Altair® FluxMotor® 2022.2

Supervisor

General user information

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△ ALTAIR
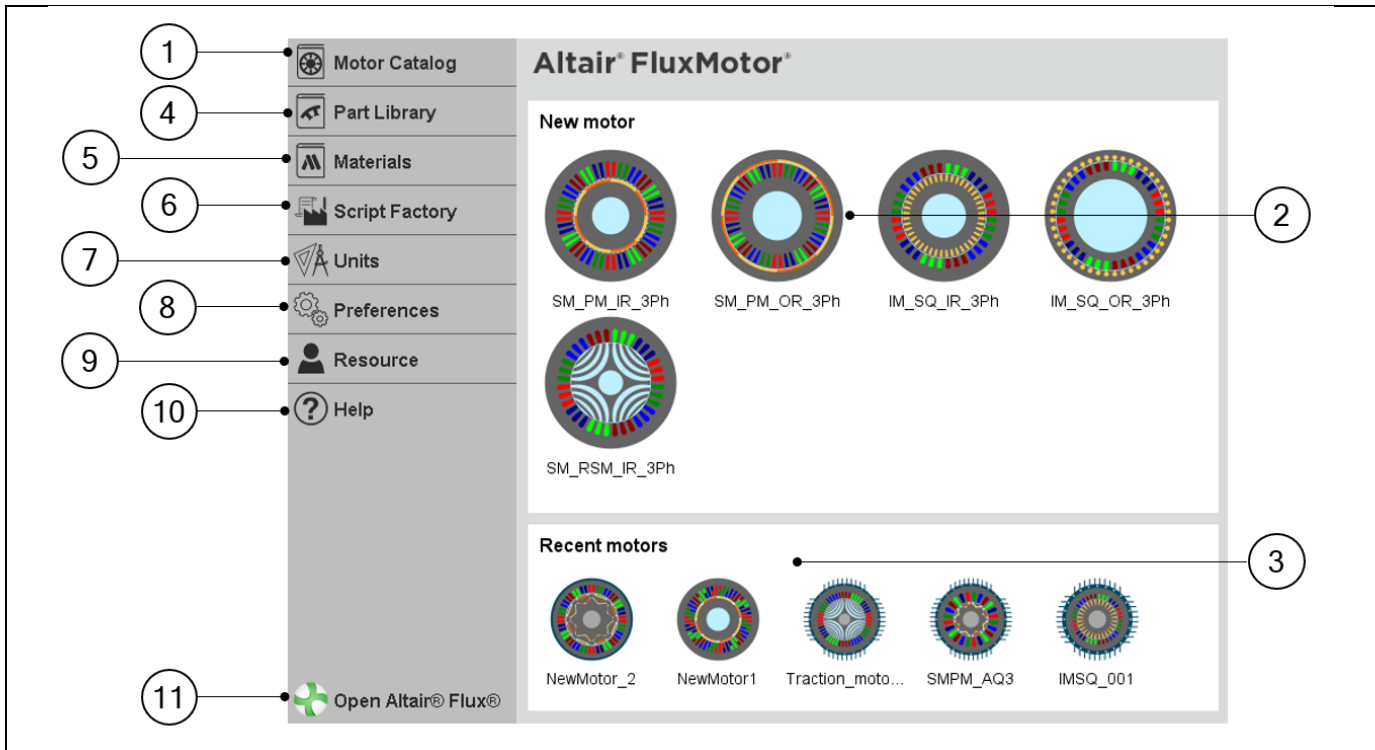
1   SUPERVISOR OVERVIEW

1.1   Overview

The aim of the supervisor is to group all the needed applications to build and manage the motors.
Supervisor is the first dialog the user comes across and it displays all applications used to build, test and compare motors.

	Applications available from the Altair® FluxMotor® supervisor
1	Click on Motor Catalog. Refer to and manage catalogs, compare and choose motors.

2	Click on a type of motor and get into Motor Factory for designing and testing motors.
	5 types are available:
	    SM_PM_IR_3Ph: 3-Phase synchronous machines with permanent magnets – Inner rotor
	    SM_PM_OR_3Ph: 3-Phase synchronous machines with permanent magnets – outer rotor
	    SM_RSM_IR_3Ph: 3-Phase Reluctance Synchronous Machines – Inner rotor
	    IM_SQ_IR_3Ph: 3-Phase induction machines with squirrel cage – Inner rotor
	    IM_SQ_OR_3Ph: 3-Phase induction machines with squirrel cage – outer rotor

3	Click on a recent studied motor and get into Motor Factory for designing and testing motors
4	Click on Part Library. Refer to and manage parts: choose, modify or create
5	Click on Materials. Refer to and manage materials: choose, modify or create.
6	Click on Script Factory to create and run scripts for driving FluxMotor® applications. Available in user beta mode (See user preferences).
7	Click on Units. Refer to and choose the units available in FluxMotor®.
8	Click on Preferences to choose user preferences.
9	Click on Resource gives access to Altair Connect.
10	Click on Help gives access to Online help, Licensing system and information about FluxMotor® and Altair® HyperWorks®
11	Click on "Open Altair® Flux®" to launch Flux® directly and quickly from FluxMotor® supervisor

Altair® FluxMotor® applications are briefly described in the next chapter.

1.2   Application to access motors

1.2.1   Motor Catalog

Motor Catalog is a **Powerful project management** to refer to and manage catalogs, compare and choose motors

Motor catalog environment allows easy management of motors and projects.
An embedded comparator is available. The general data and performances of several machines can be compared thus simplifying the process to choose a machine.

For more information, refer to **Motor Catalog user guide.**

1.2.2   Motor Factory

With Motor Factory, get into a dedicated space for designing and testing motors.

Designing and testing electrical motors

- The dedicated design environment helps user define machines within minutes.
- Then using a step-by-step process, a dedicated interface will help users to finalize machine design which includes the shaft, rotor, magnets to the slots, winding and housing of the stator.

- The dedicated test environment enables users to assess motor performances
- Standard and relevant test portfolio is available and predefined tests are ready to be performed

For more information, refer to **Motor Factory user guide.**

1.3   Building blocks of machines

1.3.1   Part Library

Part Factory allows an **Effective management of machine parts.** Refer to and manage parts: choose, modify or create.

- In Part Library area, libraries are provided containing standard parts.
- Many slots, magnets and bars are available, and all the topologies are parameterized.

For more information, refer to **Part Library user guide.**

1.3.2   Part Factory

Part Factory can be accessed from Part Library. Get into a dedicated space for visualizing, modifying or creating parts.

- Customization of parts (slots, magnets)
- Standard parts, slots and magnets are provided, which can be edited and customized for various configurations.

For more information, refer to **Part Factory user guide.**

1.3.3   Materials

A comprehensive and scalable material database. Refer to and manage materials: choose, modify or create.

- Many typical materials are provided: Lamination, Solid, Magnet, Electrical Conductor, Electrical Insulator and Fluid.
- Users can also create their own materials.

For more information, refer to **Materials user guide.**

1.4   Miscellaneous functions to manage FluxMotor®

1.4.1   Choice of units

Refer to and choose the units available in FluxMotor®.
For additional information, refer to chapter below.

1.4.2   Resource

To get into Altair Connect.
Access Altair support and information with your Altair account.
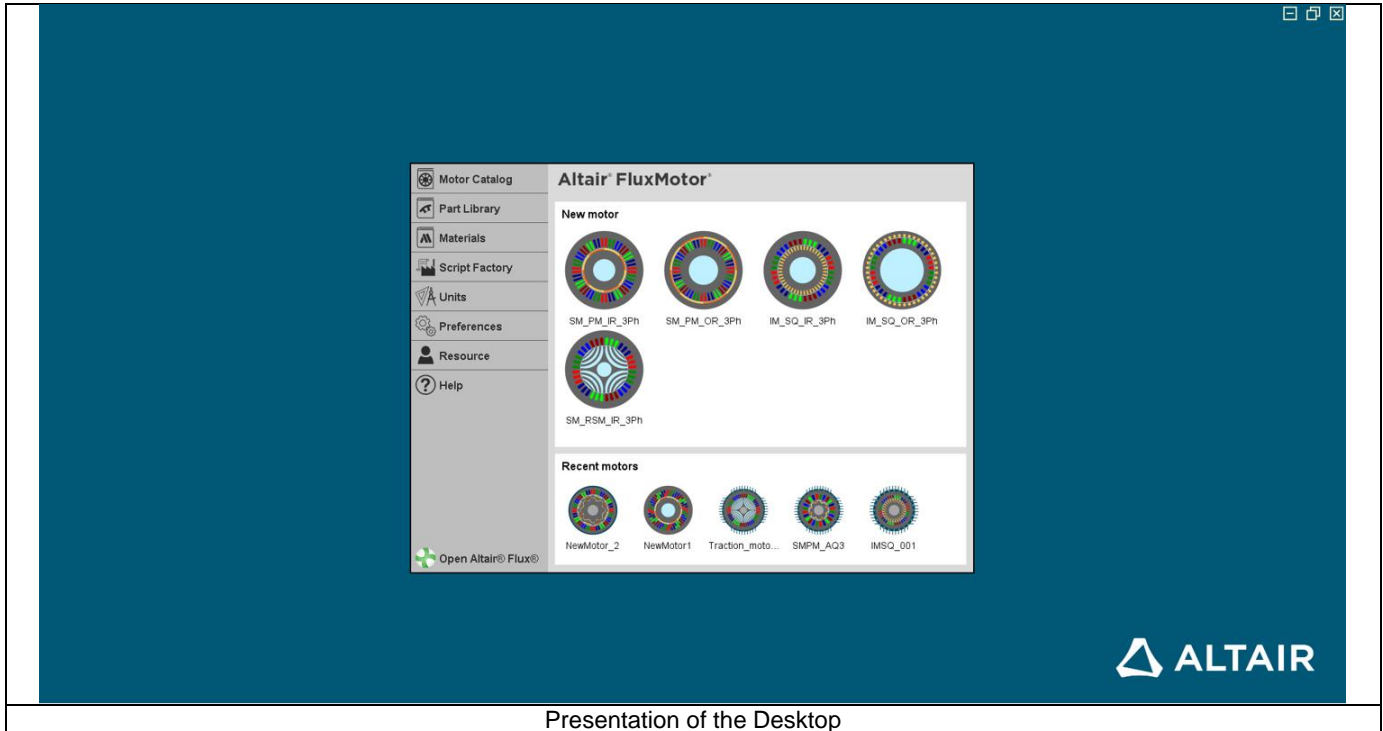
1.4.3   User preferences

