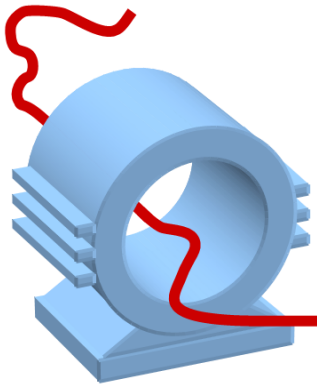


BobiSoft®

Installation Procedure and Basic Operation
Version 2019

OptiSigma energia e ambiente

I n d e x

STEP 1 – Downloading the Installation File

To install BobiSoft 2018 and BobiSoft 2019 in the computer the user must download the installation file available online at:

http://www.optisigma.pt/en/
or
http://www.optisigma.pt/en/produtos-servicos/bobisoft/

Then click in the right icon as indicated in Fig. 1.

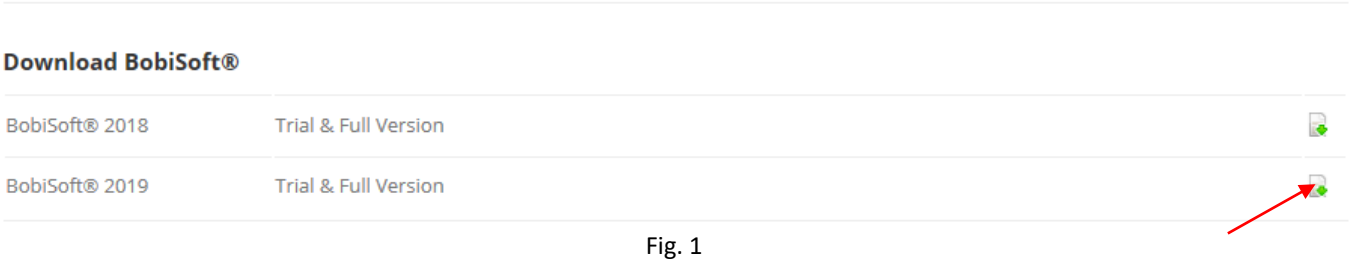


Fig. 1

Transfer and save the installation file **BobiSoft_v2019_feb.rar** in any folder of the computer.

STEP 2 – Running the Installation File

Unzip the BobiSoft2019_Sept2020.rar file and run the file **BobiSoft2019_Sept2020.exe** .

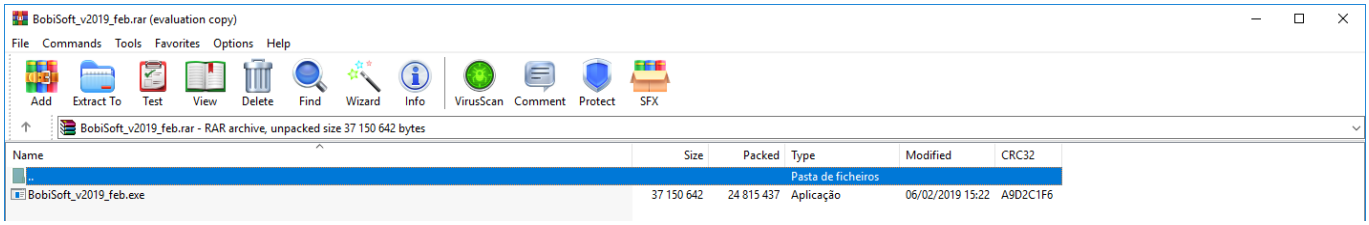


Fig. 2

The installation process will proceed automatically. If necessary, the user may change the installation folder.

By default, BobiSoft is installed in the following folder:

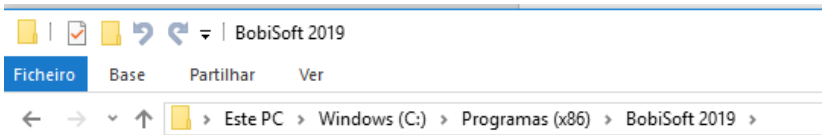


Fig. 3

STEP 3 – Installing BobiSoft

During the installation process, the windows presented in Figs. 4-10 will be displayed.

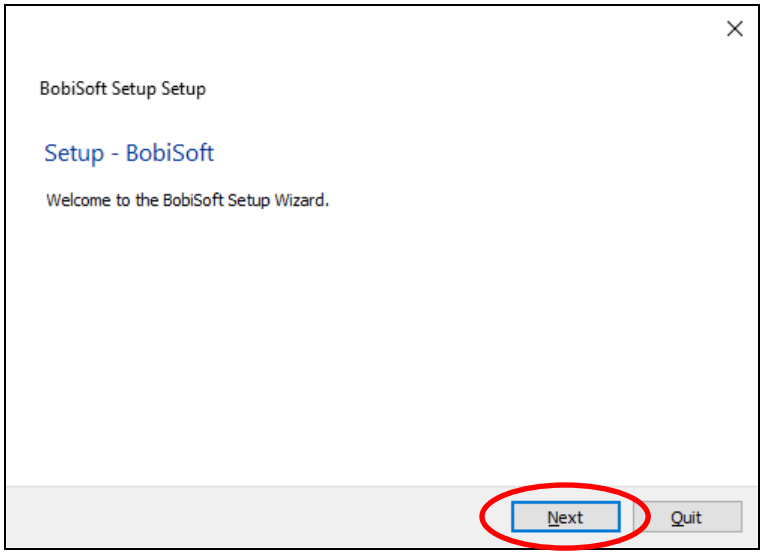


Fig. 4

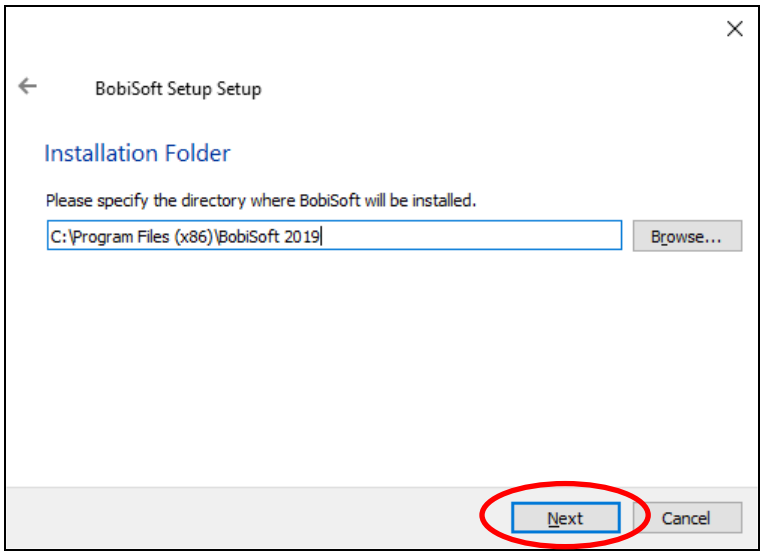
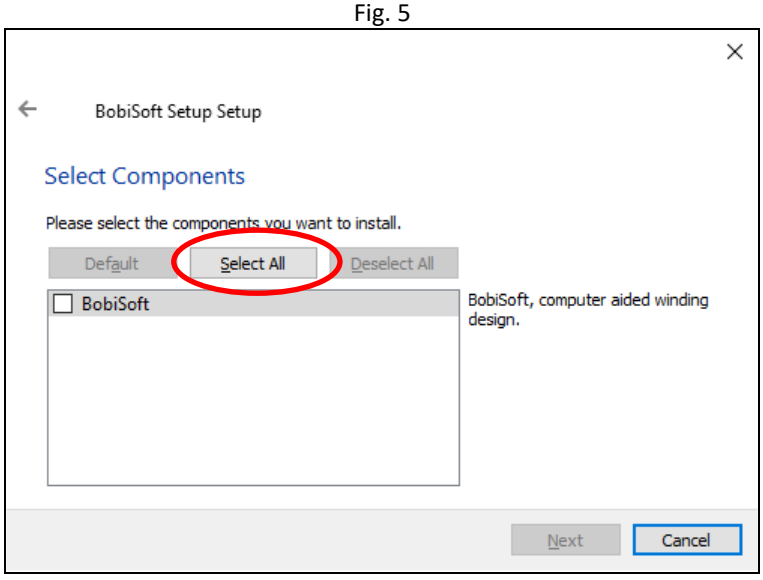


