron_losses.data Constants.data
	Yes	Q1 & Q2	D_Flux.data Q_Flux.data Iron_losses.data Constants.data
Yes	No	All	D_Flux.data Q_Flux.data Iron_losses.data Torque.data Constants.data
	Yes	All	D_Flux.data Q_Flux.data Iron_losses.data Torque.data Constants.data



The four packages of export and one example of exported files

Here are the user inputs to perform the computations of the four packages of data.

Table 9: Export maps to Siemens Simcenter Amesim – User inputs and outputs



1	Standard user inputs
2	Standard and advanced user inputs – Case to perform computations with rotor position dependency
3	Standard and advanced user inputs – Case to perform computations without rotor position dependency
4	Thermal inputs to perform computation with temperature dependency

Note: Like in the previous version, the users can also export files dedicated to Twin Activate® or PSIM™, the other system simulation tools, by selecting the Export – System environment.

Warning: The new area dedicated to export LUT is available only for synchronous machines with permanent magnets (SMPM).

2.6 Enhanced GUI and workflows

Introduction

The new version, FluxMotor 2026 continues and completes the improvements to the interface and workflow begun in the previous version of FluxMotor.

One of our main objectives is to make FluxMotor even easier to use by homogenizing the different definition spaces within design and test environments while modernizing our user interfaces and workflows.

The main applications affected by these changes are as follows:

FluxMotor supervisor, Motor Factory (Design area, Test Area, Export Area), as well as the satellite applications like Motor Catalog, Part Library, Materials, Units, Script Factory, etc.

> **Note:** Information: This work is now finalized. Therefore, the new user help guide is not yet updated. We apologize for the inconvenience.
>
> However, gradually in the next weeks and months, the online user help guide will be updated and directly available for users.
>
> In the meantime, it is still possible to refer to the former user help documents.

2.6.1 The supervisor - new items

The main entry points

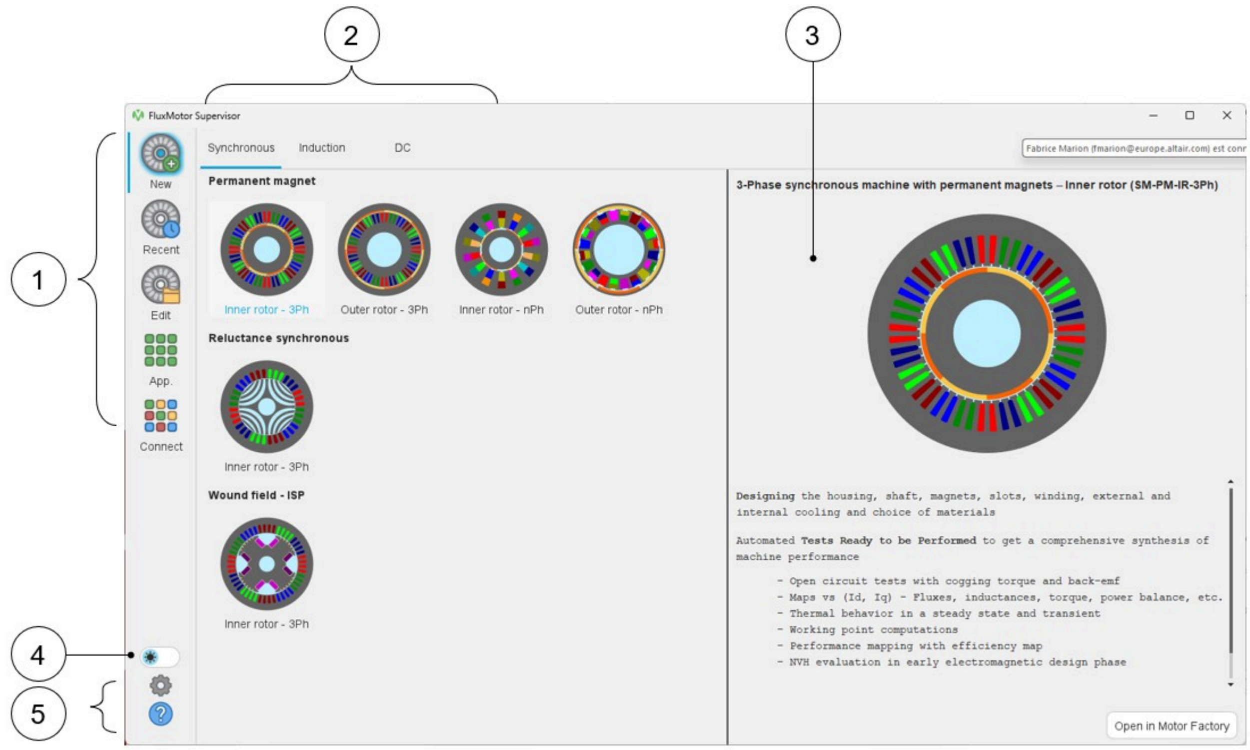
In the previous version a new supervisor has been developed to enable easier and faster viewing and access to projects and rotating electrical machines.

Five new main entrances have been defined: New, Recent, Edit, App, Connect.

- **New**: to create a new motor from a default topology. The machines can be selected from the three classical machines families.
- **Recent**: to edit a recent project. Up to 100 projects can be stored on this list.
- **Edit**: to select and edit a project from the catalogs, standard and user catalogs, like what can be done when using Motor Catalog.
- **App**: to access the FluxMotor satellite applications like Motor Catalog, Part Library, Materials, Units, Script Factory, etc.
- **Connect**: is a new label allowing access to a dedicated section that gives access to external software that is needed and complementary for FluxMotor: Flow Simulator™, Flux®, HyperStudy™, PSIM™, SimLab®, Twin Activate®, Siemens Simcenter Amesim.

> **Note:** A new software is now available: Siemens Simcenter Amesim which is a mechatronic systems simulation platform that allows design engineers to virtually assess and optimize the systems' performance.

*Table 10: FluxMotor – New supervisor – Create a **New** motor*



1	Main entry points of the supervisor – **New** motor in Motor Factory, edit a **Recent** motor, **Edit** a motor from catalogs, Open FluxMotor satellite **App**lications, and Open **Altair®** solutions
2	Classification and selection of Rotating Electrical Machines – Three families – Synchronous, Induction and DC machines
3	The topology of the selecting machine is displayed with a brief introduction
4	Button to switch between Light and Dark modes
5	Access to **user's preferences** and to **help information**

Dark or Light themes

The theme can be selected directly from the front end of the supervisor. A dedicated button allows you to switch between modes.

> **Note:** The switching between modes leads the supervisor to restart automatically with the selected theme.
>
> If applications such as Motor Factory or others were already open during the switchover, their theme will not be changed.
>
> These applications must be closed and reopened for the theme to be applied to them.

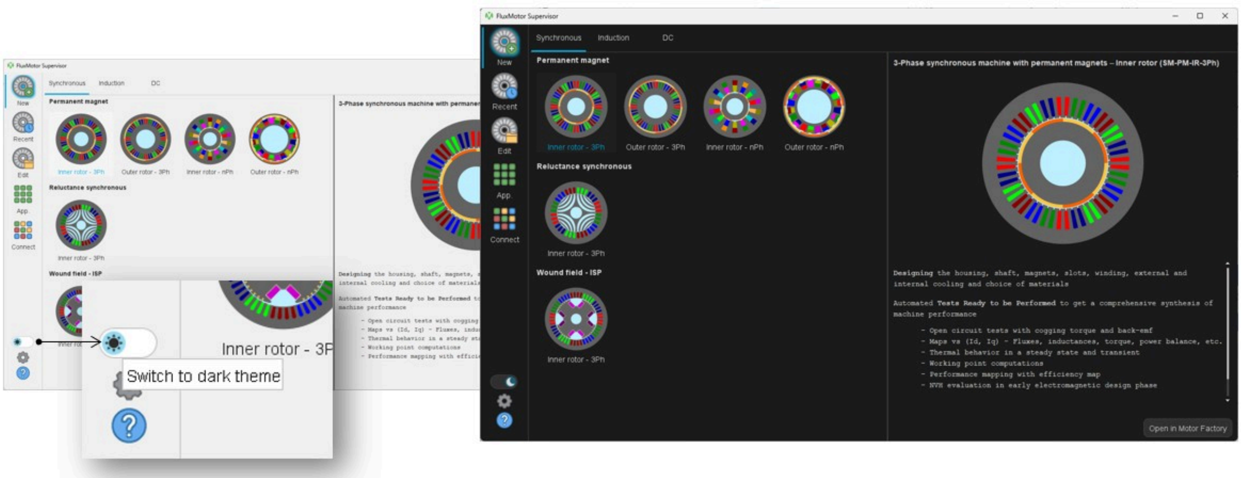
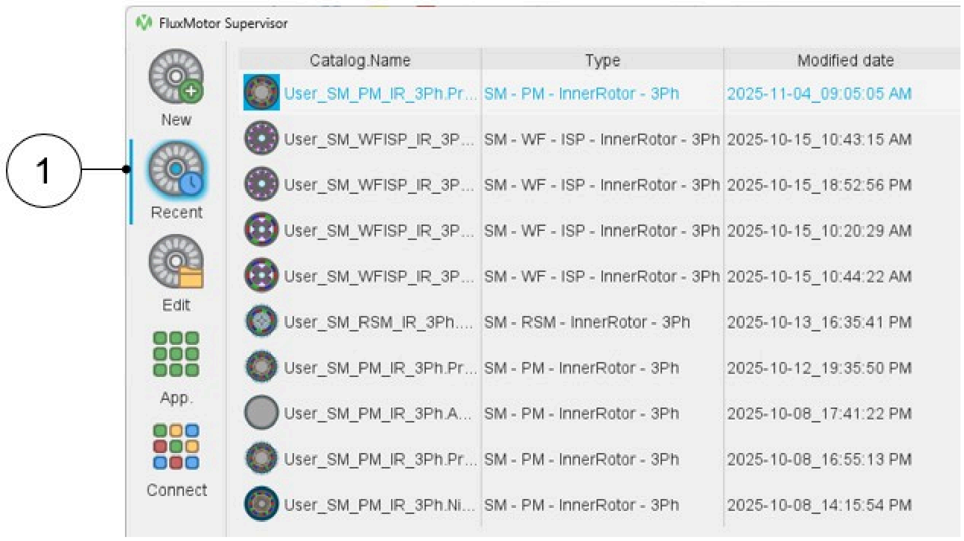