Choose user preferences.
For additional information, refer to chapter below.

1.4.4   Help

This gives access to Online help, Licensing system and information about FluxMotor® and Altair® HyperWorks®
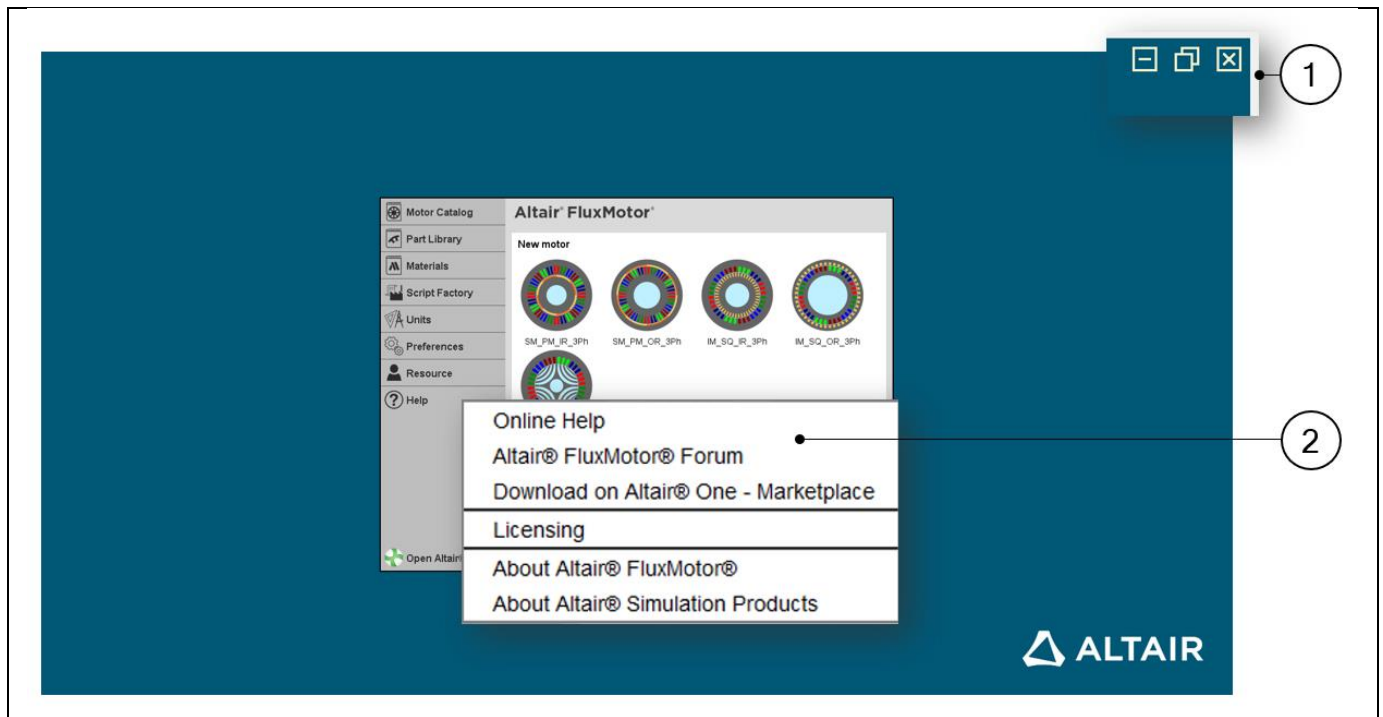
1.5   Desktop of Altair® FluxMotor®

The desktop contains the Supervisor.

Presentation of the Desktop

The supervisor (desktop) of FluxMotor® can be reduced by using functions (buttons) on the right top part of the screen.
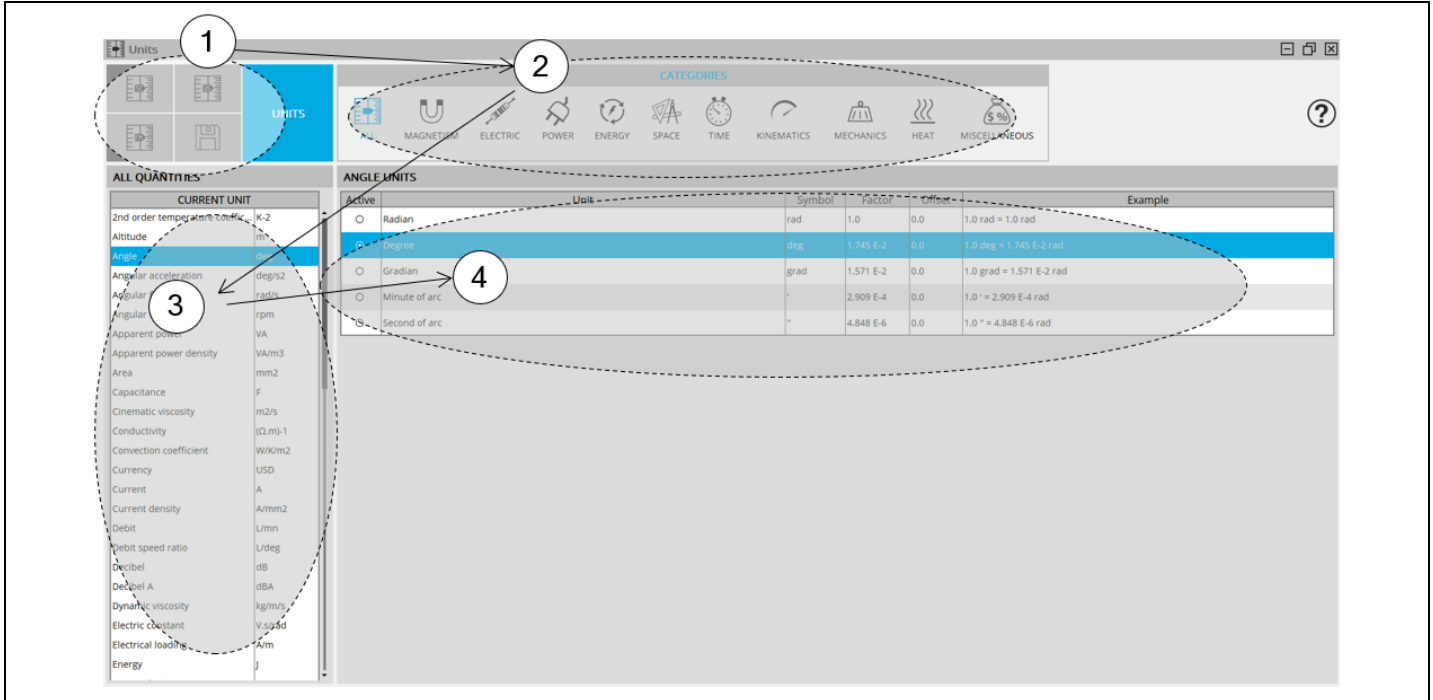

| Miscellaneous functions of FluxMotor® Desktop	
1	Management of the size of FluxMotor® Desktop.
2	Expand the menu "Help" to access to "Online help", FluxMotor® Forum, Altair One -Marketplace, "Licensing" system and information about FluxMotor® and Altair® HyperWorks® Note: The section "About FluxMotor®" allows finding the reference of the current version of FluxMotor®.

2   UNITS

2.1   Overview

To get into "Units" application from the supervisor, click on "Units" button.
The "Units" area is shown on the picture below. It is composed of four main zones.

1	Main functions to select directly a general unit system (US, SI, FM) and save modifications. • US = Anglo-Saxon system of Units • SI = International System of Units • FM = FluxMotor® system of Units Disk = Save changed units
2	Presentation of the ten quantities of families are available in "Units" application. Selecting an icon will display the units belonging to the selected family. See illustration below.
3	List of current units.
4	When a quantity is selected in the list (2), the corresponding available units are displayed. Symbol, conversion factor and an example to illustrate the principle of conversion are presented.