Fig. 5



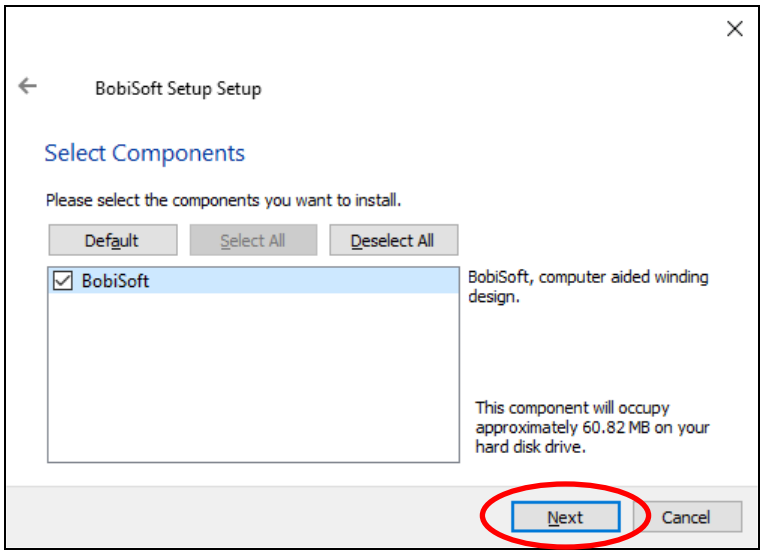


Fig. 6

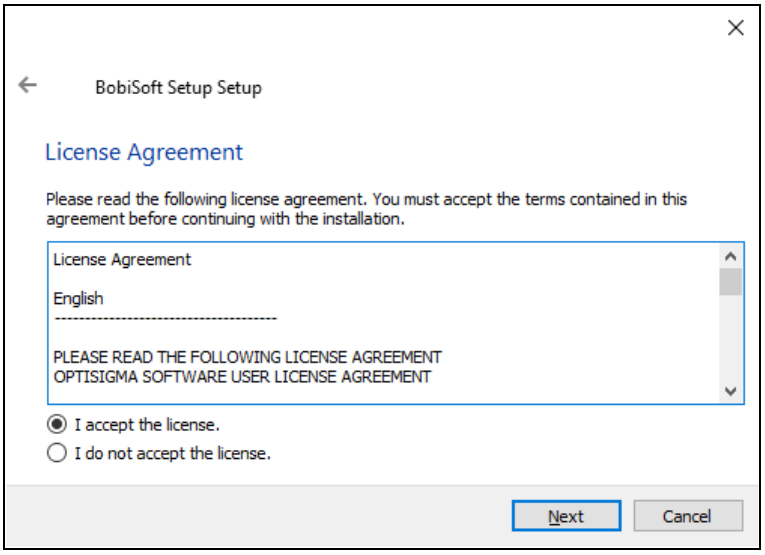


Fig. 7

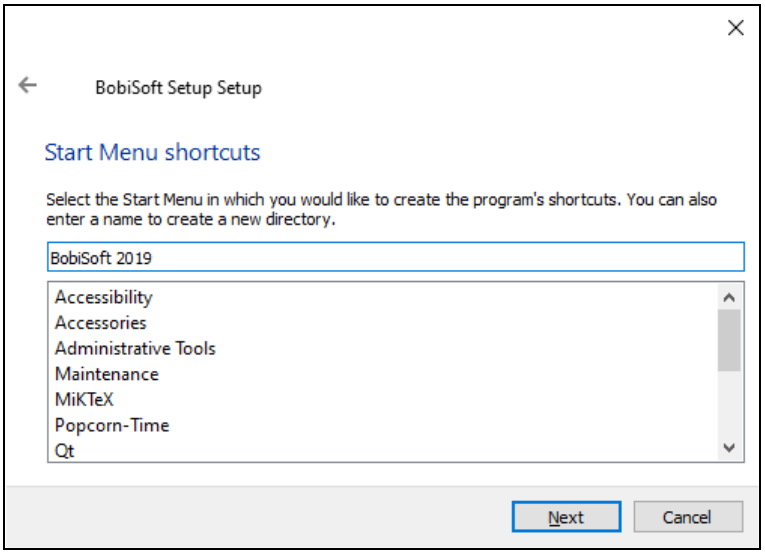


Fig. 8

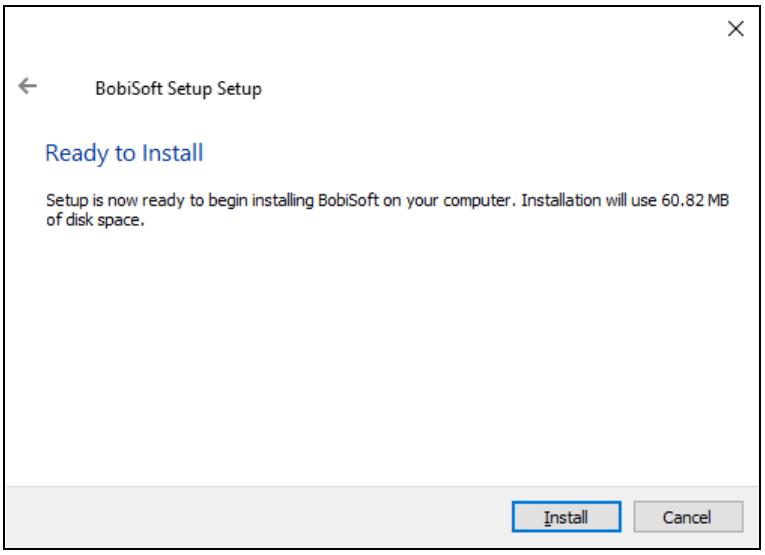


Fig. 9

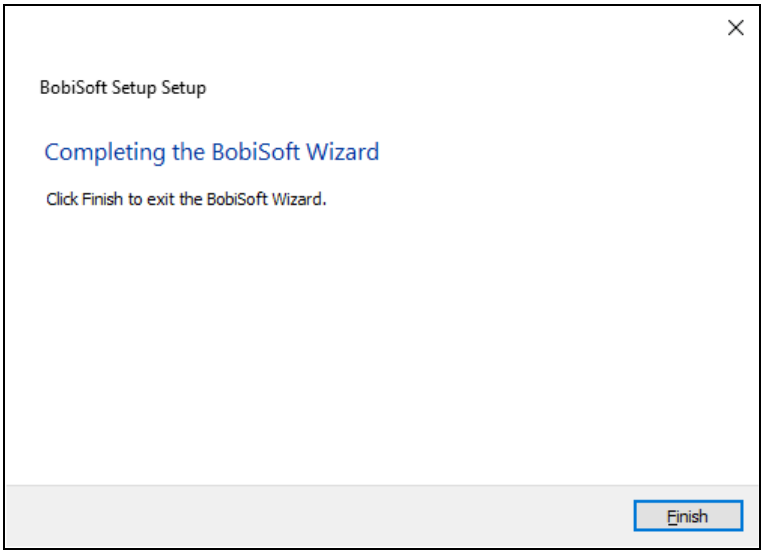


Fig. 10

STEP 4 – Registering BobiSoft

After installing the software, the user should register the software. The first time the user runs the software, the window presented in Fig. 11 will appear, and the respective fields (text boxes) should be filled, including the user name associated with the registration and the type of installation ("trial version" or "full version"). Then click on the "Generate Key File" button. The recommended fill sequence is shown in Fig. 12.

In the field "Key File Location", it is shown the folder where the register file **userKey.bbr** is saved (typically, that file is saved in the "Desktop" folder).

Then, *copy & paste* the file **userKey.bbr** into an e-mail message, as an attachment, and send it to bobisoft@optisigma.pt.

Close the BobiSoft registration window.

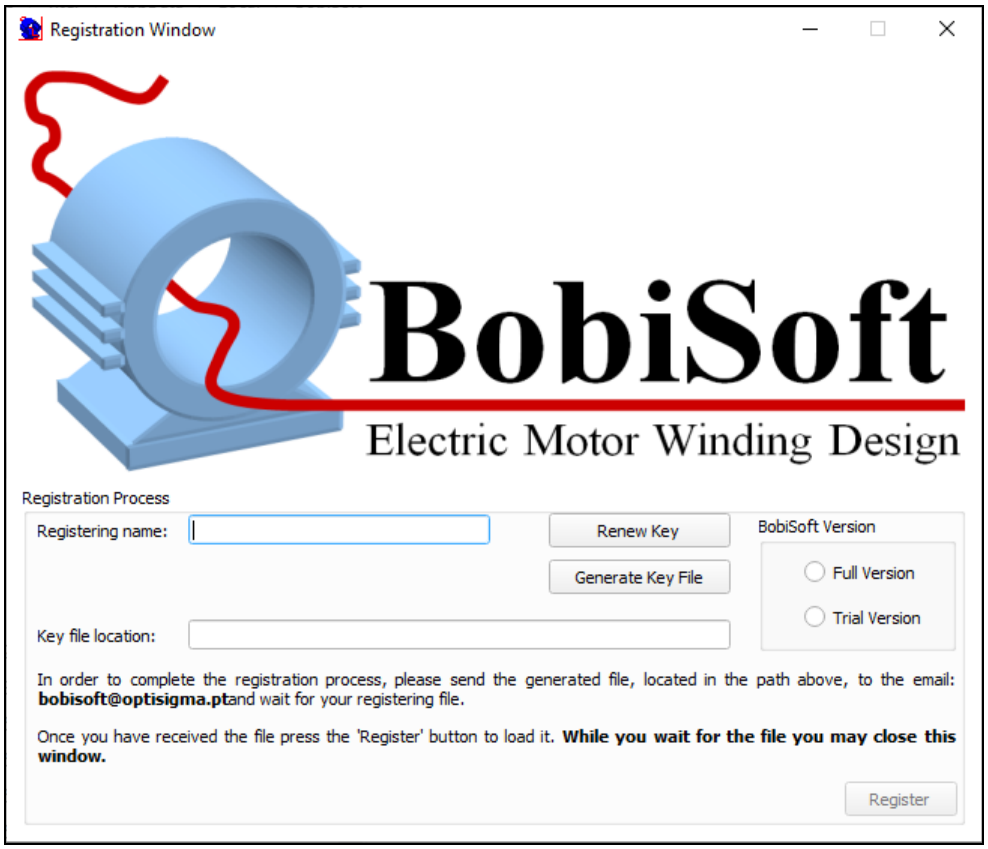


Fig. 11

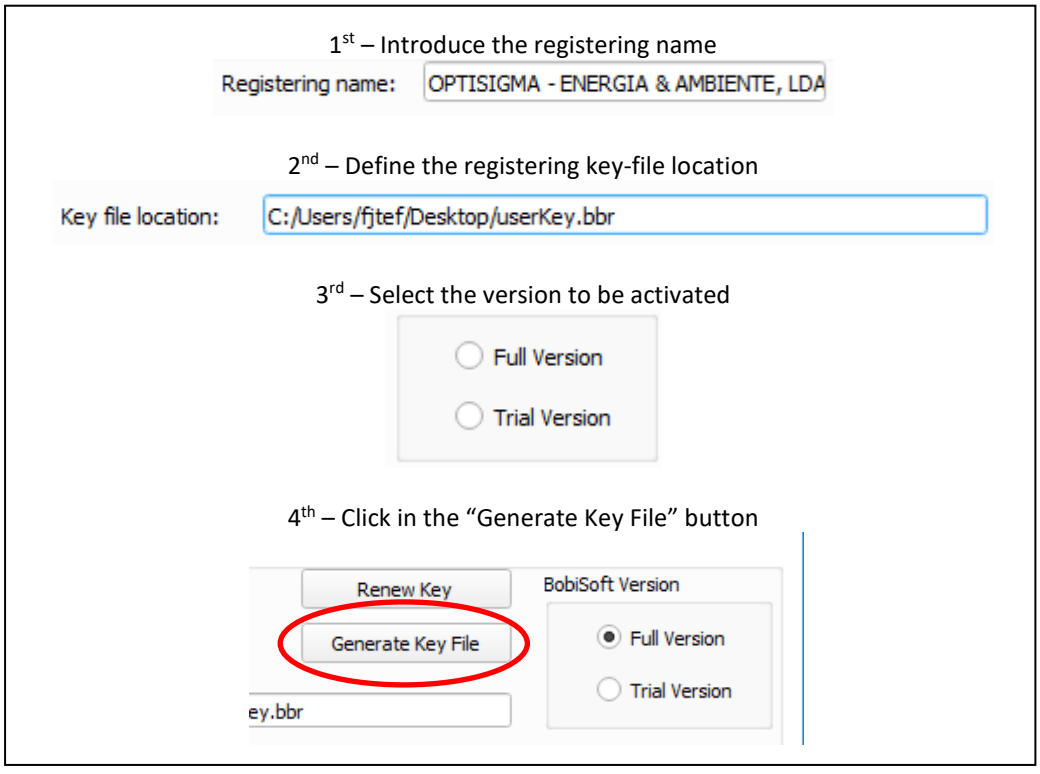


Fig. 12

STEP 5 – Concluding the Installation

The installation file **BobiSoft_Key.bbr** will be returned by e-mail, as an attachment. The installation file could be saved in any folder (we recommend the "Desktop" folder).