Figure 10: New way for switching between light or dark theme

Additional improvements

1. Lighter displaying of recent motor list

Table 11: FluxMotor – Supervisor – Edit ***Recent*** *Motors*

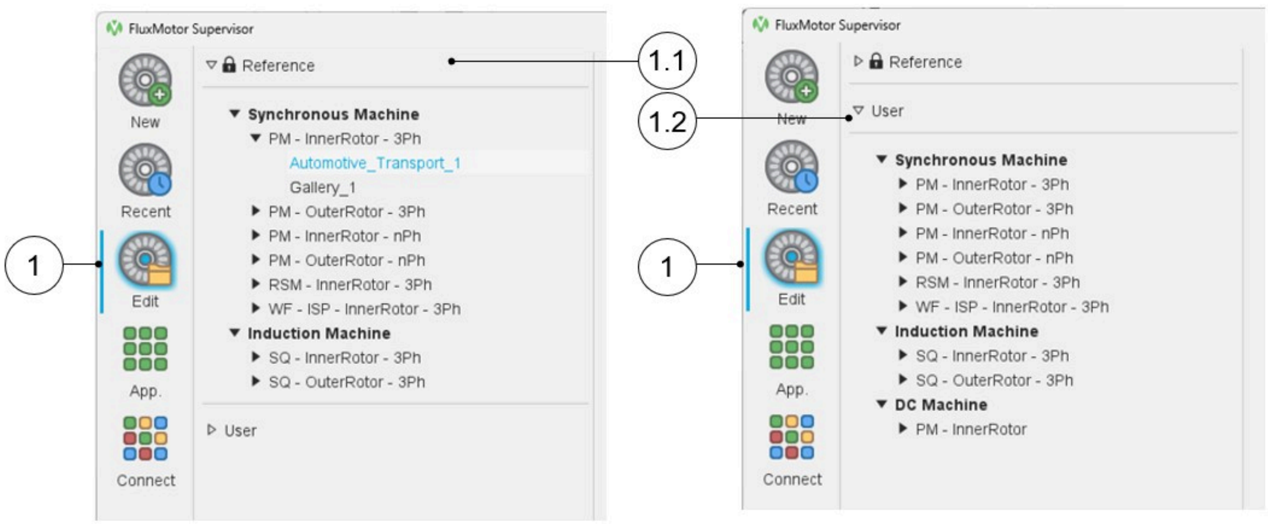
<table>
<tr><td colspan="2">
</td></tr>
<tr><td>1</td><td>"Recent": To edit a recent project. Up to 100 projects can be stored on this list</td></tr>
</table>

2. New selection tree for the motor catalog

A new selection tree has been implemented for visualizing the machines and selecting them in a more user-friendly way.

Hence, once the type of catalog is selected, either Reference or User, the user can display all the available catalogs in the whole area for more visibility as illustrated below.

*Table 12: FluxMotor – Supervisor – **Edit** a motor from catalogs*



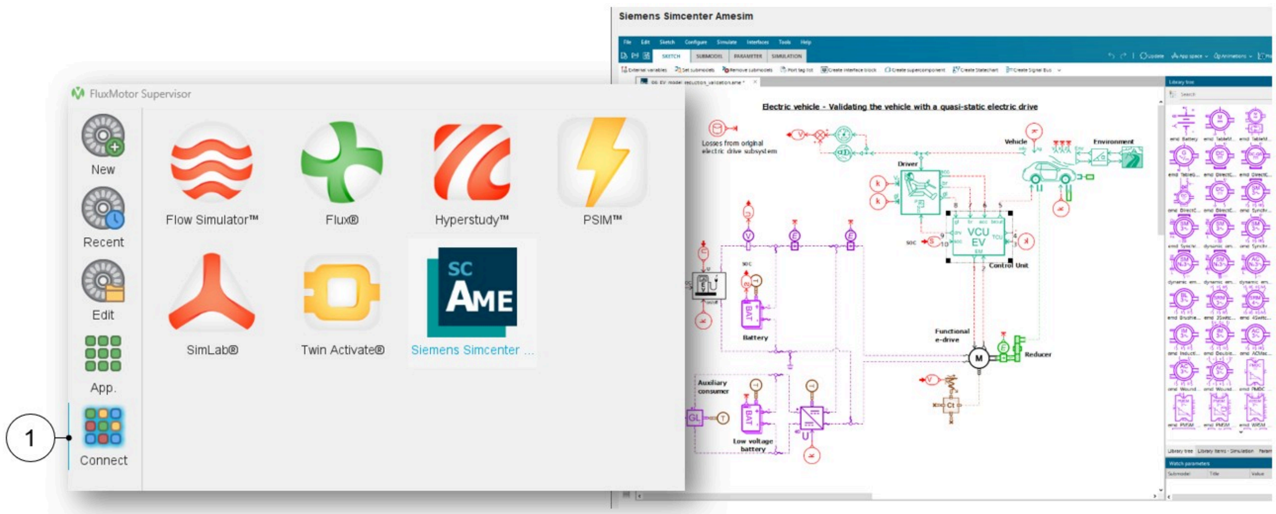
1	"**Edit**": To select and edit a project from the catalogs, standard and user catalogs like what can be done when using Motor Catalog
1.1	The reference catalogs have been selected and are deployed, and others (User) are folded
1.2	The user catalogs have been selected and are deployed, and others (Reference) are folded

3. **Connect to external software**

Once you select the button "Connect" – Among the list of external software that are needed and complementary for FluxMotor, a new one is now available: "Siemens Simcenter Amesim" which is a mechatronic systems simulation platform that allows design engineers to virtually assess and optimize the systems' performance.

> **Note:** For SMPM machines, a new export allows us to build and export maps from FluxMotor to Amesim for performing system behavior analysis.

*Table 13: FluxMotor – Supervisor – **Connect** – Access to Siemens Simcenter Amesim*



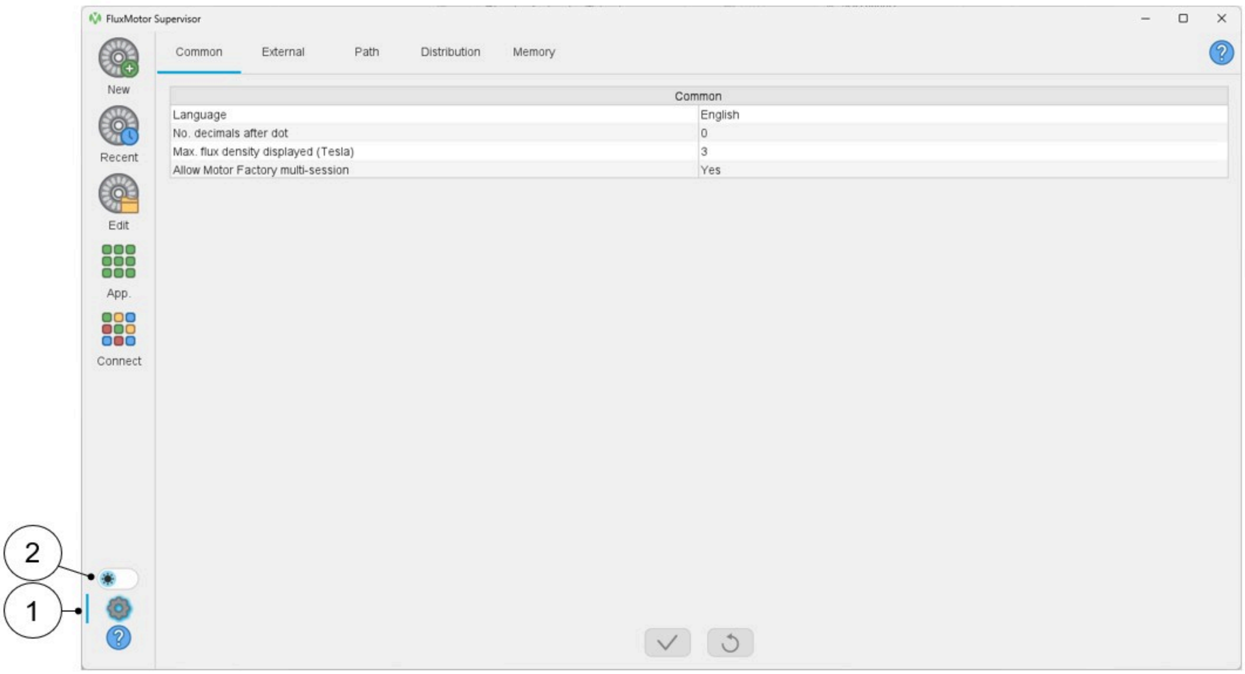
1	"**Connect**": is a new label allowing access to external software that is needed and complementary for FluxMotor

4. **New presentation for the user preferences**

   The display and content of user preferences have been revised. The data are displayed in a table for better visibility.