Note: In Units application, the icons at the top part of the screen display the available units in different categories. See illustration below.
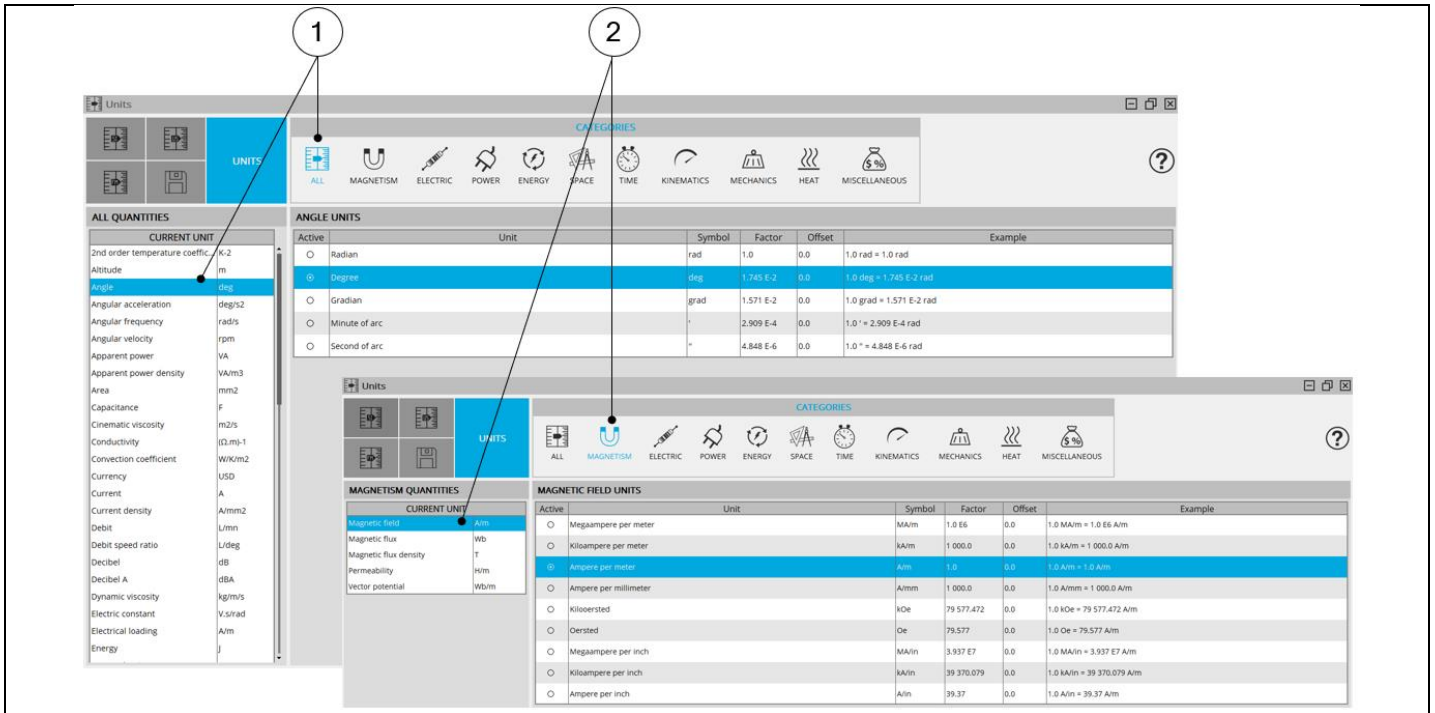
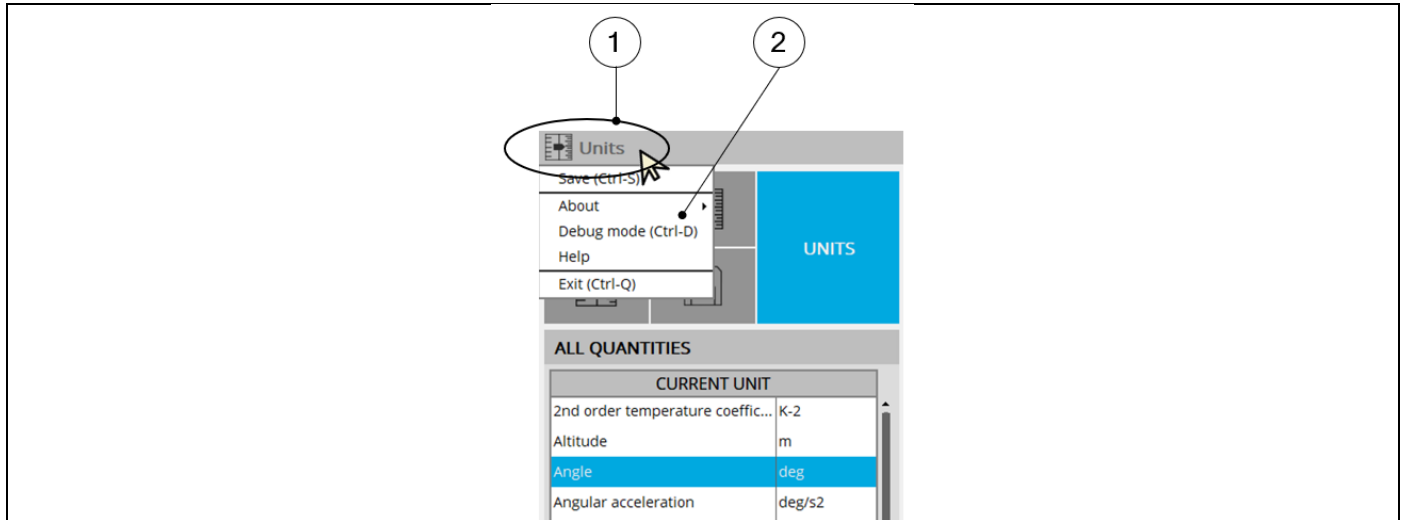|	Selection of a unit family
1	All types of physical quantities are displayed.
2	Only physical quantities relative to magnetism are displayed.

2.2   How to choose and save a unit?

1	Select the physical quantity family in which the concerned unit is present.
2	Select the unit which is to be modified.
3	Select the new unit.
4	Save unit changes.
5	It is possible to select the units proposed by FluxMotor® (FM) or select one of the two international system of units (SI or US).

2.3   Expanding the menu in Units

This menu gives access to system functions like help documentation and Exit.

1	Expand the menu in the top left corner in Units dialog box.
2	List of actions available: • Save (=Save unit changes) • About • Debug mode • Help to open the online help documentation directly on the chapter dealing with Units • Exit for closing Units dialog box
⊠	Closing Units dialog box is also possible by using this icon on the top right corner of the Units dialog box.
*	Closing Units dialog box is also possible by using the shortcut CTRL-Q defined in the user preferences. For more information, refer to the chapter "Preferences" below.

3   PREFERENCES

3.1   Common Preferences

	Common Preferences screen
1	The Preferences dialog box is opened from the Supervisor.
2	First tab is: Common Preferences.
3	Choice of language used in FluxMotor® application: only English is available in the current version.
4	Number of decimals to consider after dot for all the numbers displayed in FluxMotor®.
5	Number of most recently used motors. When clicking on the icon Motor Factory, from the supervisor, it is possible either to create a new motor or to choose among a list of most recently used motors. The number of most recently used motors available must be defined in the user preferences. The default value is 5.
6	When "Yes" is selected several Motor Factory sessions can be opened at the same time. "Yes" is set by default.
7	Button to apply changes and close the Preferences dialog box.
8	Button to close the Preferences dialog box without applying the changes.