Then, the user should open again the BobiSoft software and, in the registration window, click in the "Register" button (Fig. 13) and upload the file **BobiSoft_Key.bbr** (Fig. 14) to conclude the installation/registration process.

In the case of successful registration, the message shown in Fig. 15 will be displayed.

Fig. 13

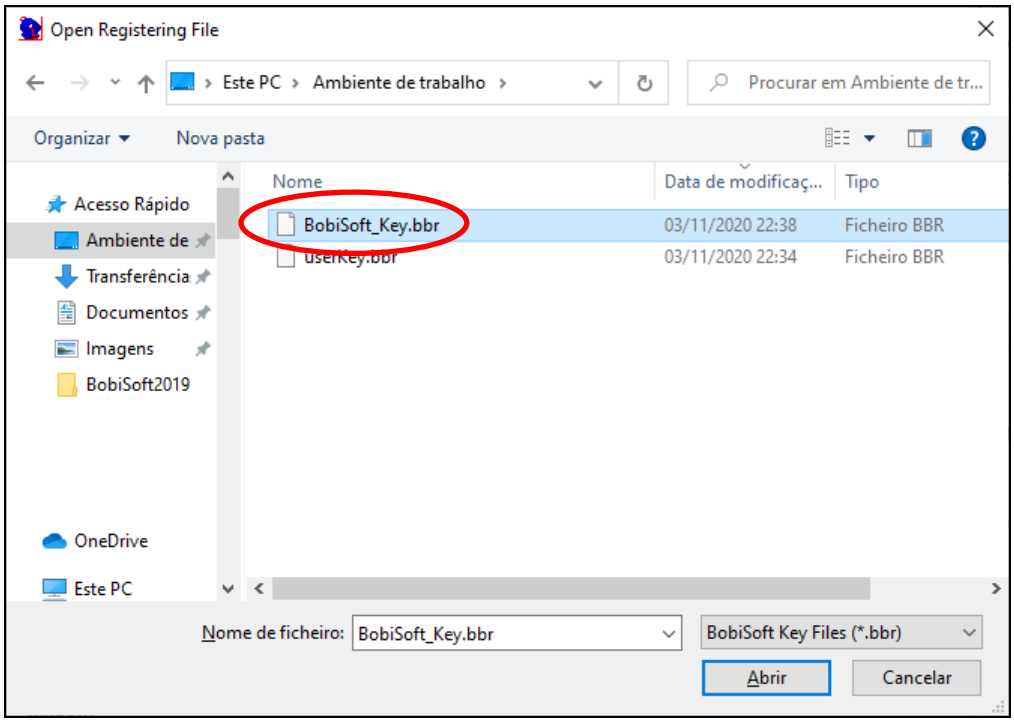


Fig. 14

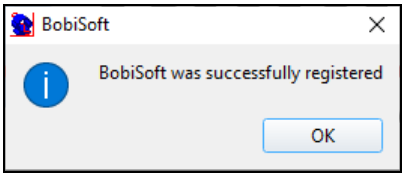


Fig. 15

After the installation, the icon shown in Fig. 16 will be created automatically in the Desktop folder.

The design/project files created by BobiSoft have the extension ".bob" and the icon shown in Fig. 17.

Fig. 16

Fig. 17

STEP 6 – Basic Operation

The main window of BobiSoft 2019 is shown in Fig. 18. The software language can be changed in the Settings → Language, as indicated in Fig. 19. After changing the language, it is necessary to close & reopen the software. In Fig. 20, the Portuguese main window is shown.

On important button is the left-hand side, green, play/run button ( ), which should be clicked after opening or changing a project to recompute/refresh all graphs and data.

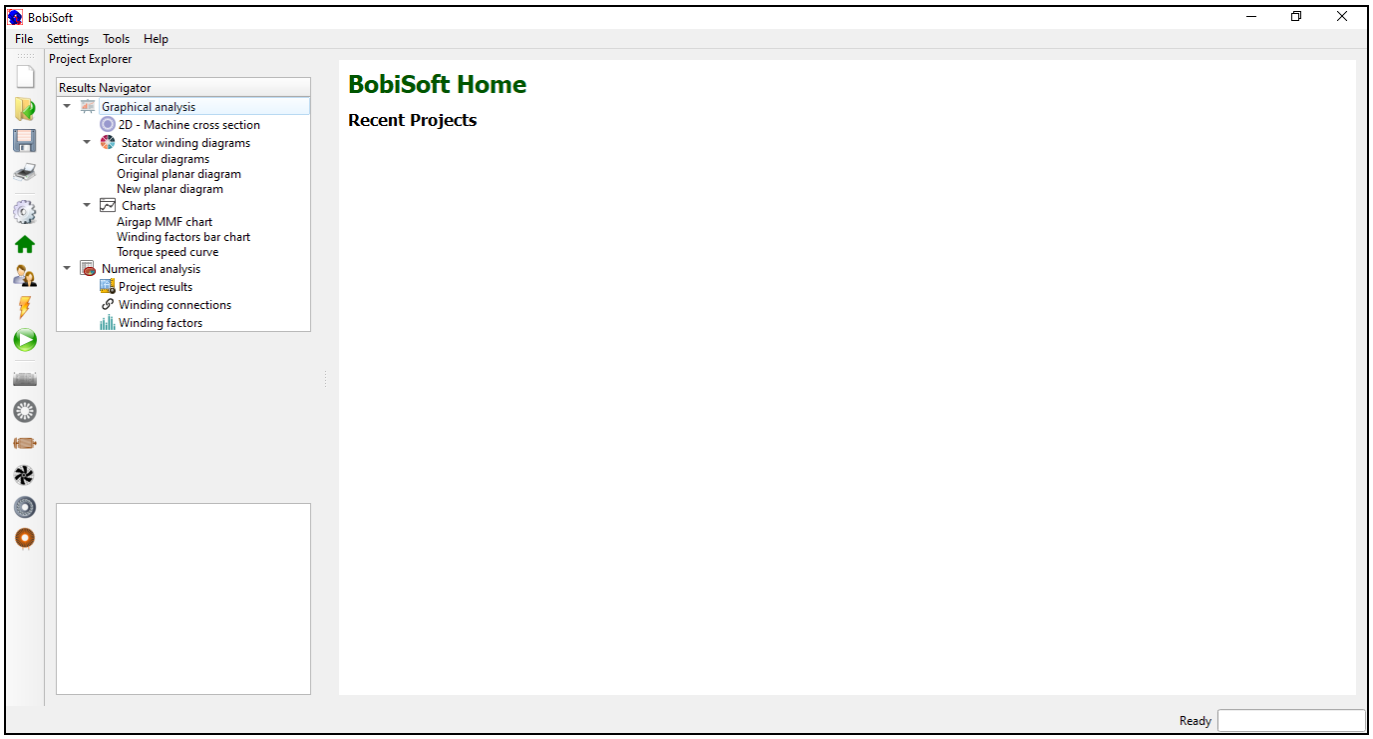


Fig. 18

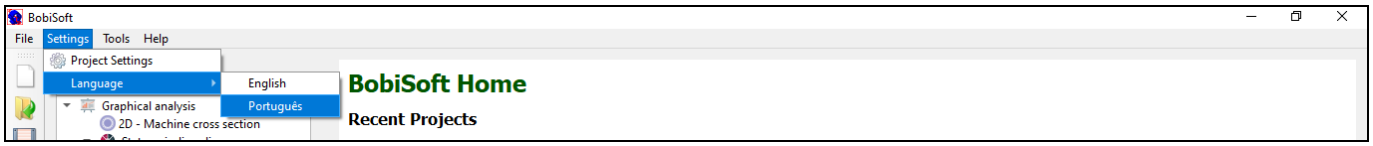


Fig. 19

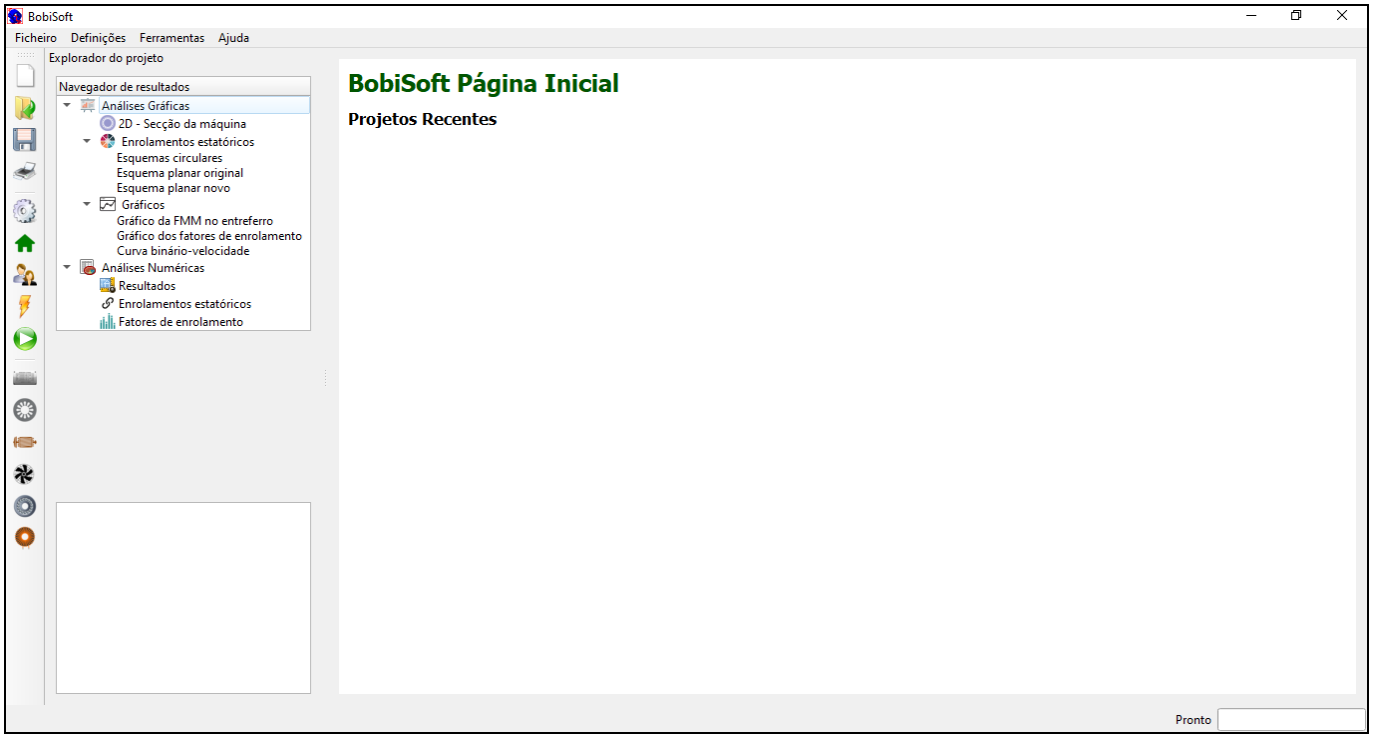


Fig. 20

In Fig. 21, all the menu options are shown.