   In the **Common user preferences**, the choice of the preferred look and feel (dark or light theme) has been removed. This choice is made directly by the supervisor.

Table 14: FluxMotor – Supervisor – ***User preferences – Common***



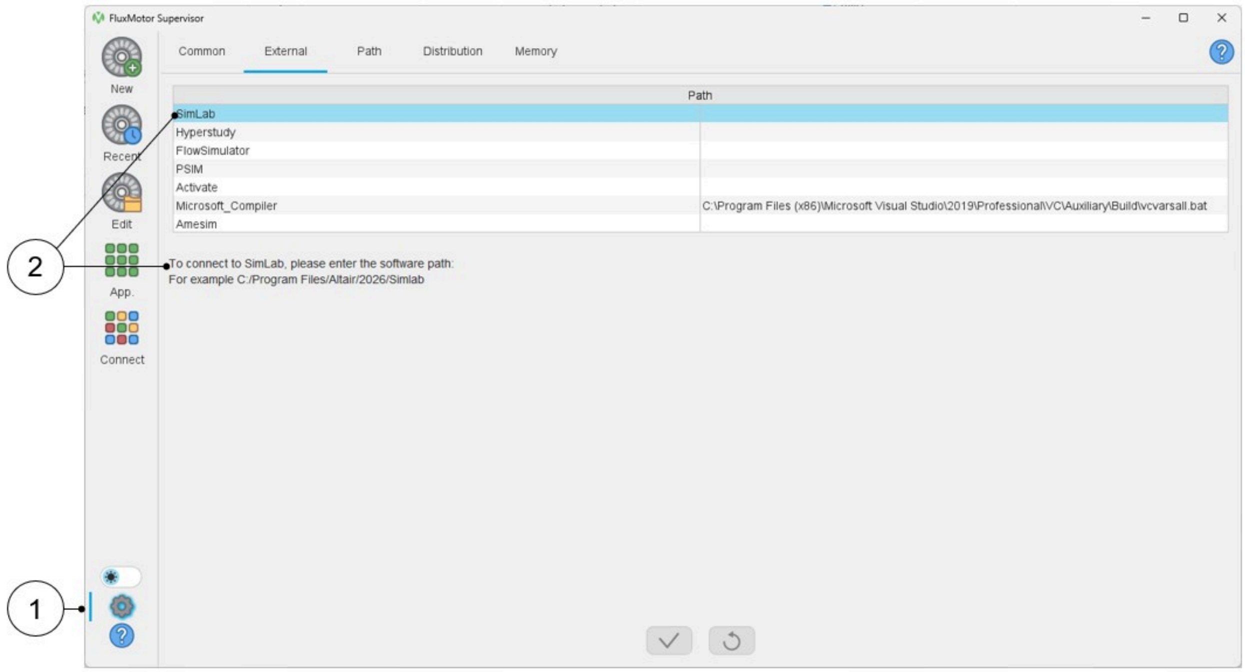
1	Access to **user's preferences**
2	Selection of the Dark or Light theme

A new selection tab has been added: The **User preference External**.

In this section, one can define all the links needed to reach and launch the available external software. Once a software name is selected and highlighted (SimLab in the example below), a typical path for the considered software is provided for helping the user.

> **Note:** The user must adjust the link to his proper case.

*Table 15: FluxMotor – Supervisor – **User preferences – External***



1	Access to **user's preferences**
2	Definition of the path for the software considered. An example is provided to help the user to define the path

In the **path user preferences**, the different path types have been classified into several sections for better visibility.

Default creation path: For storing files generated by applications like Motor Catalog, Part Library or Materials.

Default Export path: For storing files that are exported from the different applications.

Default source path: For defining the default folder where files can be loaded either for building the part or for adding attachments (Part Library or Motor Catalog).

Default HyperStudy path: For defining the default folder where the connectors generated for HyperStudy are stored and where the catalog provided during the HyperStudy process will be stored.

Default Other path: Motor Factory working directory and Amesim export folder.

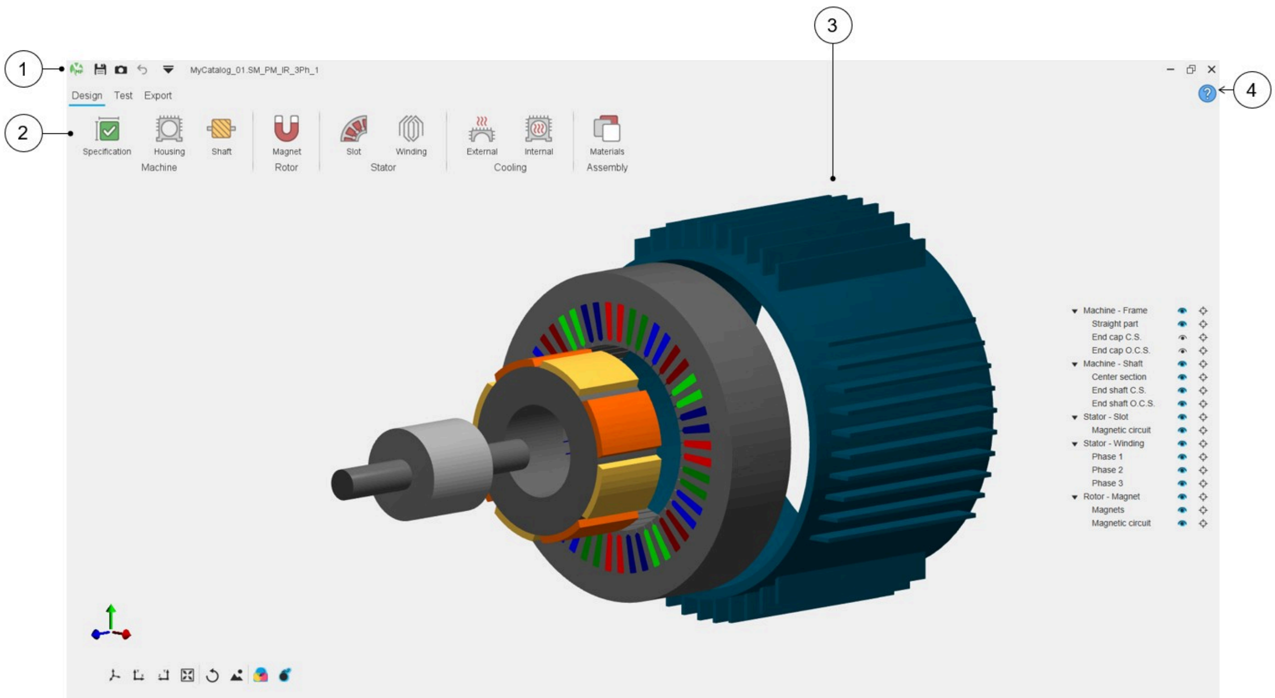
In the **Distribution user preferences**, one can define the Flux distribution mode and the corresponding parameters.

Last, in the **Memory user preferences**, one can define the memory allocation for the different applications used.

2.6.2 Enhancement of Motor Factory

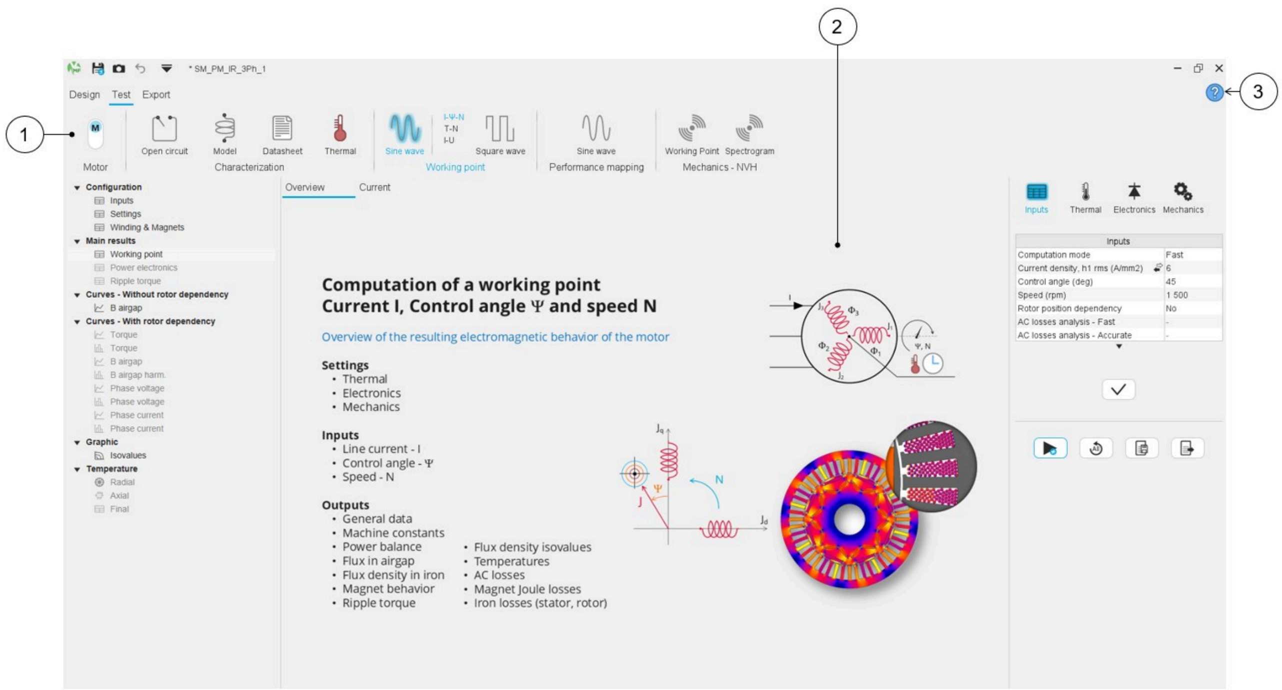
The main improvements are illustrated in the tables below.