3.2   Default Path Preferences
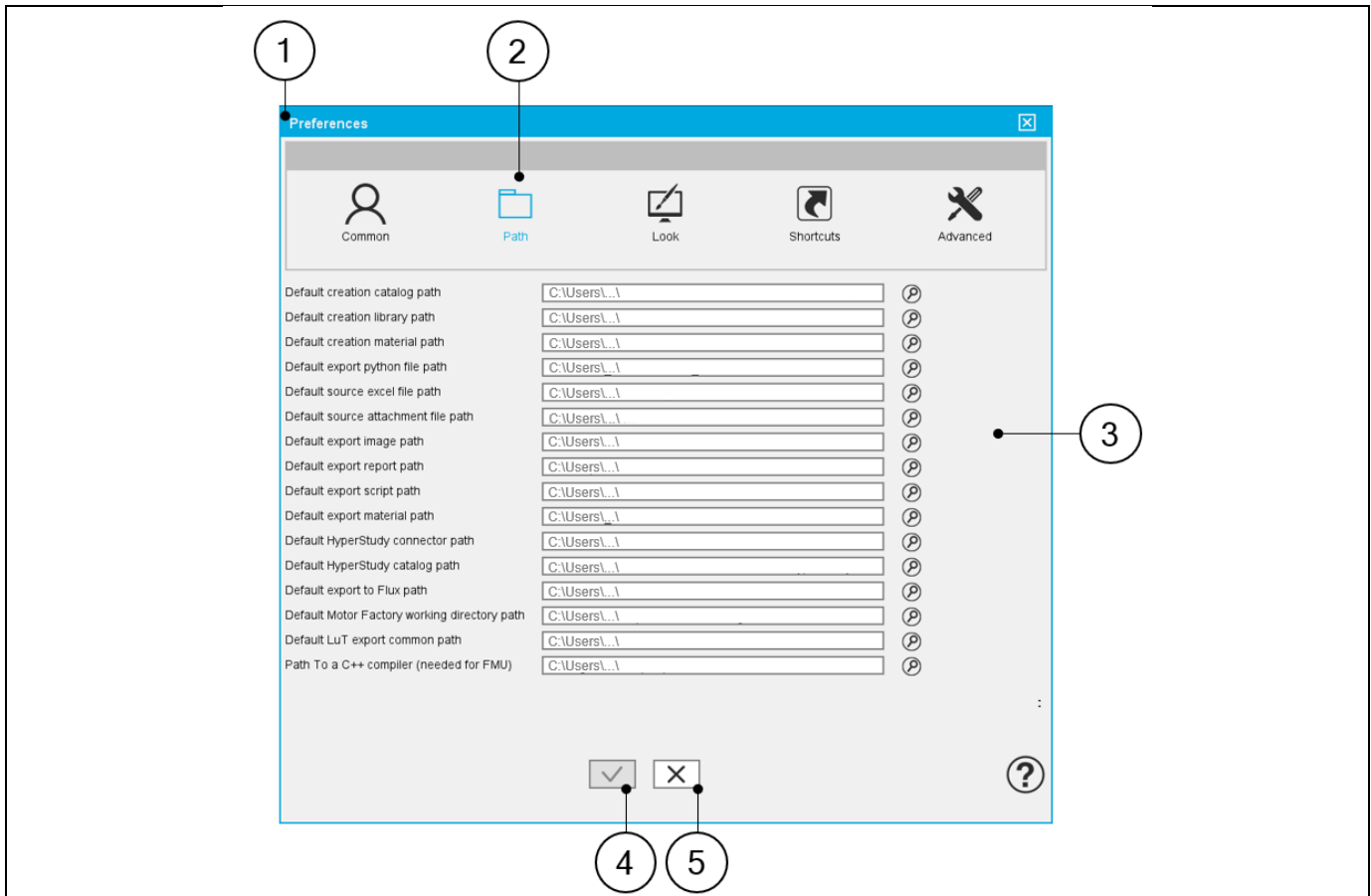
	Path Preferences Screen
1	The Preferences dialog box is opened from the supervisor.
2	Second tab is Path Preferences.
3	Define default paths for application by browsing the folders.
4	Button to apply changes and close the Preferences dialog box.
5	Button to close the Preferences window dialog box without applying the changes.

3.3   Look Preferences

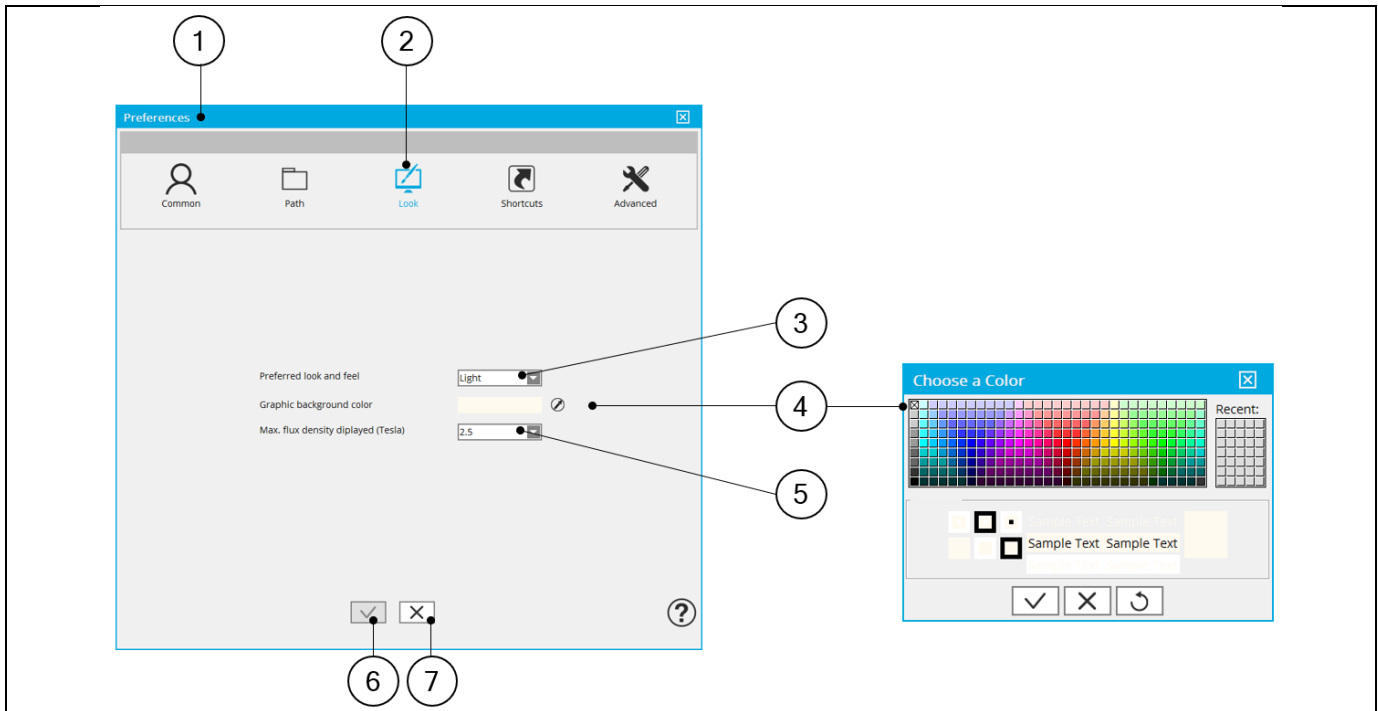|	Look Preferences Screen
1	The Preferences dialog box is opened from the Supervisor.
2	Third tab is Look Preferences.
3	Two types of look and feel are available in the current version: Dark and Light.
4	Graphic background color changes for the Motor Factory and Part Factory areas.
5	Maximum magnitude of the displayed flux density for visualizing the flux density into the magnetic circuit. The default value is 2.5 Tesla.
6	Button to apply changes and close the Preferences dialog box.
7	Button to close the Preferences dialog box without applying the changes.