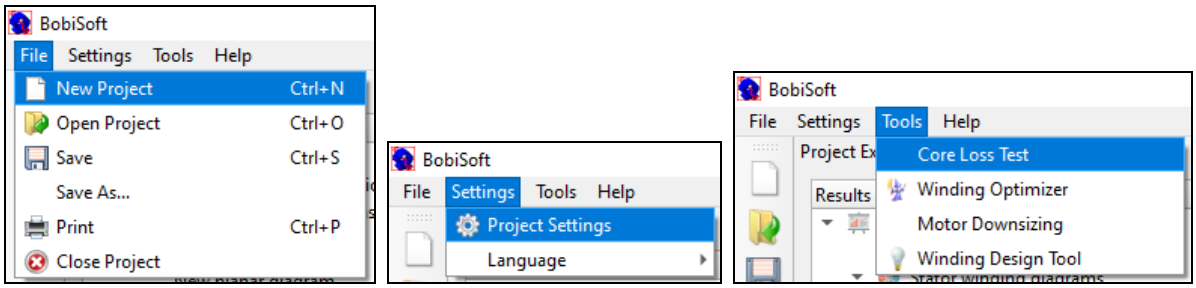


Fig. 21

The main tool bar, in the left-hand side of the main window, is shown in Fig. 22. The main tools of the "Results Navigator" are shown in Fig. 23. The bottom box is used for the display of relevant information concerning input data and output results.

Fig. 22

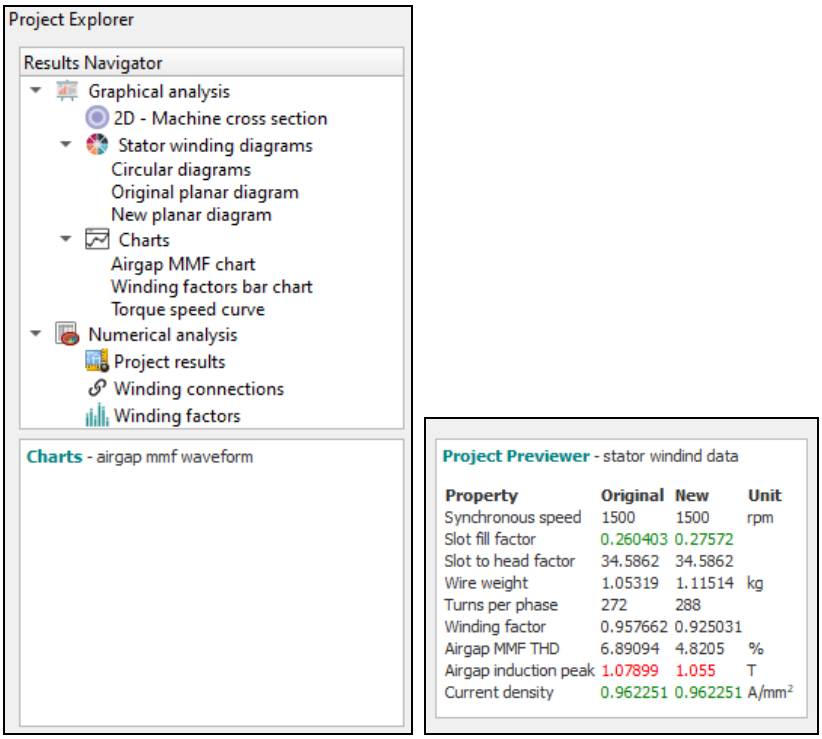


Fig. 23

The button “Project Settings” () opens the respective window, shown in Fig. 24.

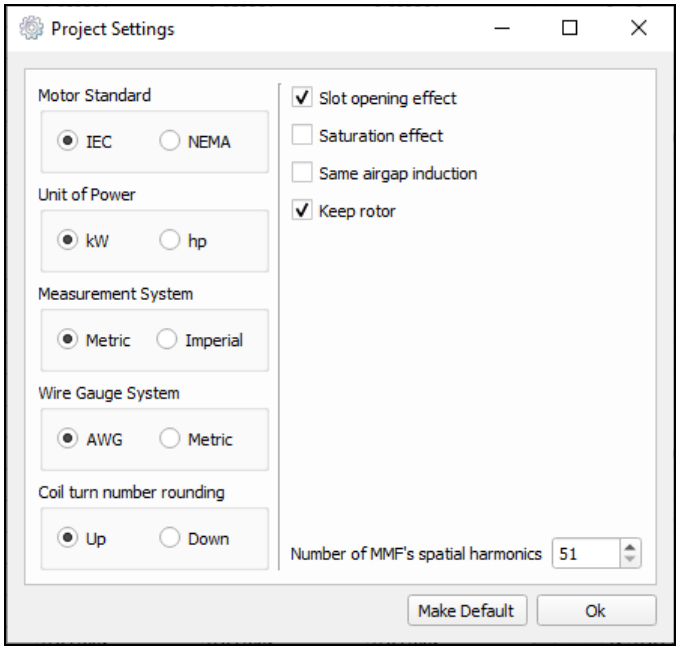


Fig. 24

The button “Home” () presents in the main window the recent projects, as shown in Fig. 25.

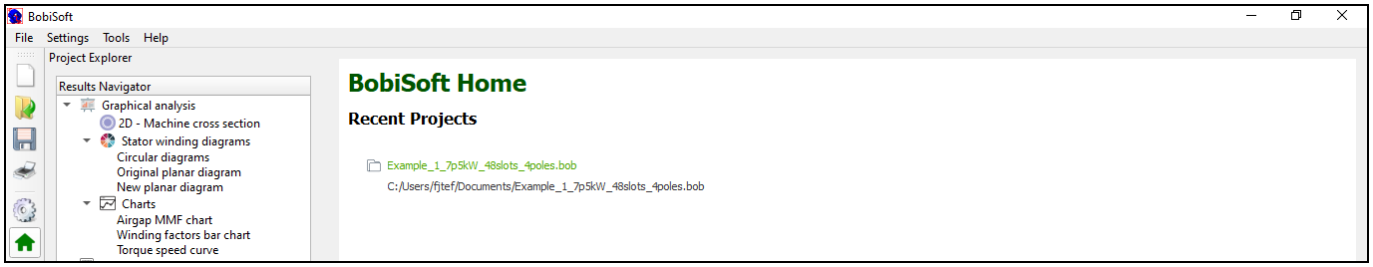


Fig. 25

The button “Client and Service Data” (), opens the respective window, shown in Fig. 26.

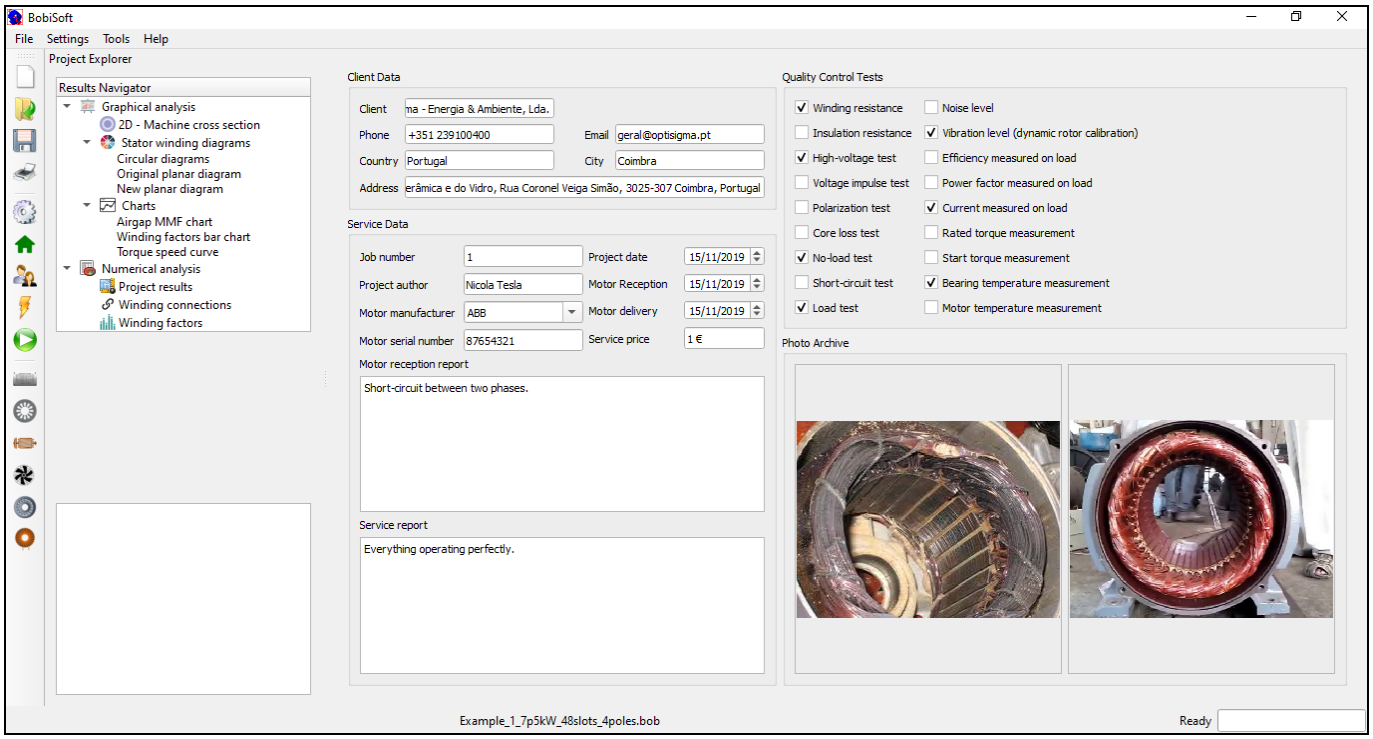


Fig. 26

The button “Quick Project” ( ), opens the respective window, shown in Fig. 27.