Table 16: FluxMotor – Motor Factory – Design area



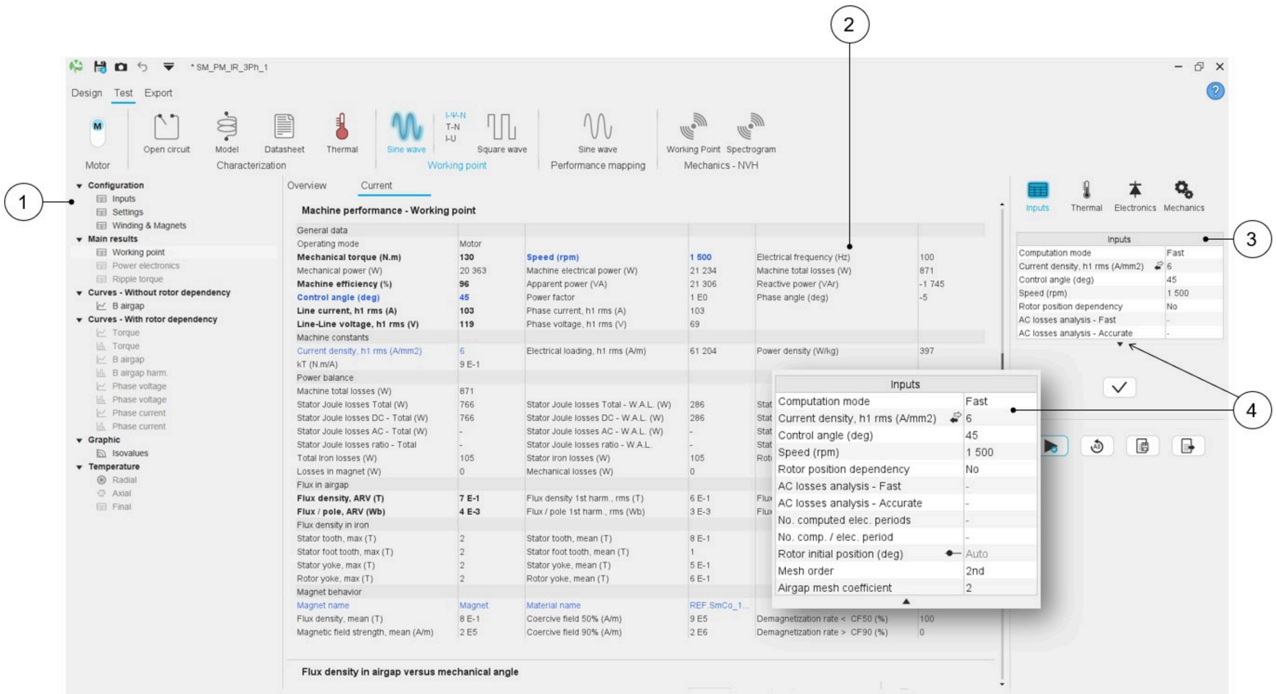
1	Generic functions: Save, Store, and Undo are also available in the top left-hand corner of the screen next to the drop-down menu in which generic functions such as Save, Save as, Store, Undo, About, Debug, Help and Exit can be selected as well
2	New icons for illustrating the main areas
3	3D view to get a better visualization
4	Online user help guide link. One link is dedicated to each design area

Table 17: FluxMotor – Motor Factory – Test area - Overview



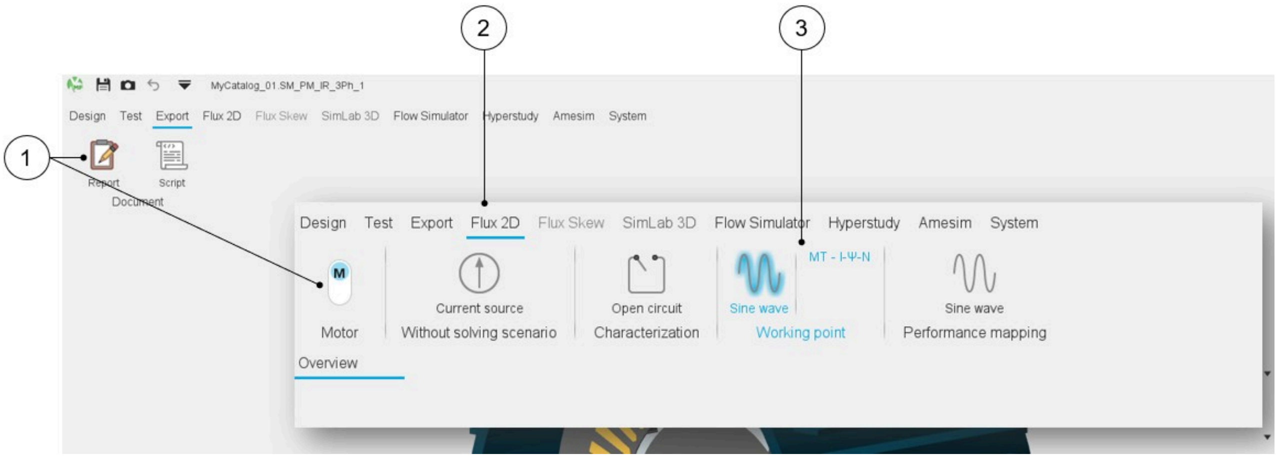
1	New icons
2	New overviews
3	Online user help guide link. One link is dedicated to each test area

Table 18: FluxMotor – Motor Factory – Test area – Test results



1	New selection tree - More compact layout for more efficient selection
2	Lighter presentation of results
3	Lighter presentation of user inputs. Advanced user inputs can be visualized by clicking on the arrow (4)

Table 19: FluxMotor – Motor Factory – Export area



1	New icons
2	Export to external software: Flux 2D in our example
3	Selection of a test project to be exported: Working point – Sine wave – MT – I, PSI, N

2.6.3 Enhancement of FluxMotor applications

All the applications of FluxMotor have been updated with the same principle as the ones applied in Motor Factory.

This makes them even easier to use by homogenizing the different environments while modernizing our user interfaces and workflows.

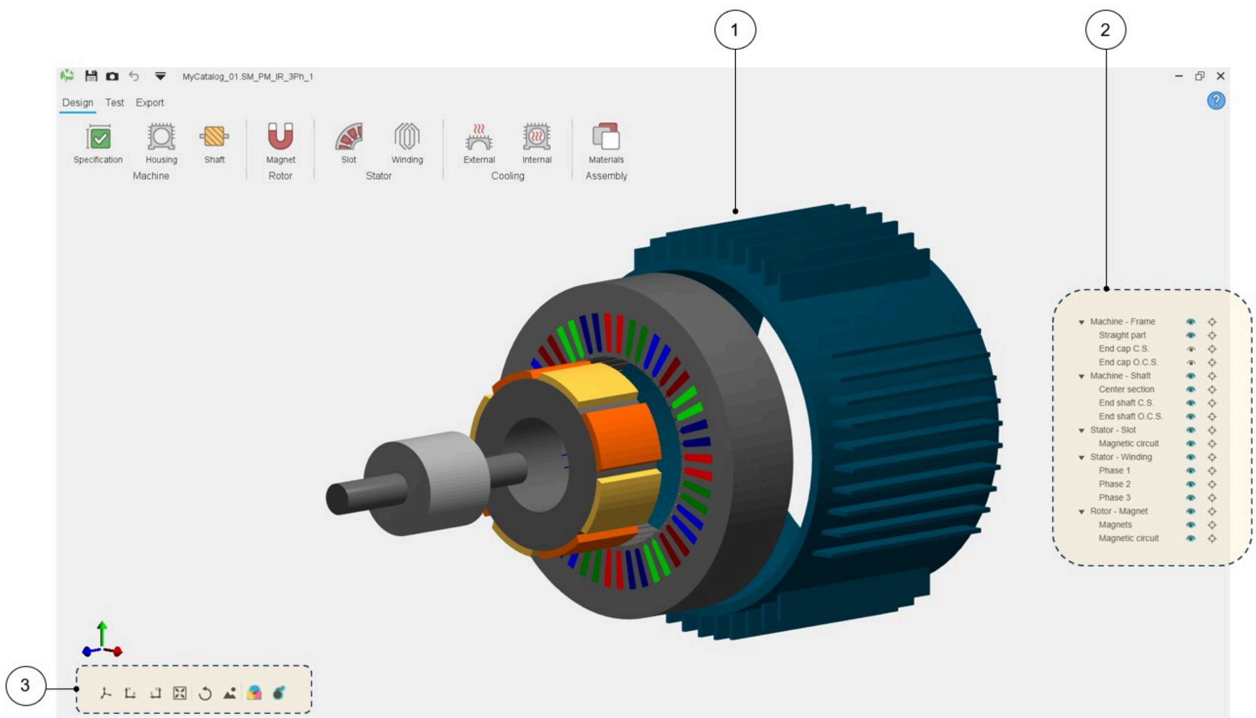
2.7 Machine 3D view

A 3D view is now displayed in the three main environments of Motor Factory: Design, Test and Export areas.