3.4   Shortcuts Preferences

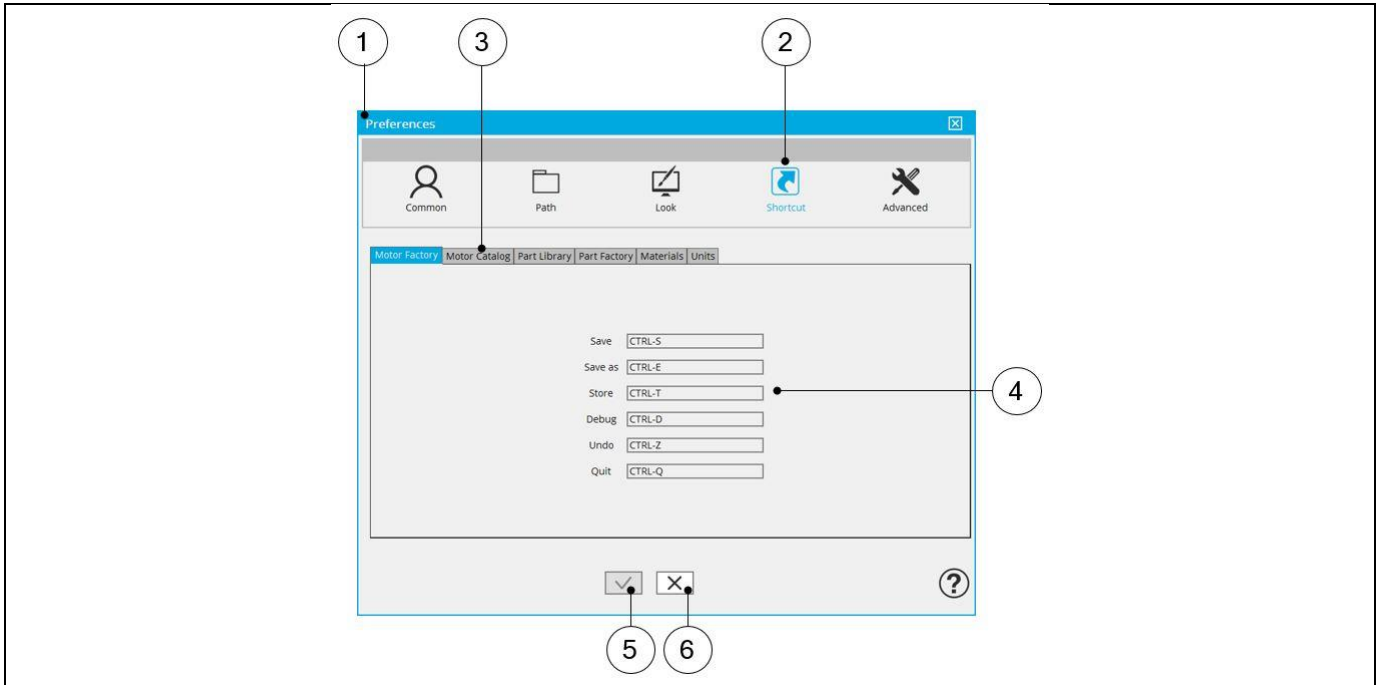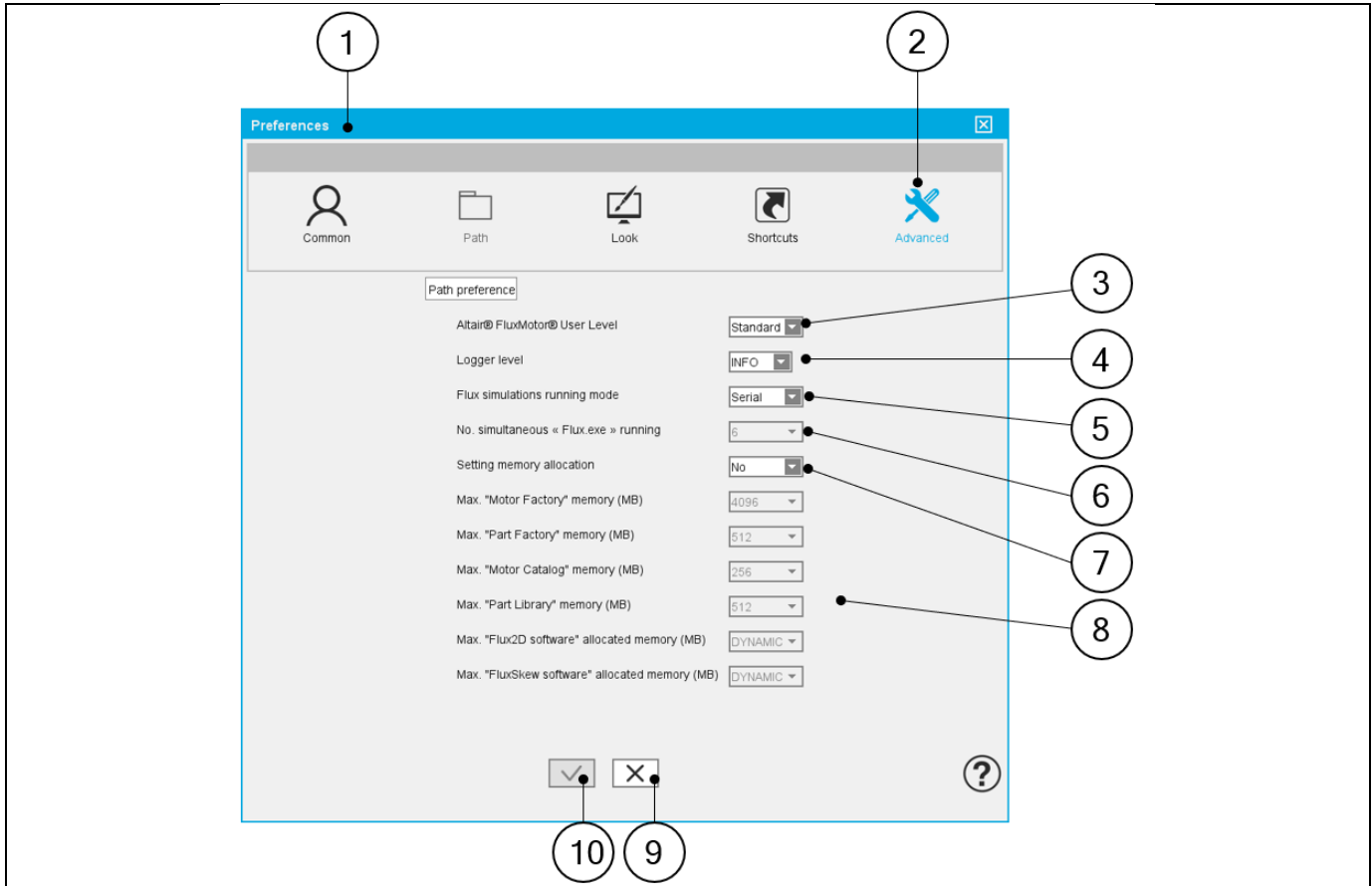|	
	Shortcut Preferences Screen
1	The Preferences dialog box is opened from the Supervisor.
2	Fourth tab is Shortcut Preferences.
3	Tabs by Application Names are present at the top of the Shortcut Preferences Screen. Each tab displays available shortcuts. Note: Shortcuts cannot be modified. They are displayed only for user information.
4	List of available shortcuts for the selected application tab.
5	Button to apply changes and close the Preferences dialog box.
6	Button to close the Preferences dialog box without applying the changes.

3.5   Advanced Preferences

3.5.1   Presentation

	Advanced Preferences Screen
1	The Preferences dialog box is opened from the supervisor.
2	Fifth tab is Advanced Preferences.
3	FluxMotor® User Level: Standard or Beta. By default, the user level is Standard. Note: In Beta Level features non-entirely qualified are available for testing.
4	Logger level: STANDARD, DEBUG, SEVERE. Logger level represents the level of information given by log files provided by FluxMotor®.
5	Process of computation can be launched in Serial or in Parallel. By default, they are running in Parallel mode. However, in case of a big model and/or if the computer does not have enough dynamic memory space you should select the Serial mode. In that case, the computation time will be longer.
6	Number of simultaneous « Flux.exe » running. This can help when the memory capability of the computer is limited.
7	Setting memory allocation: Yes / No. In case of answer "Yes" the maximum memory allocation for applications can be defined by user.
8	Maximum memory allocation for applications. It is recommended to keep default values as far as possible. In case of a trouble consult our support team. These fields are in write mode in advanced FluxMotor® user level.
9	Button to close the Preferences dialog box without applying the changes.
10	Button to apply changes and close the Preferences dialog box.

3.5.2   Warning:

When FluxMotor® User Level is "Beta", **features non-entirely qualified tests which** are available for testing.

For example, in the current version, evaluation of NVH for induction machines with squirrel cage is concerned by this mode.
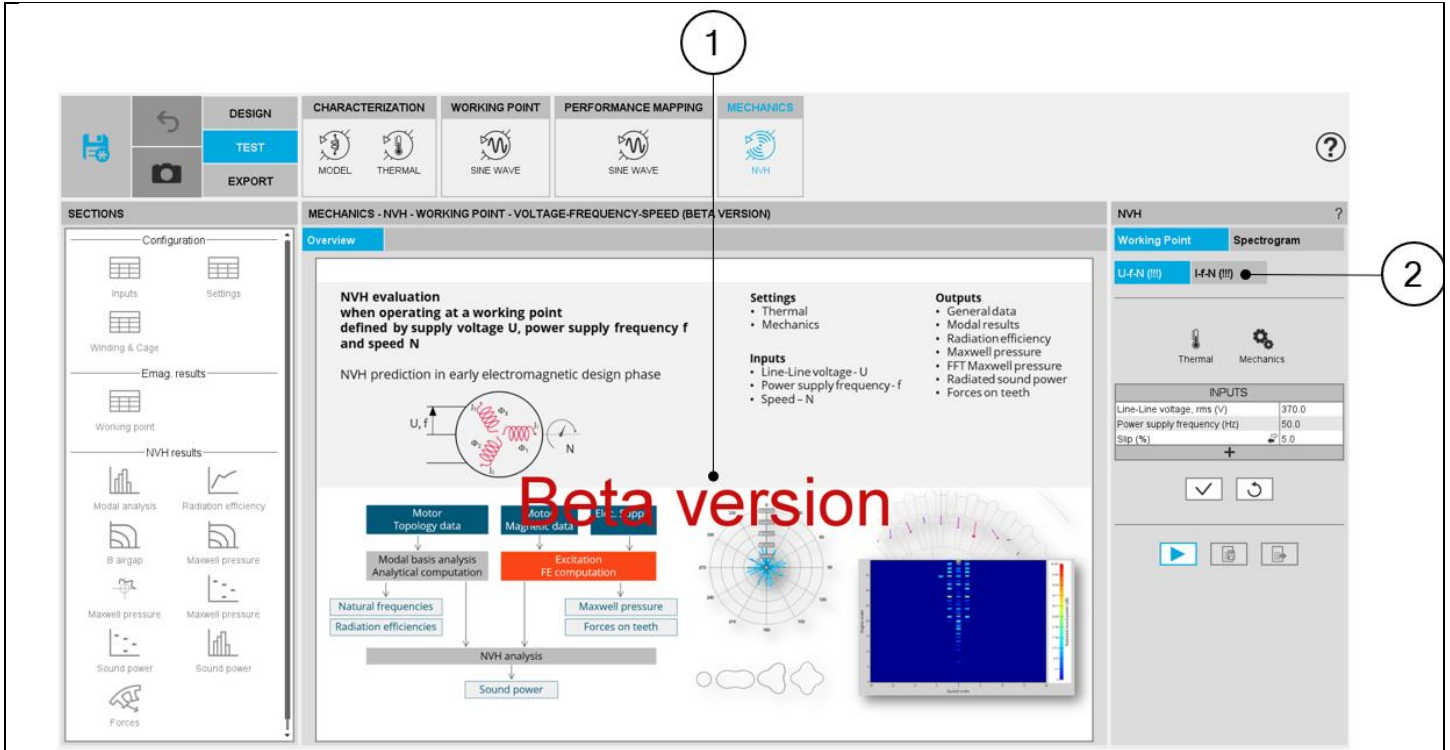
| NVH evaluation is available with the beta user level mode	
1	Message "Beta version" is displayed for warning the users
2	(!!!) is displayed next to the labels for warning the users