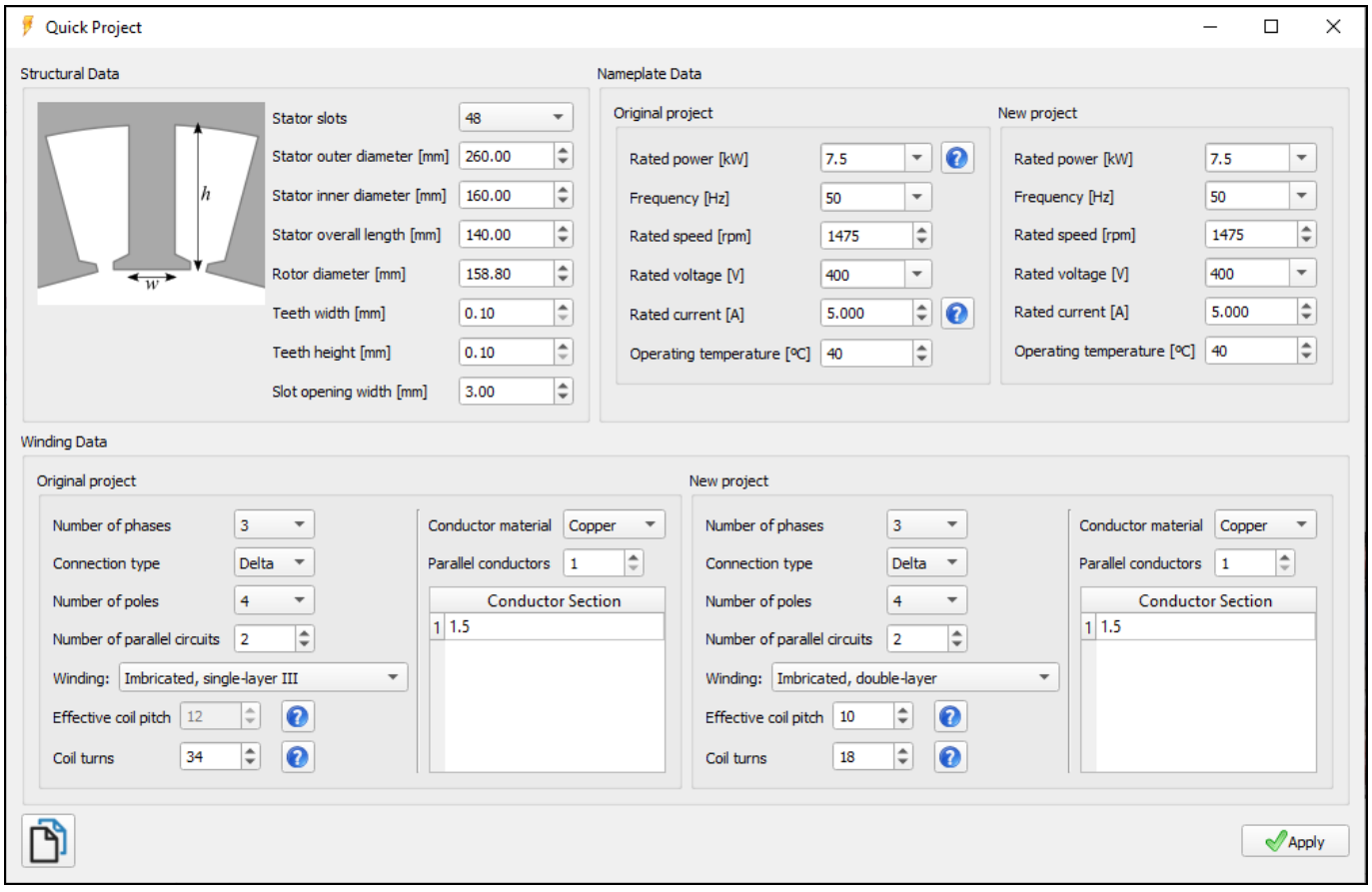


Fig. 27

The “Run” button ( ), recomputes/refreshes all graphs and data. It should be clicked after opening or changing a project.

The button “Nameplate Data” ( ), opens the respective window, shown in Fig. 28.

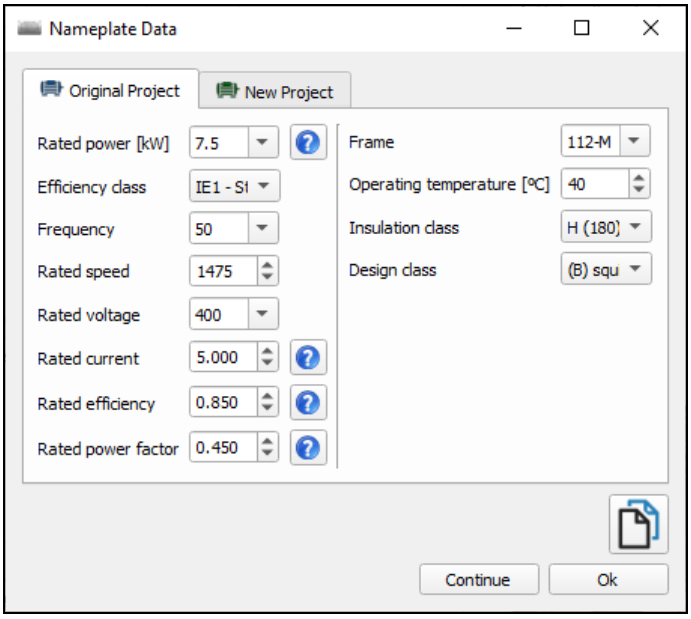


Fig. 28

The button “Stator Data” ( ), opens the respective window, shown in Fig. 29. If there are no air ducts in the stator, which are only found in large machines, fill with “0” the field “Air ducts total length [mm]”.

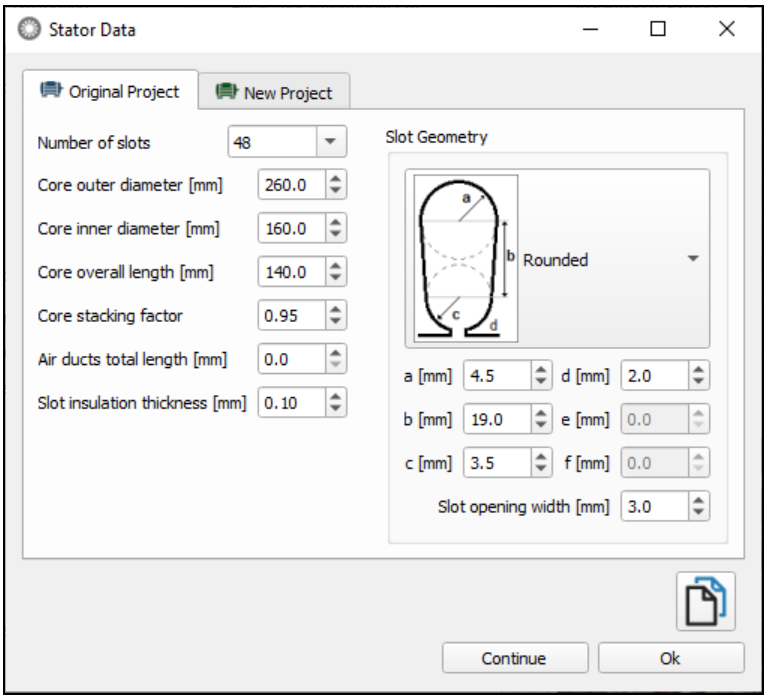


Fig. 29

The button “Rotor Data” ( ), opens the respective window, shown in Fig. 30. It is very important to fill the field “Core diameter [mm]”.

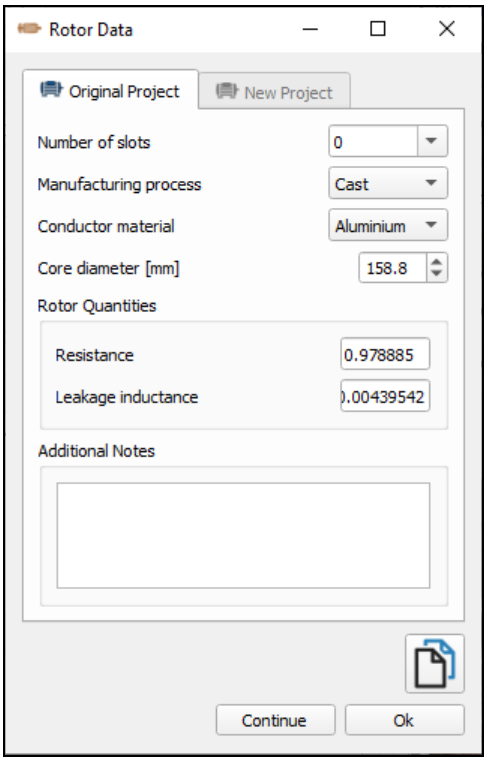


Fig. 30

The button “Cooling Data” ( ), opens the respective window, shown in Fig. 31. The button “Mechanical Data” ( ), opens the respective window, shown in Fig. 32.