This new feature is available for every machine type.

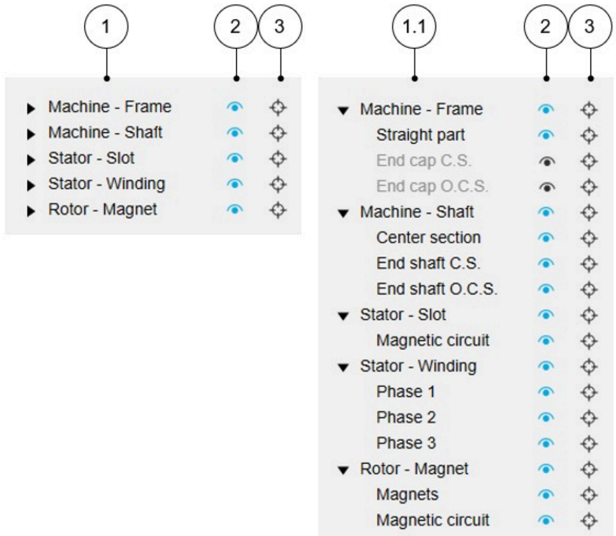
In this section we present an overview of the 3D view, the main graphic functions and the management of panels.

Table 20: Motor Factory – Design – 3D view – Example of the synchronous machine with permanent magnets – Inner rotor



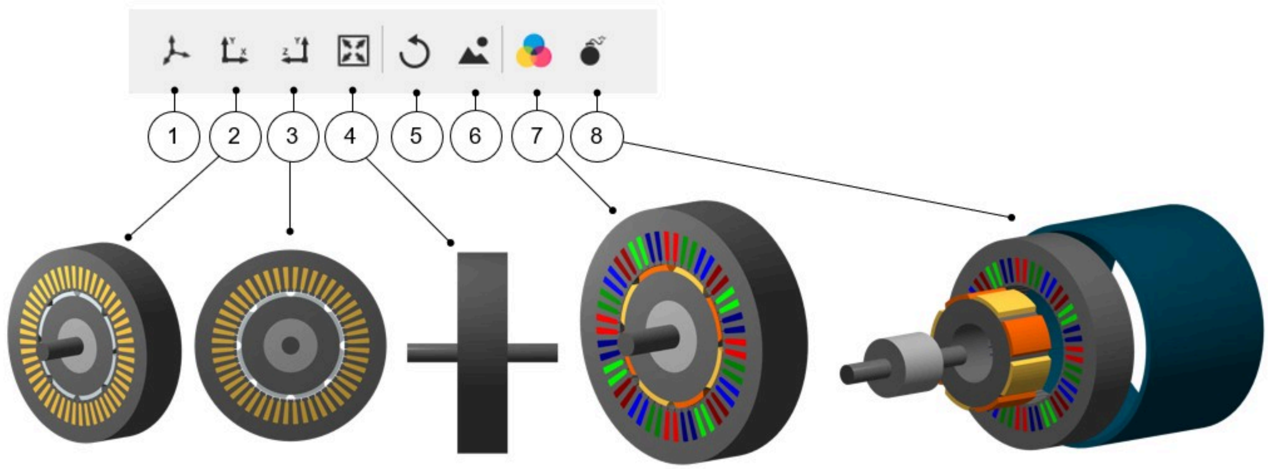
1	Displaying of the machine in 3D view
2	Tools for visualizing or not machine regions
3	Buttons to manage the 3D view displaying

Table 21: Motor Factory – Design – 3D view - Tools for visualizing or not machine regions – Example for a SMPM machine



1	List of the main regions of the machine
1.1	List of the main regions and the associated sub-regions of the machine
2	The selector (eye) allows the considered machine region to be displayed (blue color) or not (black color) **Note:** When the selected "eye" is in front of a main region label, all the associated sub-regions are displayed.
3	The selector (target) allows us to isolate the considered machine regions **Note:** You can reset the 3D view to reinitialize the 3D view display and make all the regions reappear. **Note:** When the selected "target" is in front of a main region label, all the associated sub-regions are isolated.

Table 22: Motor Factory – Design – 3D view - Buttons to manage the 3D view displaying – Example of a SMPM machine



1	Displaying of the machine in 3D view = default 3D view
2	2D view - Projection in the xOy plane
3	2D view - Projection in the yOz plane
4	Reset zoom
5	Reset the 3D view display to come back to the default 3D view
6	Export picture to *.png file **Note:** Clicking on this button opens a dialog box to give a name to the exported non-vector (png) picture and a folder where to store it.
7	Button to display or not the FluxMotor model colors (active regions) meaning the conventional colors used in FluxMotor to represent the winding phases. This allows us to well distinguish the phase order for instance. The conventional magnet colors allow for a good distinction between the north and south polarities. Without this selection, the colors displayed represent a more realistic appearance of the different regions of the machine.
8	Button to display or not an exploded view of the machine

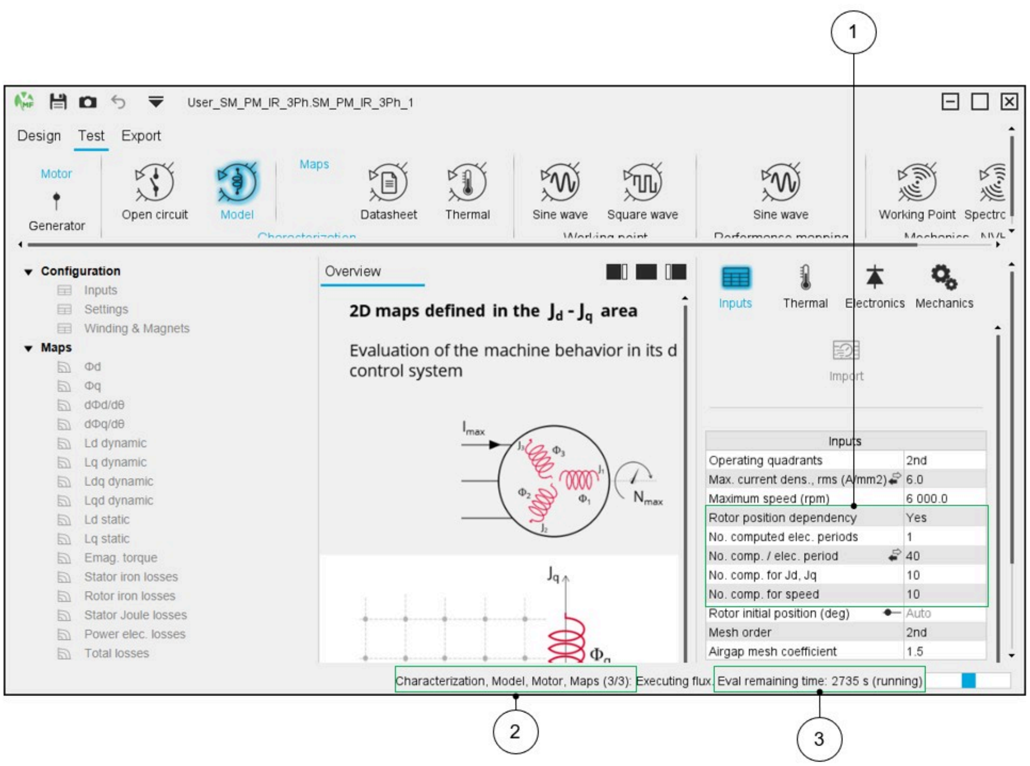
2.8 Time estimation bar

There are several tests for which it is difficult to predict the duration because there are many factors impacting the complexity. The two main tests concerned are the model map and the efficiency map tests. We have implemented a method to evaluate the expected run-time based on historical data of previous runs. This method considers the following data:

- Number of currents computed
- Dependency on the rotor position
- Thermal mode on magnets
- Non-skewed vs skewed design
- Design complexity
- Distribution settings

This information is displayed in the status bar, along with the progress information about the significant intermediate steps of the current test. You can see an illustration below.

Table 23: Motor Factory – Test area – Time estimation bar - Example



1	Parameters impacting on the complexity of the test
2	Information about the progress
3	Estimated remaining time

In addition to this, if the distribution is enabled, we also developed a method that evaluates the most appropriate distribution number to ensure that the Flux job can be safely run on your host and that the distribution factor is well-suited for your design size.