4   SYSTEM FUNCTIONS

4.1   How to report an error?

When a bug or a problem occurs when using FluxMotor® (whatever is the considered application), a dedicated panel is automatically provided for helping the users to report this error.
It allows creating a zip file which stores all the information needed for FluxMotor® support team to understand and solve (as far as possible) the problem.
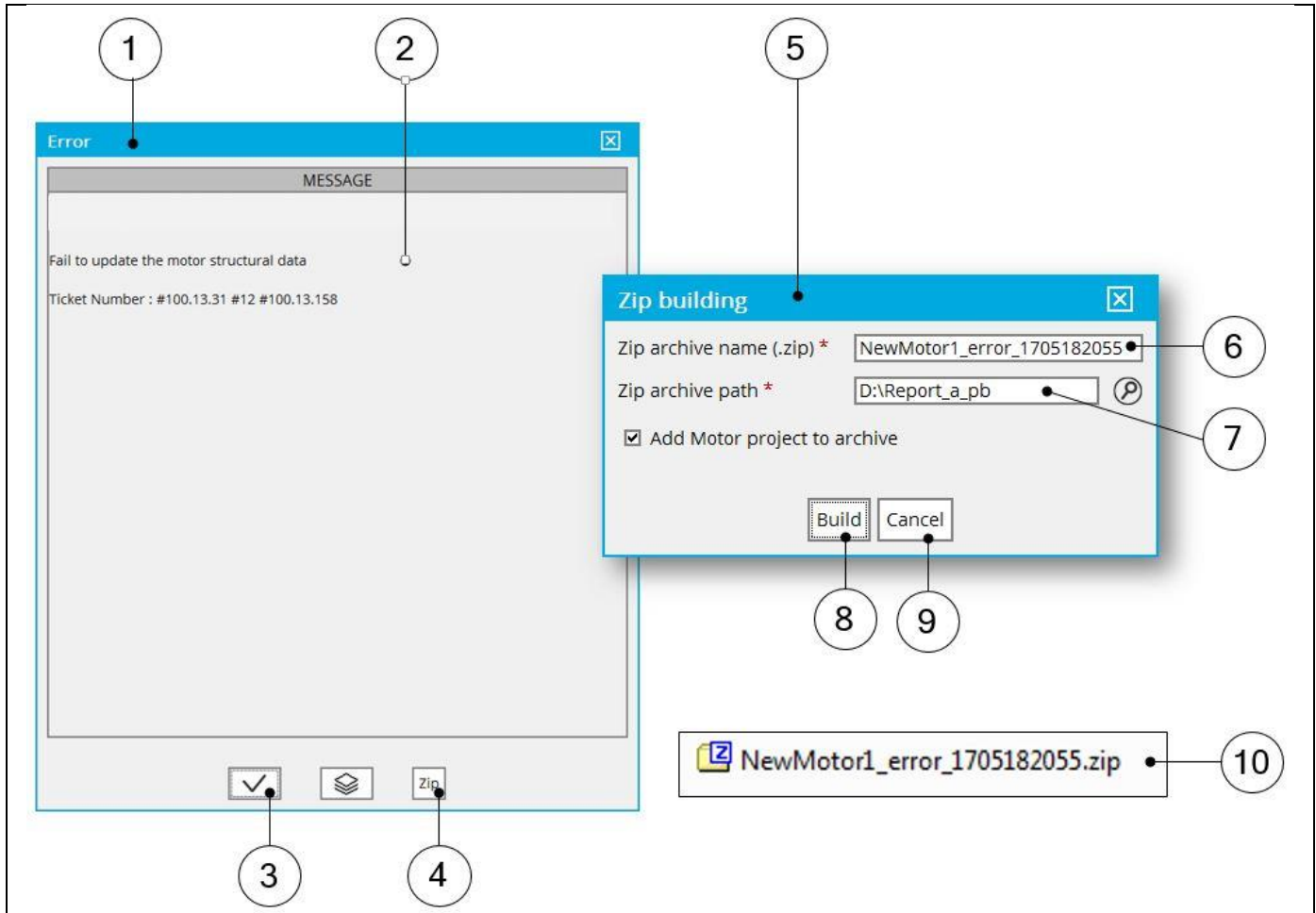
Process to report a trouble	
1	This panel automatically is opened when an error or a bug is occurring.
2	A short message is displayed to explain the origin of the problem.
3	Button to close the panel after reading the message.
4	Button to create the zip file before sending it to the support team.
5	Dialog box to define the zip file.
6	Give a name to the zip file.
7	Store the zip file in a folder.
8	Button to finalize the building of the zip file.
9	Button to close the dialog box without creating the zip file.
10	Resulting zip file automatically built and ready to be sent to the support team.

5   ALTAIR FLUXMOTOR® LICENSING

5.1   Altair® HyperWorks®

5.1.1   Network server license activation

Prerequisites: You will need the port@host information, which can be obtained from your company's system administrator, to connect to an existing license server. They will first need to set up and install the license server.
Please, refer to section 5 of the Altair License Management System guide for more details.

1) Launch the software. If you do not have a valid license on your workstation, the License setup window will open automatically, and the license status will show as "NON-ACTIVATED".
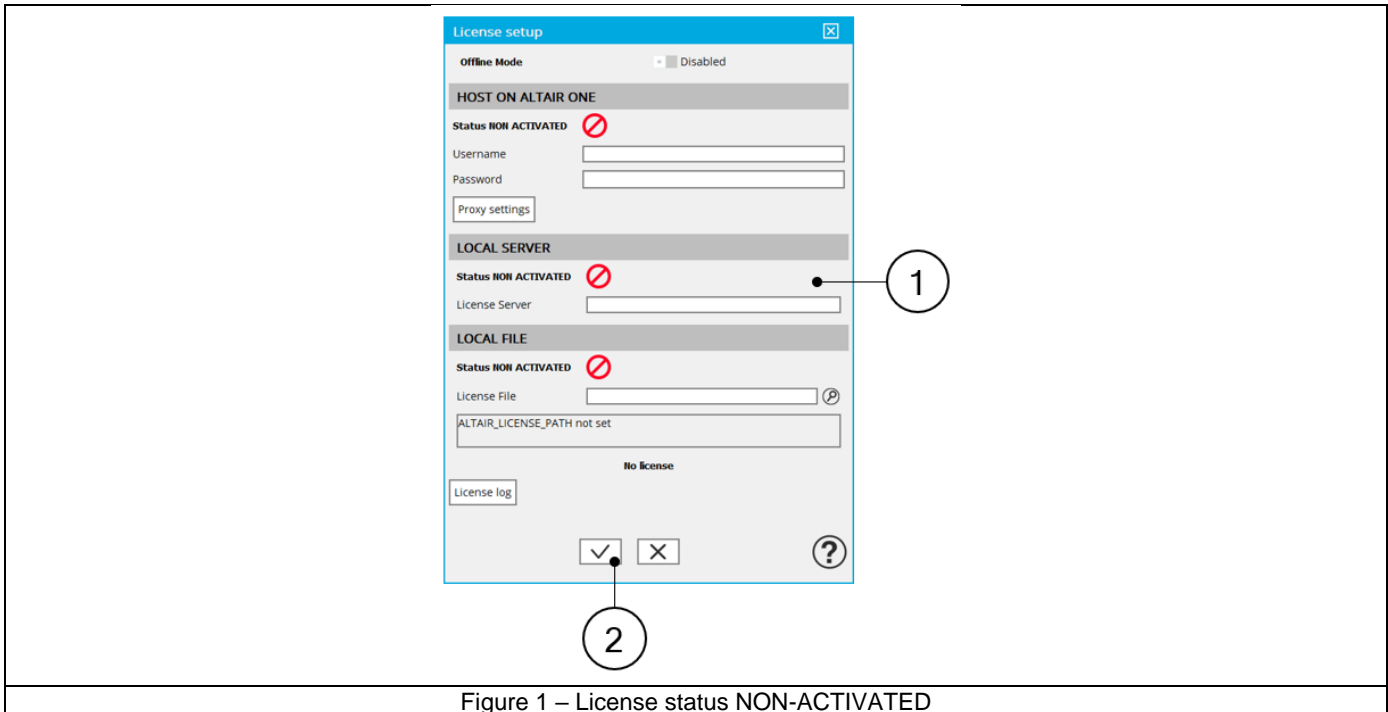

Figure 1 – License status NON-ACTIVATED

2) Enter the port@host information for the License Server (Mark 1 - Figure 1 – License status NON-ACTIVATED)..
Example: 6200@192.168.100.5

3) Click on the apply button (Mark 2 - Figure 1 – License status NON-ACTIVATED). The status changes to "ACTIVATED" when the license is validated, or you will receive an error message if unsuccessful.

Warning: This license activation will be available only during the FluxMotor® session. After the closure of FluxMotor®, you will have to do this action again.
Please refer to section 5.1.3 (Specifying a license with a Windows environment variable) if you want to save your license registration.