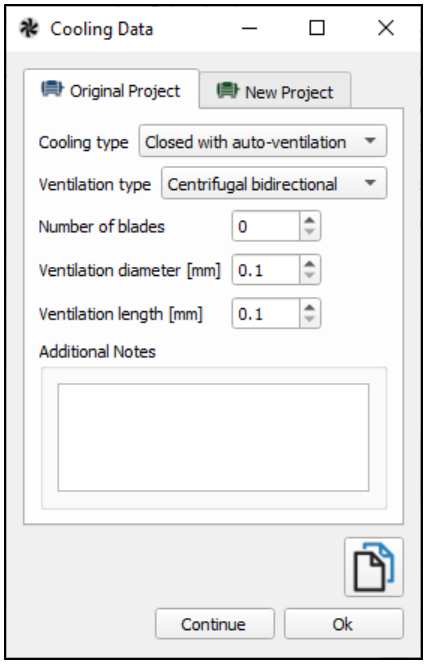


Fig. 31

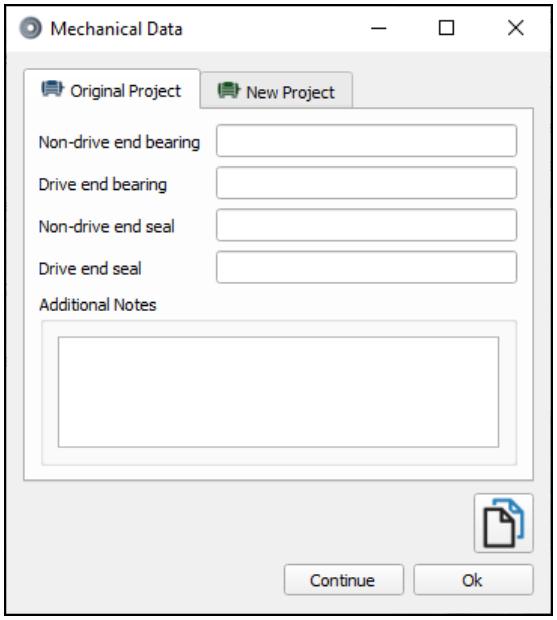


Fig. 32

The button “Winding Data” ( ), opens the respective window, shown in Fig. 33.

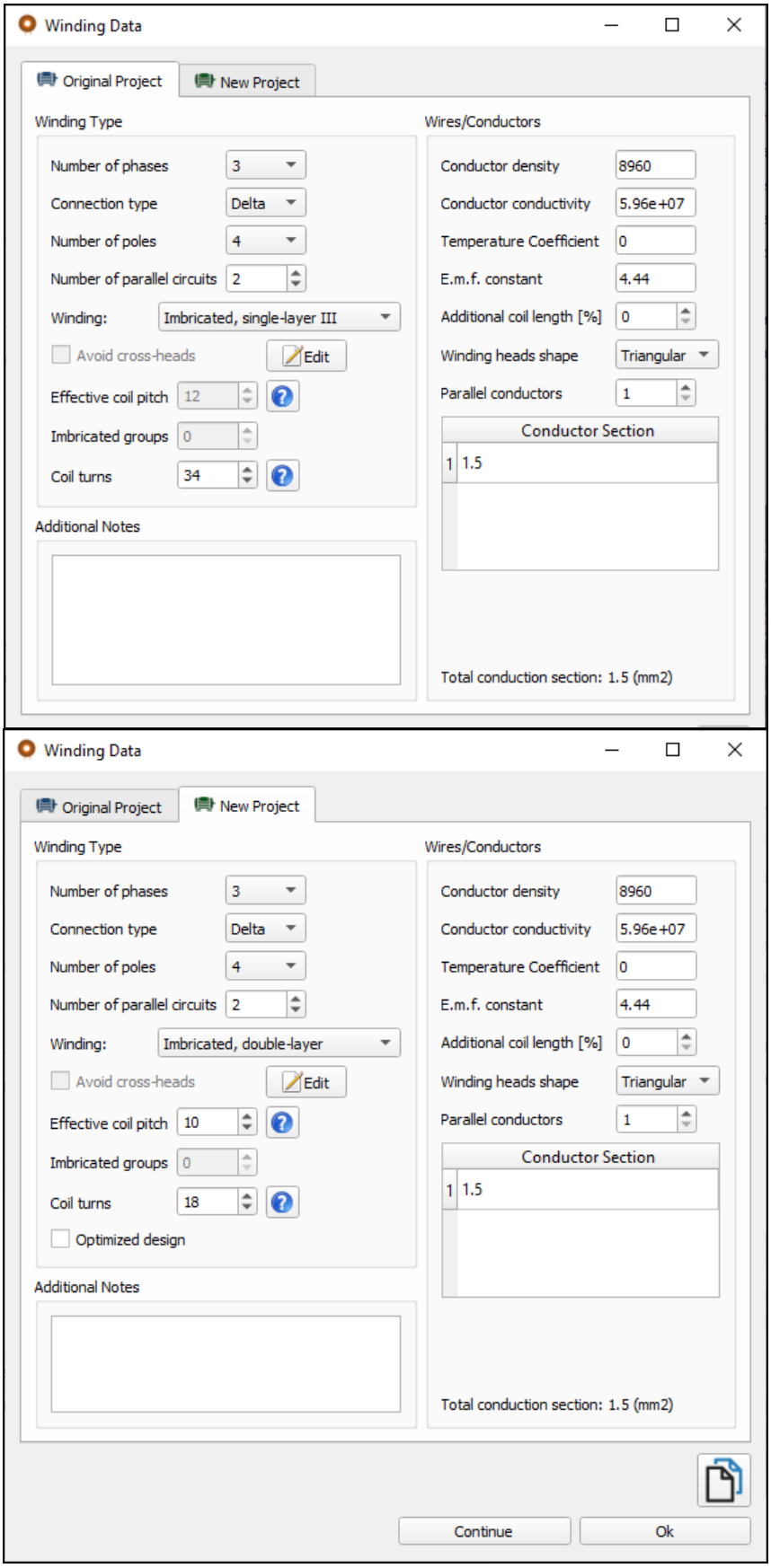
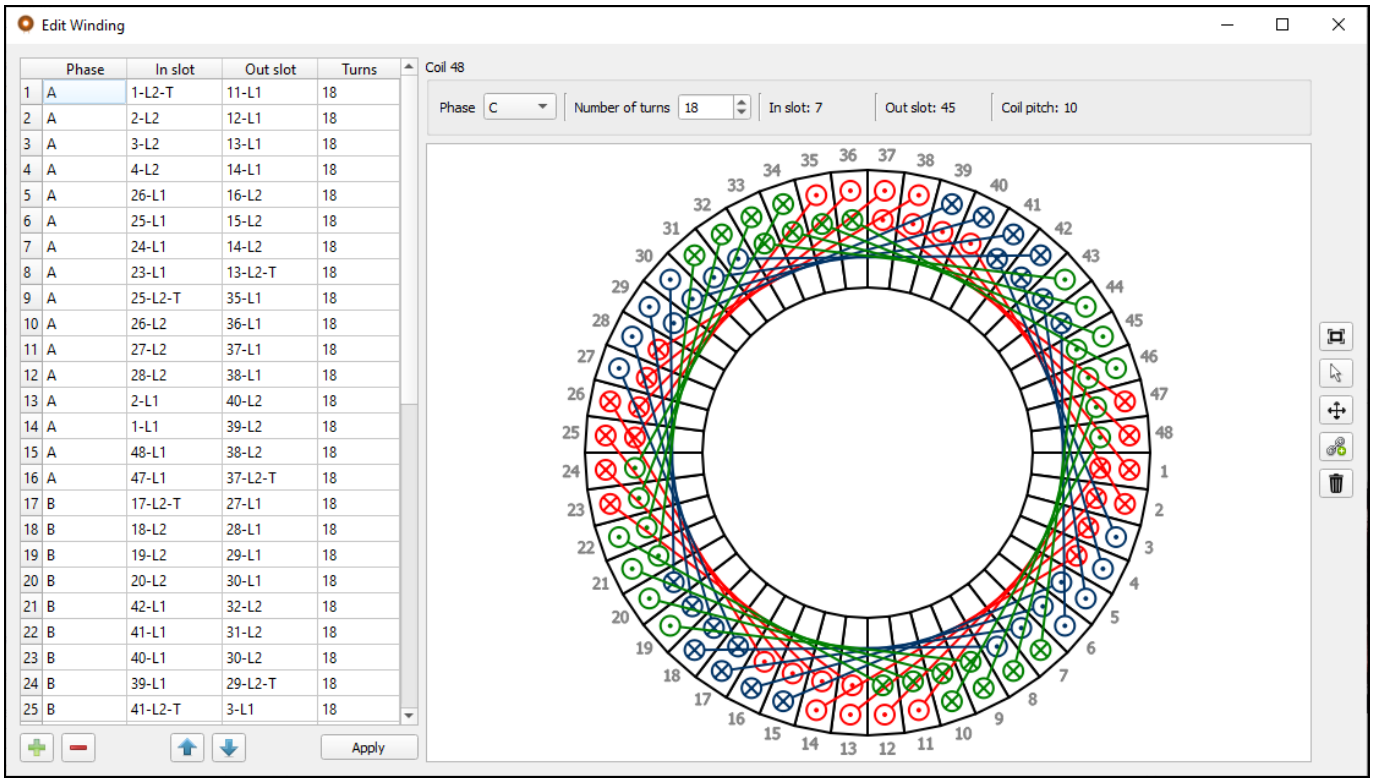


Fig. 33

In the "New Project" tab of "Winding Data" window, there is the option to edit manually the winding, by clicking in the button "Edit", which opens the window shown in Fig. 34.



	Phase	In slot	Out slot	Turns
1	A	1-L2-T	11-L1	18
2	A	2-L2	12-L1	18
3	A	3-L2	13-L1	18
4	A	4-L2	14-L1	18
5	A	26-L1	16-L2	18
6	A	25-L1	15-L2	18
7	A	24-L1	14-L2	18
8	A	23-L1	13-L2-T	18
9	A	25-L2-T	35-L1	18
10	A	26-L2	36-L1	18
11	A	27-L2	37-L1	18
12	A	28-L2	38-L1	18
13	A	2-L1	40-L2	18
14	A	1-L1	39-L2	18
15	A	48-L1	38-L2	18
16	A	47-L1	37-L2-T	18
17	B	17-L2-T	27-L1	18
18	B	18-L2	28-L1	18
19	B	19-L2	29-L1	18
20	B	20-L2	30-L1	18
21	B	42-L1	32-L2	18
22	B	41-L1	31-L2	18
23	B	40-L1	30-L2	18
24	B	39-L1	29-L2-T	18
25	B	41-L2-T	3-L1	18

Fig. 34

After introducing all the required data and clicking in the "Run" button, the user may use the tools in the "Results Navigator" (Fig. 23) to analyse the processed results.

Clicking in the tool "Graphical Analysis / 2D – Machine Cross Section", the 2D stator and rotor core cross sections are presented in the main window, as shown in Fig. 35.