List of fixed issues and major improvements

3

This chapter covers the following:

3.1 All machines

Distribution of computations cannot be used for computing NVH spectrogram

(ref.: SLVFXM-15772) - This issue has been corrected.

Computation of maps may be incompatible with the Flux distribution mode

It is highly recommended to not use the Flux distribution mode while computing maps.

This restriction must be applied for the test Characterization / Model / maps test as well as for the export of maps to System (ref.: SLVFXM-17954).

This issue has been corrected.

Import input function doesn’t work

In the Export / HyperStudy area, the import input function doesn’t work for thermal settings (ref.: SLVFXM-17724).

This issue has been corrected.

Issue with the number of decimals after dot

When setting the common user preferences "No. decimal after dot" equal to 5, the numbers less than 1 written with an exponent (1E-X) become equal to 0 (ref.: SLVFXM-17837 + SLVFXM-17838).

These issues have been corrected.

Export LUT – Issue with the temperature dependency of the stator resistance

While exporting the LUT, the value of the stator resistance doesn’t consider the temperature, which is defined in the thermal settings (ref.: SLVFXM-17692).

This issue has been corrected.

Null values are not well managed while designing the Frame and shaft

Null values are allowed for designing the housing, bearing, or shaft dimensions, but this leads to the wrong thermal analysis. It is highly recommended not to use null values for the inputs considered (ref.: SLVFXM-14705).

This issue has been corrected. Null values are now forbidden.

Export to FeMT with too long output path

The Flux script crashes when the output path for FeMT export is too long (ref.: SLVFXM-15471).

This issue has been corrected.

Fault in the coupling FluxMotor-HyperStudy

An error in the FluxMotor process doesn't stop the HyperStudy execution (ref.: SLVFXM-15402).

This issue has been corrected.

Issue with exported Flux Skew projects

After exporting a Flux Skew project, if the user solves the project, deletes the results, and then solves them again, the running of the project fails (ref.: SLVFXM-15075).

This issue has been corrected.

Error while opening a motor (2020.1) with null shaft extension

Opening a motor built with version 2020.1 (or older) with a null shaft extension leads to an error. With new versions, a null shaft extension is forbidden (ref.: SLVFXM-14684).

This issue has been corrected.

Power electronics and coupling with HyperStudy®

For tests where the setting "Electronics" is available, data like power electronics stage, maximum efficiency, and its rated power can be selected for generating a connector for HyperStudy®, but it should not be.

In the Export-HyperStudy® area, when the selected test is “Working Point, T-N”, the settings of “Electronics” - "Max efficiency", and "Rated Power" - are exported even if the associated option is not selected (ref.: SLVFXM-13726).

This issue has been corrected.

3.2 Synchronous machines – Motor Factory – Test environment

In accurate mode the sign of the reactive power and the phase angle are not right

The sign conventions are not respected for defining the reactive power and phase angle (ref.: SLVFXM-16143, SLVFXM-16542).

These issues have been corrected.

3.3 Synchronous machines – Motor Factory – Export environment

Export from FluxMotor to FEMT - Issue when exporting the Efficiency map test in case of parallel paths

This problem occurs when there is more than one circuit in parallel for the periodic portion of the model under consideration (ref.: SLVFXM-17103).

This issue has been corrected.

3.4 Synchronous machines – Wound field– Motor Factory – Test environment

Wrong thermal settings for the test "NVH Spectrogram" dedicated to the wound field synchronous machine

The thermal settings should be the same that those available for the test "NVH Working point" (ref.: SLVFXM-17932).

This issue has been corrected.

3.5 Synchronous machines with permanent magnets – Motor Factory – Export environment

Issue while exporting a 3D machine with a shaft

The shaft is not represented in the resulting 3D project (ref.: SLVFXM-17953).

This issue has been corrected.

3.6 Reluctance synchronous machines –Motor Factory – Test environment

Issue in the displaying of the characteristic curves in Jd-Jq area

In the test efficiency map, there is an issue in the displaying of the characteristic curves in Jd-Jq area, where the location of the second working point is wrong (ref.: SLVFXM-17801).

This issue has been corrected.

3.7 Induction machines – Motor Factory – Test environment

The computation of the efficiency map (U, I) with mechanical losses can fail

This issue raises a null-pointer exception (ref.: SLVFXM-16157).

This issue has been corrected.

Error when exporting and solving a project in Flux Skew – Transient application

This issue occurs when the user input “Represented coil conductors” is set to All phases (ref.: SLVFXM-15877).

This issue has been corrected.

Power balance of No-load working point

Sometimes, computation of the no-load working point (slip = 0.1%) leads to a NaN (Not a Number) result. The computed amount of iron losses is not consistent with the power balance (ref.: SLVFXM-12600).

This issue has been corrected.

Issue while computing the efficiency map (scalar control – U,f or U,I) – IMSQ

The scalar model gives wrong results when hairpin winding technology is considered compared to results obtained with an equivalent classical winding (ref.: SLVFXM-17183).

This issue has been corrected.

3.8 Script Factory

The new files are not visible in the tree if the folder is empty

When we open an empty directory, the workspace tree is empty. Using the 'New file' button does not make visible the created files. (ref.: SLVFXM-16901).

This issue has been corrected.

List of warnings

4

This chapter covers the following:

4.1 All machines

Physics properties of Flux model are not well defined

The face region associated with a solid region - built with solid material - is not well defined in the physics properties of the Flux model.

A solid region is defined as a "Laminated magnetic non conducting" region instead of "magnetic non-conducting region".

However, this doesn't lead to wrong computation results.

> **Note:** This issue concerns every region built with solid material as well (shaft and others…) (ref.: SLVFXM-18032).

Features available in beta mode

Sometimes, a new test is provided in beta mode, meaning that it is not entirely qualified. However, we make it available for testing, and we invite the users to give us their feedback and comments for improving this feature even more.

To indicate the "Beta mode" status of the test, "BETA VERSION" is written in the overview of the considered test, as illustrated below.

Here is an overview of the test, as shown below.

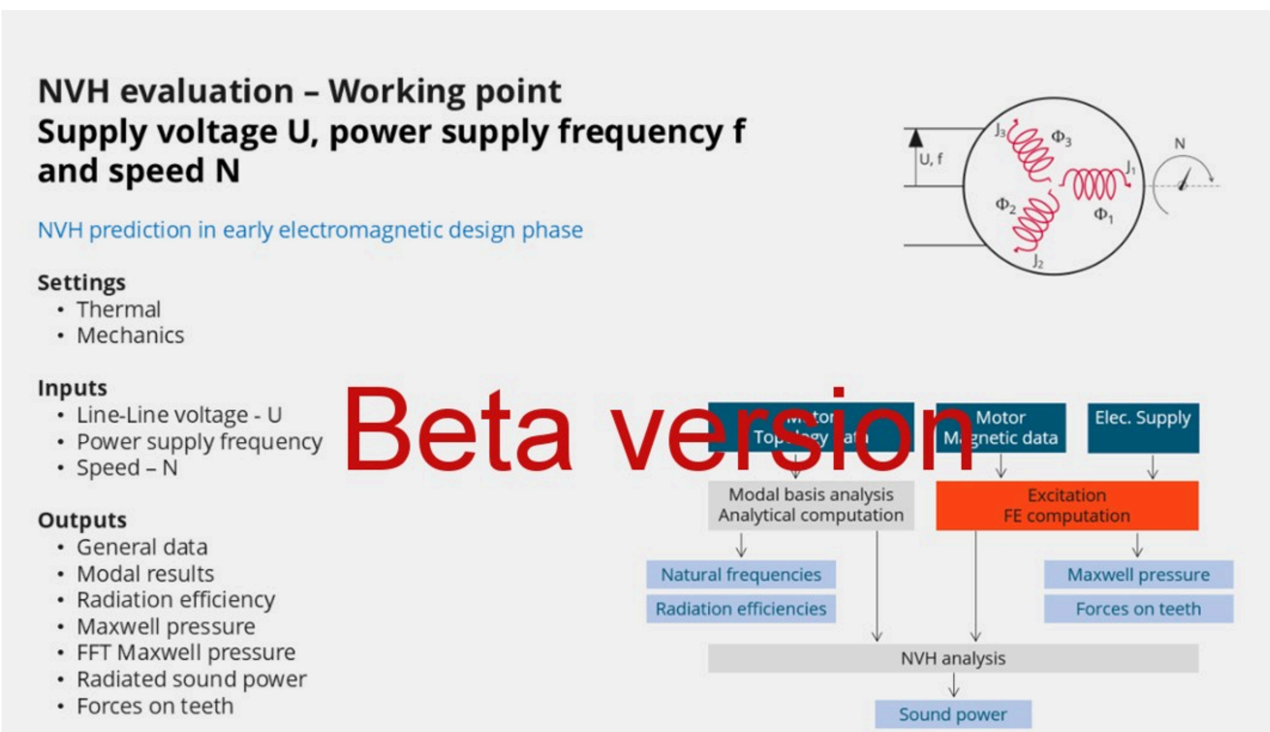


Figure 11: Example of a test provided in beta mode

For information here is the list of the features available in beta mode in the current version of FluxMotor:

Synchronous Machines with Permanent Magnets – Inner Rotor:

- The process for importing parameterized part (inner magnet) from SimLab sketcher is in beta mode.