Tip: You can also use an environment variable to specify a license file.

5.1.2   Standalone license activation

Certain applications will have standalone licenses available from your reseller. In this case, you will need to specify your license file in the HyperWorks section of the License setup window.
Prerequisites: Obtain a valid license file from your Altair account manager.

1)   Once your license file has been emailed to you, copy it to your preferred location on your workstation.

2)   Launch the software. If you do not have a valid license on your workstation, the License Setup window will open automatically, and the license status will show as "NON-ACTIVATED".
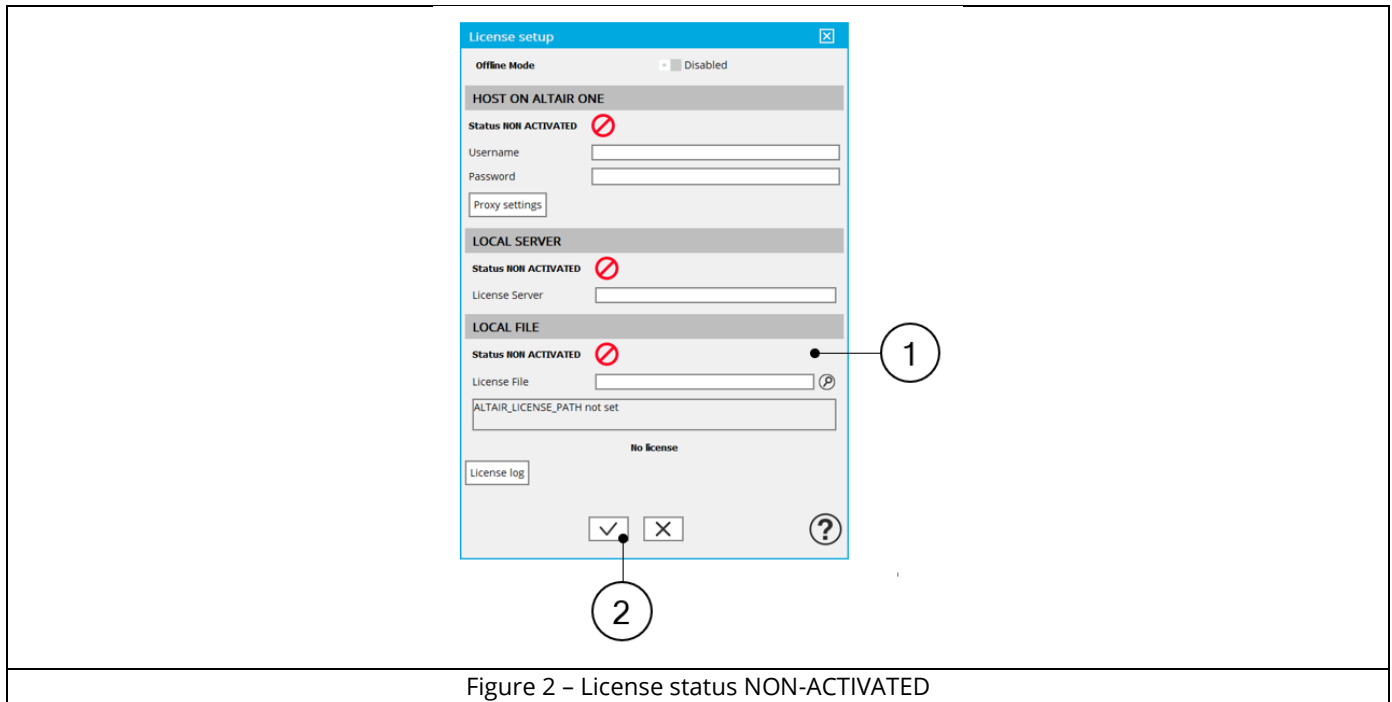

Figure 2 – License status NON-ACTIVATED

3)   Click on the browser button (Mark 1 - Figure 2 – License status NON-ACTIVATED) and browse to the location of the License File.

4)   Click on the apply button (Mark 2 - Figure 2 – License status NON-ACTIVATED). The status will change to ACTIVATED when the license is validated, or you will receive an error message if unsuccessful.

Warning: The license activation will be available only during the FluxMotor® session. After the closing of FluxMotor® session, the license must be reactivated for using FluxMotor®.
Please, refer to the section 5.1.3 (Specifying a license with a Windows environment variable) for specifying a license with a windows environment variable.

Tip: You can also use an environment variable to specify a license file.

5.1.3   Specifying a license with a Windows environment variable

Some companies prefer to use environment variables for licensing. When setting up an environment variable, you can specify a single-user license file on your local machine or a network server license.
You can also point to multiple files, locally or on a server, with the environment variable.

1) Click the Windows Start menu and navigate to System Properties.

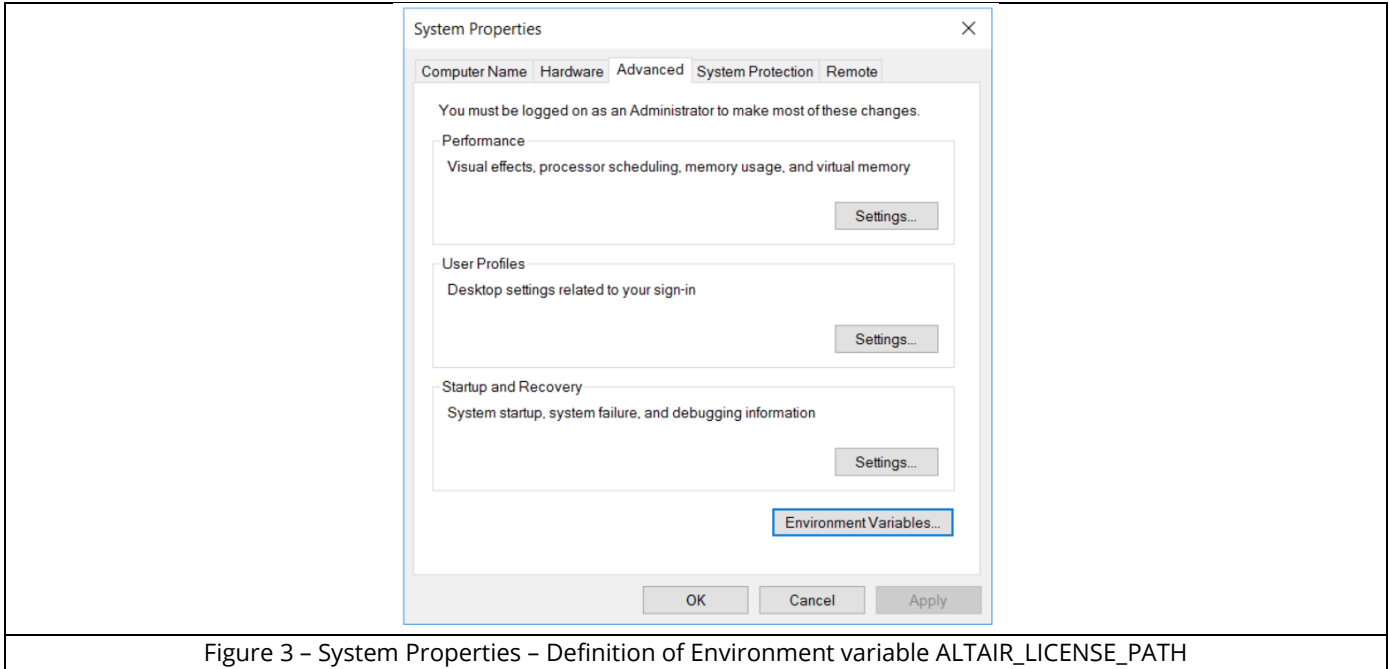Tip: In Windows 10, type "env" and then select Edit the System Environment Variables.

Figure 3 – System Properties – Definition of Environment variable ALTAIR_LICENSE_PATH

2) Click the Environment Variables button.

3) Under User variables, click New and create a variable named ALTAIR_LICENSE_PATH. If you already have this variable, highlight it and click Edit.

4) Set the Variable value to point to the single-user license file or the license server.
    Enter the complete file path to the license file, for instance:

    "C:\Users\name\Documents\licensefile.dat" or enter the port@host for the license server.

    Tip: You can use a semicolon to append a value with additional license locations.

5) Click OK

5.2   Altair One

5.2.1   Altair One account license activation

Prerequisites: You must first activate your Altair One account and download the software. If your company uses a proxy server, you will also need the host and port numbers.