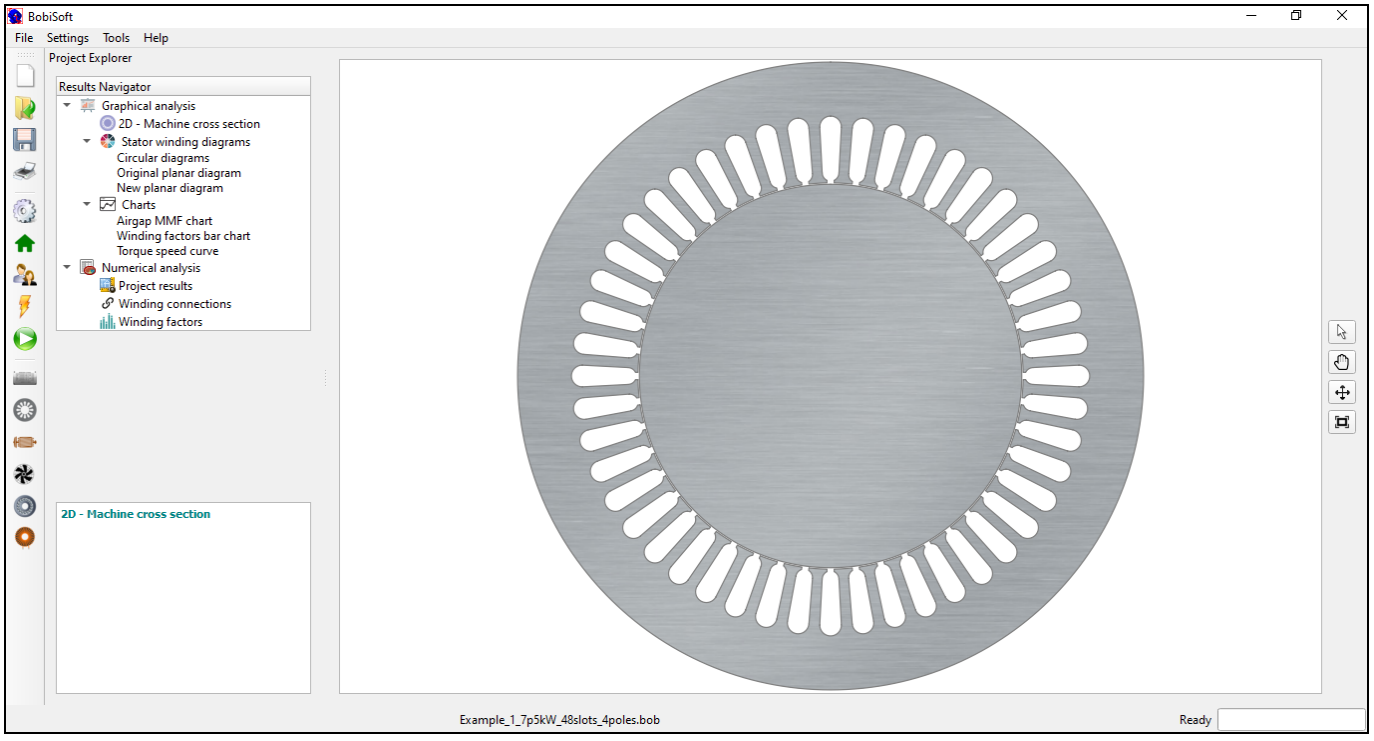


Fig. 35

Clicking in the tool “Graphical Analysis / Stator Winding Diagrams / Circular Diagrams”, the circular representation of the configurations of both original and new windings are presented in the main window, as shown in Fig. 36.

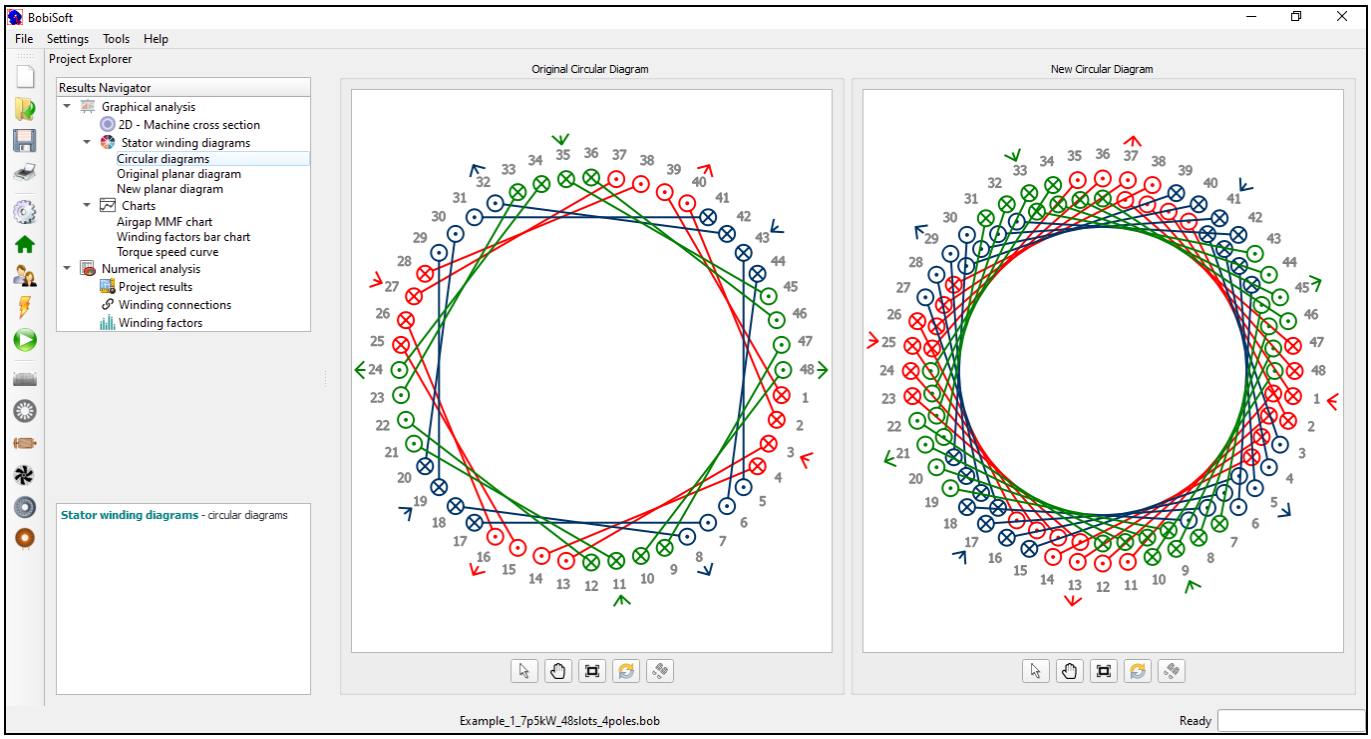


Fig. 36

Clicking in the tool “Graphical Analysis / Stator Winding Diagrams / Original Planar Diagram”, the planar representation of the configuration of the original winding is presented in the main window, as shown in Fig. 37. Clicking in the tool “Graphical Analysis / Stator Winding Diagrams / New Planar Diagram”, the planar representation of the configuration of the new winding is presented in the main window, as shown in Fig. 38.