Wound Field Synchronous Machines - Inner Salient Poles – Inner Rotor:

- Test – Mechanics – NVH – Working point If, I, PSI, N
- Test – Mechanics – NVH – Spectrogram If, I, PSI, N

Induction Machines with Squirrel Cage – Inner and Outer Rotor:

- Test – Characterization - Model – Motor – Scalar
- Test – Performance mapping – Sine wave – Motor – Ems U-f (Efficiency map)
- Test – Performance mapping – Sine wave – Motor – Ems U-I (Efficiency map)
- Test – Mechanics – NVH – Working point U, f, N
- Test – Mechanics – NVH – Working point I, f, N
- Test – Mechanics – NVH – Spectrogram U, f, N
- Test – Mechanics – NVH – Spectrogram I, f, N

DC Permanent Magnet machines – Inner Rotor:

- Test – Working point – Constant speed – Motor & Generator – U-N
- Export – Flux 2D – Transient – Working point – Voltage source – Motor & Generator – Constant speed

The online user help guide is not yet updated

Considering the huge work done for improving the GUI and workflow for all the FluxMotor applications, the online user help guide will be updated regularly after the release of FluxMotor 2026. We will do our best to complete this task as soon as possible.

Winding – Expert mode – defining of several circuits per sector

In Expert mode, several parallel circuits can be defined in a sector, and moreover, several coils can be built in one circuit.

Such circuits can be connected in parallel according to the user's input No. parallel paths.

In that case, it is mandatory to balance all the parallel paths well while building and connecting the coils inside all the circuits.

Indeed, our internal process of computation doesn't manage the unbalance between parallel paths, i.e., in the case of unbalanced parallel paths, the results of computations are wrong.

> **Note:** For example, imbalance between parallel paths can be due to the number of coils per circuit, which can be different from one circuit to another. It can also be induced by the building of coils (differences in conductor lengths...).

Frame convection coefficient differences when estimated in Design External Cooling and in thermal tests

Frame convection coefficients (both natural and forced) estimated during the design phase and those obtained from thermal testing may diverge. This discrepancy arises because the empirical correlations used in the design do not account for the final surface and fluid temperatures reached during testing. Additionally, slightly different correlations are applied in the design and test contexts. This divergence will be addressed and corrected in future releases.

Natural convection for end winding

While choosing a model where the end spaces are cooled with natural convection, the FluxMotor® model uses quite a low rotor tip speed ratio (a value of 5) to describe the fluid velocity far from the rotating components. This may lead to an overestimation of the cooling of the end winding on high-speed machines.

When a tip speed ratio of 5 seems to overestimate the end winding cooling, it is advised to switch to forced convection mode.

This mode allows forcing some higher tip speed ratios for areas far from the rotor but reduces the efficiency of the cooling on the end winding.

This model will be improved for future versions.

Modification of units

To take the change of units into account in a test, the user must reopen Motor Factory. The modification is not considered instantaneous in applications of Altair FluxMotor® like Motor Factory.

Export a model into Flux® environment with represented elementary wires

1. Building time of the model in Flux®

   When slots are filled out with a lot of elementary wires, and all the phases need to be represented with solid conductors inside the Flux® 2D model, the resulting python file can be very long. Therefore, the process of building the corresponding model in the Flux® environment can take a longer time.

Browse function

Sometimes, opening a folder from FluxMotor® applications via the browser function requires a longer time (several seconds).

Export environment – HyperStudy®

1. Compatibility of HyperStudy connectors with respect to FluxMotor solver versions

   The process that describes how to update the HyperStudy connector is written in the user help guide "MotorFactory_Introduction.pdf".
2. New test and connectors for HyperStudy®

   Connectors for coupling FluxMotor® and HyperStudy® are not yet available for the newly added tests, like those with transient thermal computations or the tests for induction machine like the "Characterization – Model – Motor – Scalar" and the "Performance mapping – Sine wave – Motor – Efficiency map scalar".

Mandatory synchronization between connector and FluxMotor versions

The connectors used in HyperStudy must be synchronized with the FluxMotor solver version.

An error message (inside the log files) is generated while performing HyperStudy studies with a connector provided with a former version of the FluxMotor solver.

Problems with slot filling

1. Slot filling is not yet possible with a non-symmetric parallel slot.
2. When a toothed winding design is considered with rectangular shaped wires, the conductor grouping method "horizontal" doesn't work properly, leading to the wrong visualization of conductors. In that case, it is recommended to select the conductor grouping method "vertical".

   All work well with circular shaped wires.

   Example with a toothed winding design (i.e., the coil pitch = 1) and with 2 wires in hand.

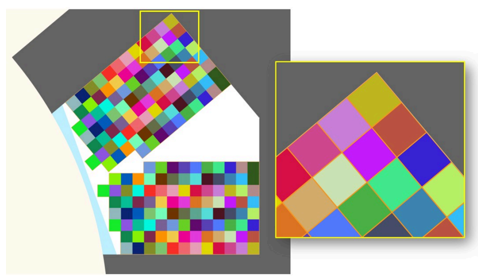


Figure 12: Horizontal filling – wrong visualization, but the total number of wires is right

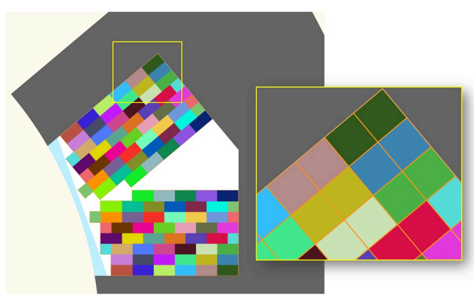


Figure 13: Vertical filling – good visualization

NVH computations - Advice for use

The modal analysis and the radiation efficiency are based on analytical computation, where the stator of the machine is considered a vibrating cylinder.

The considered cylinder behavior is weighted by the additional masses, like the fins or the winding, and the subtractive masses, like the slots and the cooling circuit holes.

This assumption allows for a faster evaluation of the behavior of the machine in connection to NVH. But in no way can this replace mechanical finite element modeling and simulation.

Possible reasons for deviations in results can be the following:

- The limits of the analytical model are reached or exceeded
- Unusual topology and/or dimensions of the teeth/slots
- Complexity of the stator-frame structure when it is composed of several components, for instance
- The ratio between the total length of the frame, Lframe and the stack length of the machine, Lstk. In any case, this ratio must be lower than 1.5:

$$\frac{L_{frame}}{L_{stk}} \leq 1.5$$

4.2 Synchronous machines – Motor Factory – Test environment

Working point – Square wave – Forced I – and delta connection

When running the test "Working point – Square wave – Motor – Forced I" with a delta winding connection, two electrical periods are considered for reaching the steady state behavior of the motor. However, sometimes two periods are not enough to get a good convergence of the process, and therefore, the displayed results may not correctly represent the steady state.

Motors built and tested with previous versions can be loaded with the current version. The existing "current tests" are removed and transformed into "saved tests" with reference to the original version (all the previous versions).

Sometimes, the results of the current tests are removed. The test must be executed again to get the corresponding results.

Delta winding connection

When a delta winding connection is considered, the computation doesn't consider the circulating currents. This can lead to a different result than expected in transient computation for the test "Characterization - Open-circuit - back-emf".

In such a case, it is recommended to perform a transient computation in the Altair® Flux® environment. The application "Export to Flux®" thereby allows exporting this kind of model to the corresponding scenario ready to be solved.

Evaluation of the maximum achievable speed

The aim of this result is to give a rough estimation of the maximum reachable speed that can be achieved by the machine. This computation is performed by considering the MTPV command mode. However, when the resulting control angle is low (no saliency in the airgap of the machine), the evaluation of the maximum achievable speed may be far away from the maximum speed given by the "Performance mapping – Sine wave – Motor - Efficiency map" test.

Export to FeMT

The export of projects to FEMT is limited to SMPM inner rotor machines.

Furthermore, when there is more than one parallel path, export to FeMT is blocked because the two electric circuit models are not yet compatible in the electric circuit built by FluxMotor. Here, parallel paths are built to represent the corresponding parallel circuits.

4.3 Induction machines – Motor Factory – Design environment

Computation of inter bar impedance

For induction machines, inter bar impedance (resistance and inductance) is computed by considering characteristics defined in the Motor Factory. However, while exporting the model into Flux® 2D or into Flux® Skew, the inter bar impedance will remain constant, even if a parametric study is performed in the Flux® environment. The topology parameter as well as the temperature variations won’t impact the inter bar impedance.

4.4 Induction machines – Motor Factory – Test environment

Computation of tests for induction machines with skewing

When the squirrel cage or the slots are skewed for induction machines, the tests are computed with Altair® Flux® Skew at the back end of the FluxMotor®.

This leads to an increase in computation time.

For the tests "Performance Mapping – Sine wave – Motor – T(Slip)" and the test "Characterization – Model – Motor – Linear", the computation time can be greater than 45 minutes depending on the machine concerned and is generally lower than 5 minutes when it is without skewing of the squirrel cage or slot.