1) Launch the software. If you do not have a valid license on your workstation, the License Setup window will open automatically, and the license status will show as Not Activated.
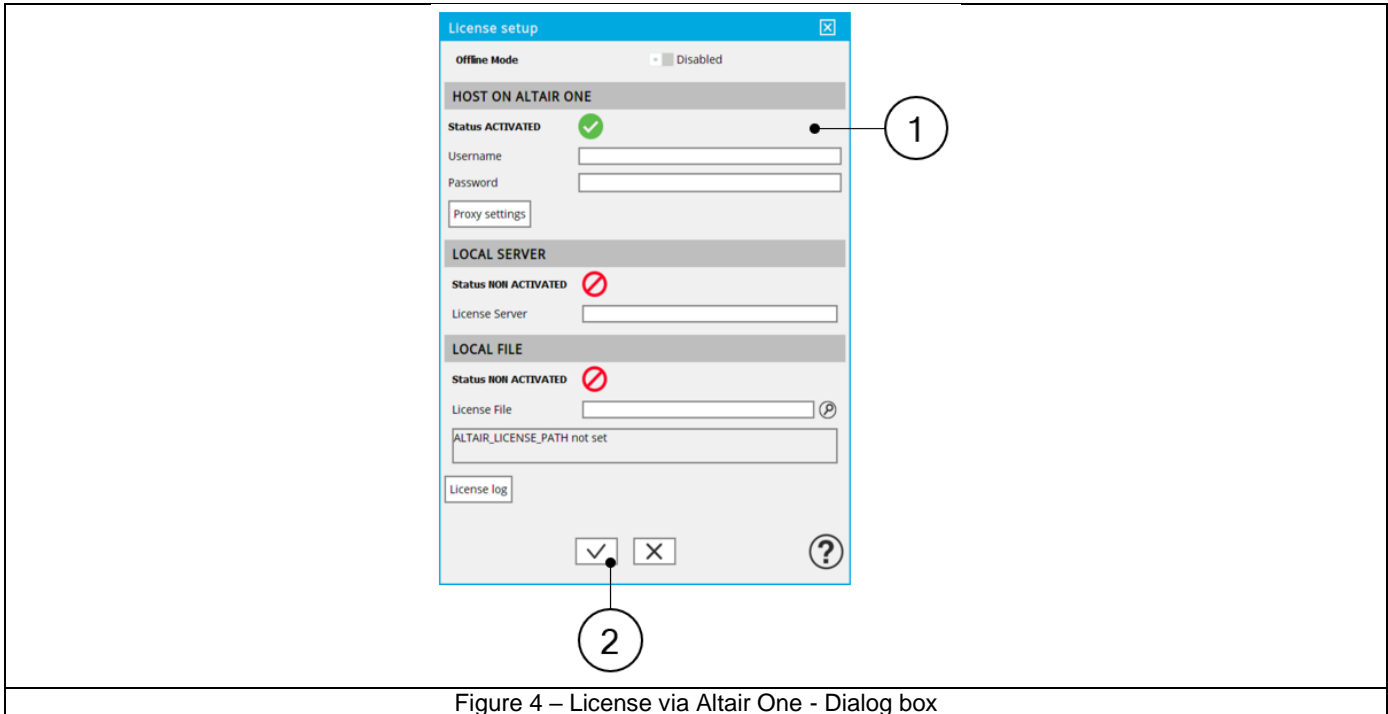

Figure 4 – License via Altair One - Dialog box

2) Enter the Username and Password you created for your Altair One account (Mark 1 - Figure 4 – License via Altair One - Dialog **box**).

3) Click on the apply button (Mark 2 - Figure 4 – License via Altair One - Dialog **box**). The status changes to "ACTIVATED" when the license is validated, or you will receive an error message if unsuccessful.

4) If your company uses a proxy server, click Proxy Settings, select Use Proxy, and enter the Host and Port numbers.

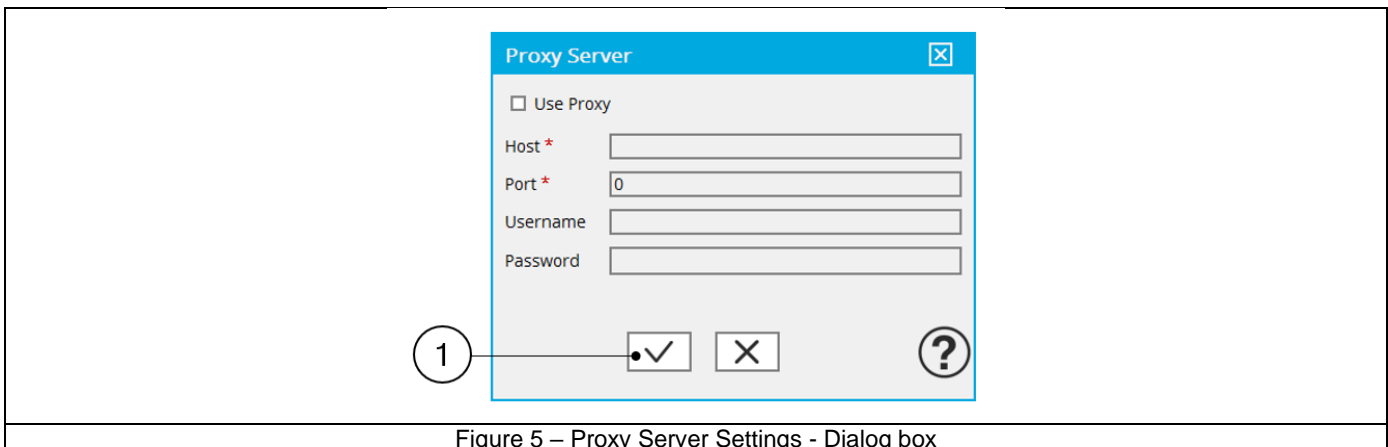
Figure 5 – Proxy Server Settings - Dialog box

5) If your proxy server requires authentication, click Proxy Server Login and enter a Username and Password.

6) Click on the apply button (Mark 1 - Figure 5 – Proxy Server Settings - Dialog box). The status will change to Activated when the license is validated, or you will receive an error message if unsuccessful.

5.2.2   Using Altair One account license in offline

Altair One units can be checked out and used in offline mode for up to two weeks. Each application must be checked out individually.

1) Launch the software.

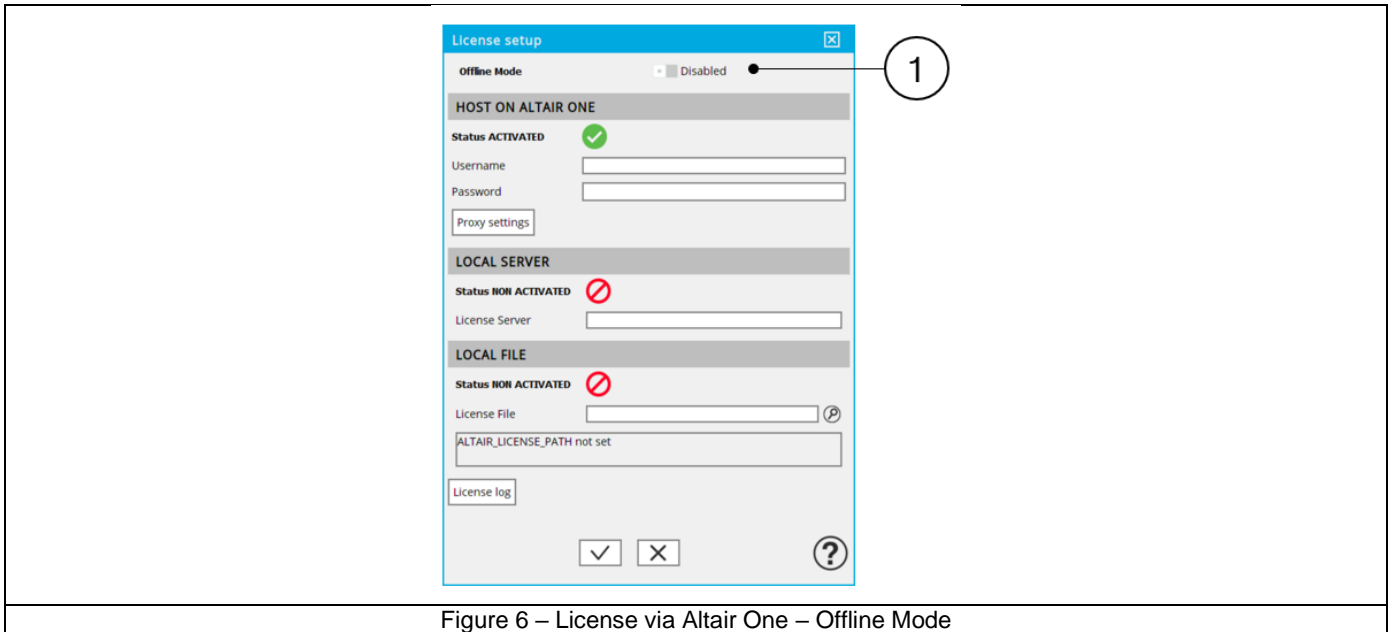2) Select File > Licensing to open the License Setup window.

Figure 6 – License via Altair One – Offline Mode

3) Click the Offline Mode slider (Mark 1 Figure 6 – **License via Altair One – Offline Mode**).

You may now run the application without an internet connection for up to two weeks. Note that each application must be checked out individually.

4) To check the units back in, click the Online Mode check box again.

5.3   Altair FluxMotor® 2022.2 Student edition

The Altair Student Edition license is a node-locked license - a license that will work only on one machine whose Ethernet ID was entered while requesting.

By downloading the software and license file you agree to not use the software for commercial purposes and to not install the software on any corporate machines.

Copy the file to a location that does not change (like a user directory) and set the environment variable ALTAIR_LICENSE_PATH to the location of the license file.

For all information about FluxMotor® Student Edition, please, refer to the following link:

https://altairuniversity.com/altairuniversity-for-students/