The computation time for computing a working point is generally close to 8 minutes with the skewing of a squirrel cage or slots and less than 1 minute when it is without skewing.

The required allocated memory is higher when Flux® Skew computations are performed at the back end of the FluxMotor®.

By default, the maximum allocated memory for Flux® Skew software and Flux® 2D software is set to DYNAMIC (user’s preferences - Advanced tab).

Computation of power density for induction machines

There was an issue in the process of computing or displaying the power density for induction machines.

The result was given in W/m3 while it is in W/kg for other machines, such as SMPM and RSM.

This issue has been corrected.

However, it won't be possible to use a connector for HyperStudy®, generated with an older version, for driving the FluxMotor® 2022.2.

List of the main issues

5

This chapter covers the following:

5.1 All machines

Flow Simulator export fails when a cooling system has been defined

This bug concerns all the machine types with a Flow Simulator™ export available. The generated export file is not readable by Flow Simulator™ when a cooling system is defined in the machine model. This issue applies to cooling systems defined in either the shaft or the housing.

The root cause has been identified as a discrepancy in version numbering. An effective bypass is to modify the `.flo` file and change the version number to 2025.1 instead of 2026.0 (ref.: SLVFXM-18435).

Wrong results for working point computation in generator mode

This concerns both SMPM and RSM machines. The issue occurs when the computation of the working point is performed in accurate mode and with the generator mode. In that case, the computations are not performed with the good quadrant, leading to wrong results (ref.: SLVFXM-18275).

The graphical display of service cycles is partial

All the intermediary working points between two states are not displayed as they should be (ref.: SLVFXM-18265).

Tests WP I,PSI,N – Fast mode with rotor position dependency - Average quantities wrongly computed

This concerns all the machines (SMPM & SMWF & SMRSM) and all the tests with "Fast mode with rotor position dependency" (Test WP I,PSI,N & Test Maps & Test EMv & Export LUT) (ref.: SLVFXM-18270).

The computation of the end winding inductances appears to be inaccurate

In some cases, the end winding inductances obtained with FluxMotor appear to be too high compared to those calculated with Flux 3D (ref.: SLVFXM-17626).

Opening Materials from Motor Factory failed when Materials are already opened

(ref.: SLVFXM-18101).

FluxMotor export report misses the values on the DQ map

(ref.: SLVFXM-18106).

Launch error message when importing incorrect geometries for SimLab

FluxMotor does not accept non-circular part - e.g., no rotor / stator circular - and then running a test is not possible. However, when a non-circular part is created by SimLab it is possible to import it into FluxMotor, and then an error will be obtained when an export / test is launched.

The import of such geometry must not be permitted, and an error message must be generated while importing it in FluxMotor.

(ref.: SLVFXM-18148).

Interfaces equal to 0 (Design – Internal cooling) leads to an error

This occurs when any thermal computation is launched (ref.: SLVFXM-18191).

There is no overview for illustrating the export of reports

(ref.: SLVFXM-18229).

The graphs displayed in the test Mechanics / NVH have bad quality

Immediately after obtaining the results, the quality of the graphics is good. It deteriorates when you change windows and then come back to see the results (ref.: SLVFXM-17258).

Problem while exporting project to Flux2D

When the machine has a high number of slots and when the machine is fully represented, sometimes, the export of the project to Flux 2D (or Flux Skew) takes a huge computation time and fails (ref.: SLVFXM-17694).

Thermal computations - Problem of convergency

When losses are very high, there is a convergence issue with the thermal computations (ref.: SLVFXM-15900).

This issue will be reevaluated since the thermal solver has been changed.

Null values are not well managed while designing the Frame and shaft

Null values are allowed for designing the housing, bearing, or shaft dimensions, but this leads to the wrong thermal analysis. It is highly recommended not to use null values for the inputs considered (ref.: SLVFXM-14705).

The color of the wires is bad

The color of wires displayed in the slots is not correct while using Flux Skew export (ref.: SLVFXM-16942).

Air material properties are wrong for high temperature

This issue impacts our internal computation processes during transient thermal solving. Indeed, some iterations involve very high temperature (more than 3000 °K), according to the Newton Raphson non-linear solving method. During the resolution, this can lead to negative conductivity and viscosity, which may make the computation fail (ref.: SLVFXM-14465).

> **Note:** In case of a problem, an "Air material" with the right parameters can be provided.

When an IO cannot be loaded, the test results are not accessible

When an IO cannot be loaded, the whole process that loads all the test results is stopped. As a result, no test is visible, although the issue may concern one result in a particular test (ref.: SLVFXM-13941).

A wedge and/or inter-coil insulation region leads to a wrong slot equivalent thermal conductivity

The slot radial thermal conductivity, which is automatically provided by the FluxMotor® in the "Cooling-Internal" context and used in all thermal tests, is wrong if the slot contains faces "wedge" or "inter-coil insulator" (ref.: SLVFXM-13896).

Winding environment – MMF computation

The counterclockwise sequence (MMF computation) is not considered in the Altair® Flux® model, which one can export. Only the clockwise phase sequence is considered (ref.: SLVFXM-10280).

Using "phase sequence" set to "Counterclockwise" leads to wrong results in tests (ref.: SLVFXM-13358).

Flux density isovalues

When a skewed topology is considered (synchronous machines or induction machines), the flux density isovalues, the vector potential isolines, and the rotor bars current density isovalues are not displayed (ref.: SLVFXM-12564).

5.2 Synchronous machines – Motor Factory – Test environment

The computation of the current density in magnets and magnet Joule losses can be wrong

For SMPM machines, when the different magnets are in contact, the current density and the Joule losses computation can be wrong. This is because magnets are solid conductors of the type: “No circuit – open circuit conductor”. This circuit coupling type doesn’t work correctly when solid conductors are in contact. This issue occurs regarding the test computations in FluxMotor as well as while exporting files to Flux. (ref.: SLVFXM-10916 + SLVFX-40259).

Working point – Square wave – Forced I – Average computation of quantities

The computation of average quantities like iron losses, the Joule losses in magnets, and torque is not executed over a full electrical period. That can lead to wrong results (ref.: SLVFXM-14091).

Maximum speed computation

The estimation of the maximum speed is wrong for the tests "Working point - Sine wave – Motor - U-I" and "Working point - Sine wave – Motor - T-N" when the control mode MTPA is selected (ref.: SLVFXM-10916). The computation is always performed by considering the MTPV command mode.

5.3 Synchronous machines – Wound field– Motor Factory – Test environment

Error when performing test working point P, Pf, U, N

This error occurs when using the generator convention and the motor operating mode.

> **Note:** Same issue while exporting the corresponding connector for HyperStudy (ref.: SLVFXM-18286).

SSFR - Negative values of the equivalent scheme

We met a few cases where the parameters of the resulting equivalent scheme were negative (ref.: SLVFXM-10916).

5.4 Induction machines – Motor Factory – Test environment

Issues while computing the efficiency map scalar control

In a few examples such test leads to errors - error messages and resolution failures (ref.: SLVFXM-16492, SLVFXM-16793).

> **Note:** This test is provided in beta mode.

Efficiency map vector control – Bad computation for Ld

The computation of the d-axis and q-axis inductances has been implemented in the framework of the new test Effciency map – vector control U-I.The computation of Ld via the d-axis flux linkage response surface gives bad results (ref.: SLVFXM-17679).

The flux density is not displayed in accurate mode computation

While computing a working point (U, f, N) for an induction machine with a skewed squirrel cage and outer rotor, the flux density inside the airgap is not displayed. (ref.: SLVFXM-16154).

Scalar Maps or Efficiency map (U,f) tests fail with hairpin winding technology

Sometimes, the tests Scalar Maps and Efficiency map (U,f) are not correctly solved with a hairpin winding configuration, like for the Motor M1 of the reference catalog (ref.: SLVFXM-15843).

Scalar maps test can provide bad results

> **Warning:** This test is still in beta mode (ref.: SLVFXM-17587).

Issue while computing the efficiency map (scalar control – U, f or U, I)

This problem occurs when there are 3 poles represented for the periodic portion of the model under consideration (ref.: SLVFXM-17150).

Torque slip curve

Test results are not continuously consistent over a torque slip curve. This occurs with the test Performance mapping T(Slip) - induction machines with a skewed squirrel cage. When the user targets a working point as an added value to be computed with the whole Torque-slip curve, sometimes this additional working point doesn't belong to the curve (ref.: SLVFXM-12599).

5.5 Part Factory

Wrong management of part borders

An inner part with an air region on the bottom border is not allowed (ref.: SLVFXM-13445; SLVFXM-17661).

5.6 Script Factory

Script Factory does not stop correctly

Script Factory does not stop correctly if FluxMotor has been killed. This occurs if the FluxMotor process has been killed externally. Then, Script Factory is not able to get back to a valid state, neither automatically nor after a kill of the process (ref.: SLVFXM-15140).

Script Factory freezes temporarily when running a script

When running a script, the Script Factory gives the impression of freezing (while still running in the background). The editing window of the script becomes unresponsive until the script is done executing (ref.: SLVFXM-13138).

Testing and exporting projects should be prohibited for certain use cases

For example, testing and exporting of projects with scripts should be prohibited when slot filling is bad or when the End-windings X-Factor leads to negative end-windings resistance (ref.: SLVFXM-16455).