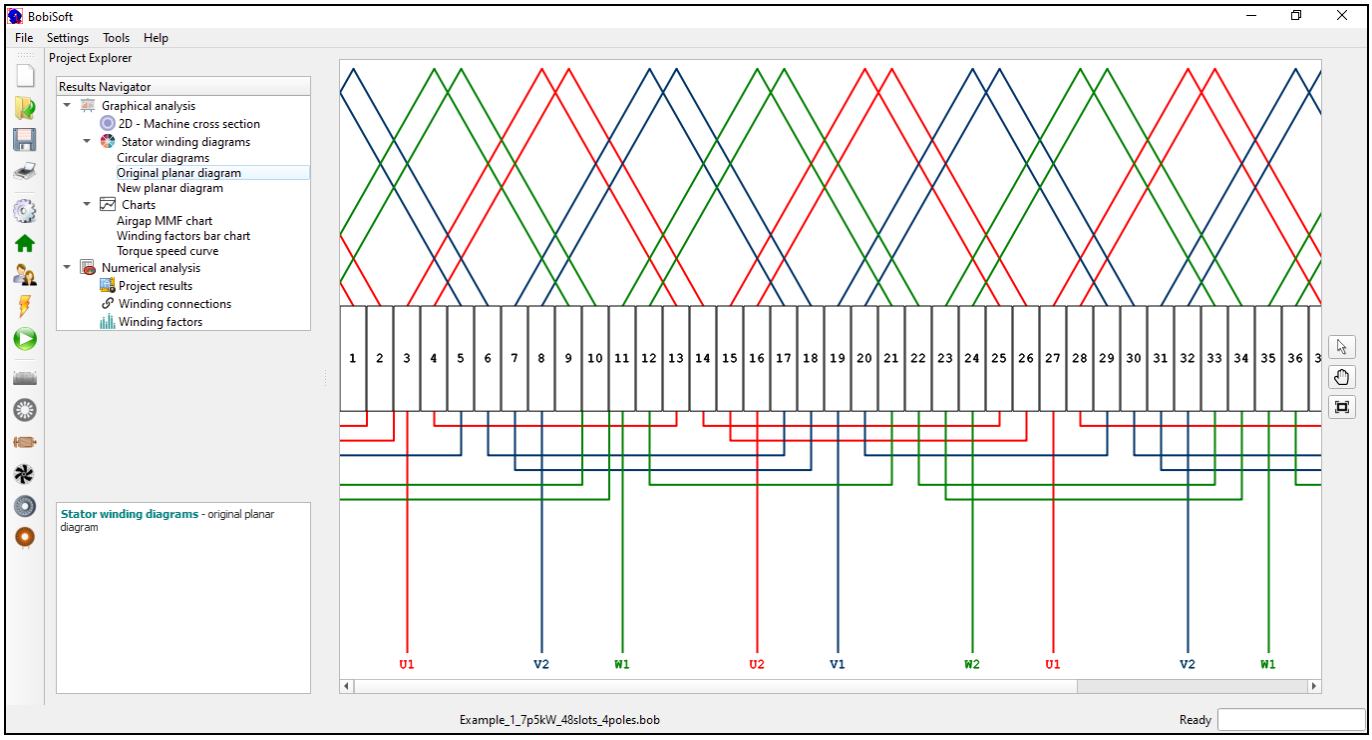


Fig. 37

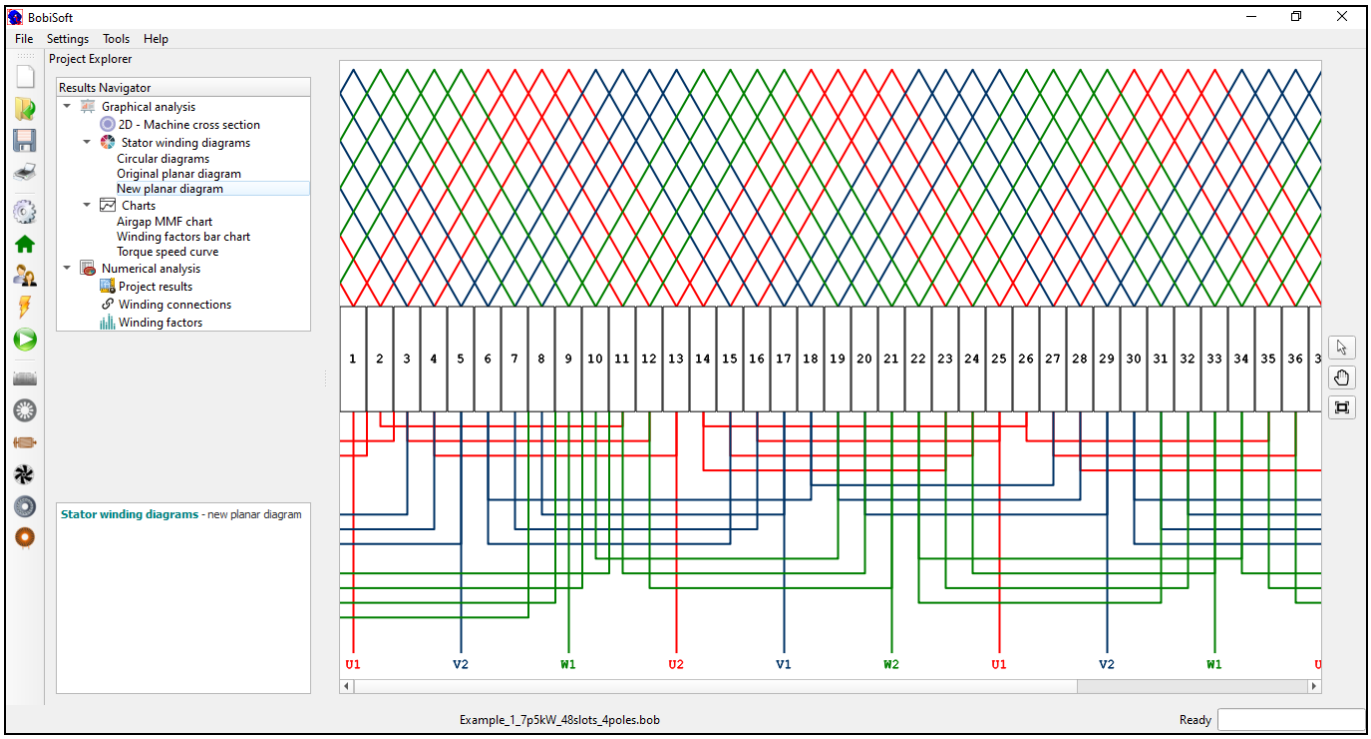


Fig. 38

Clicking in the tool “Charts / Airgap MMF Chart”, the airgap magnetomotive force (MMF) curves are presented in the main window, as shown in Figs. 39 and 40.

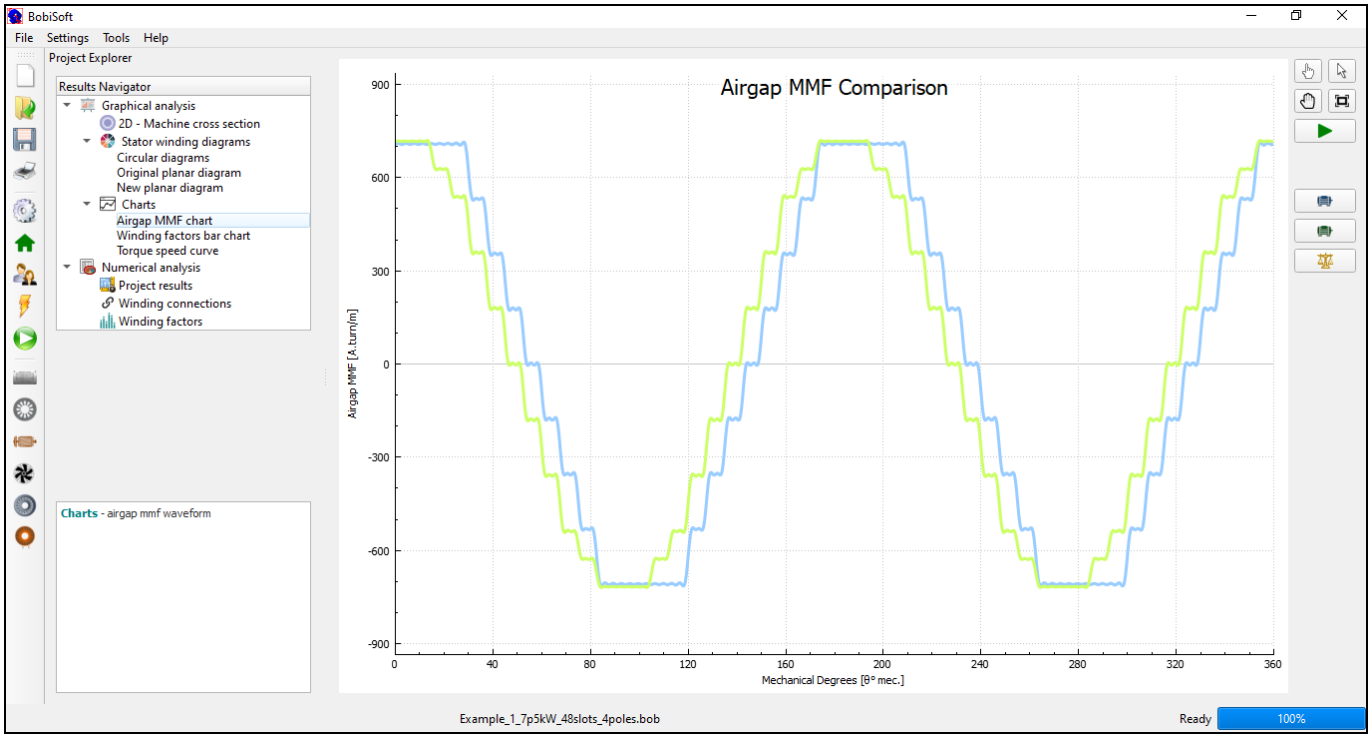


Fig. 39

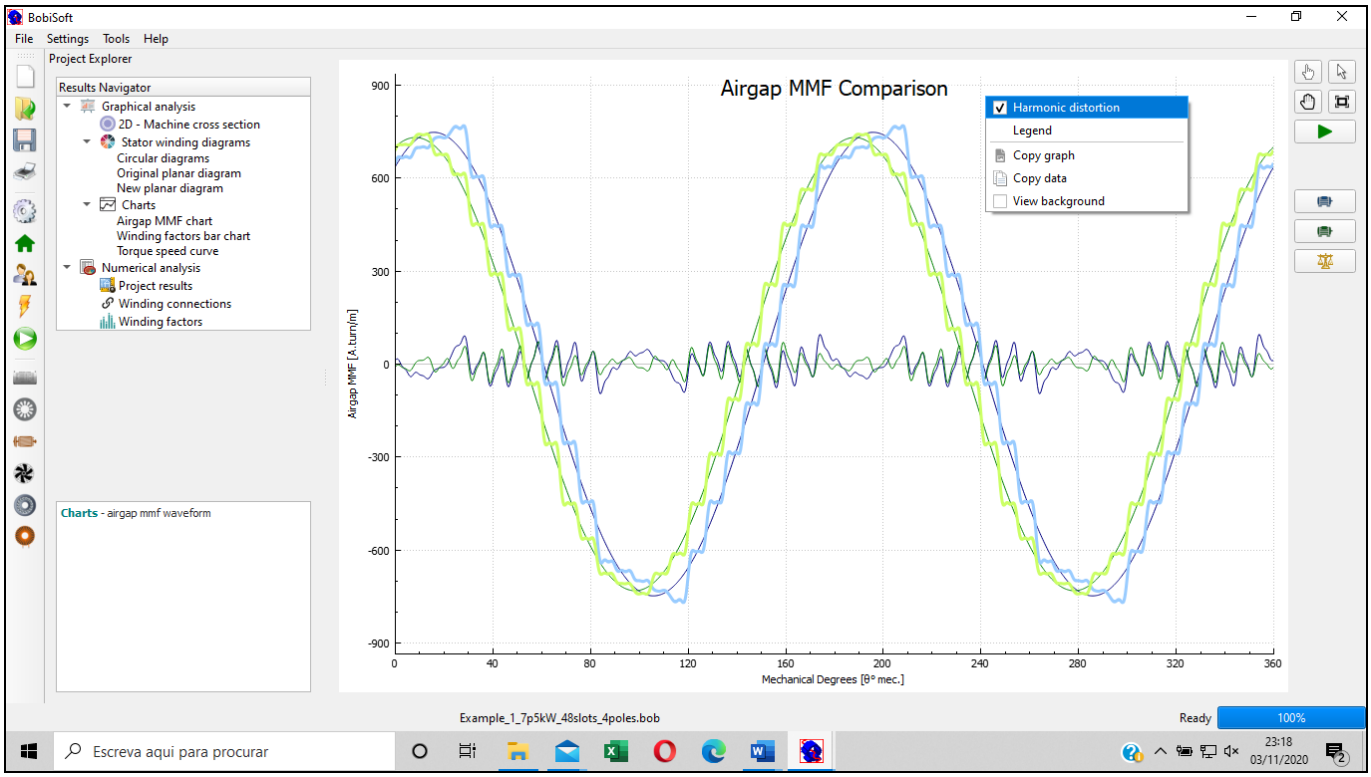


Fig. 40

Clicking in the tool “Charts / Winding Factors Bar Chart”, the bar chart of the winding factors of both original and new windings is presented in the main window, as shown in Fig. 41.

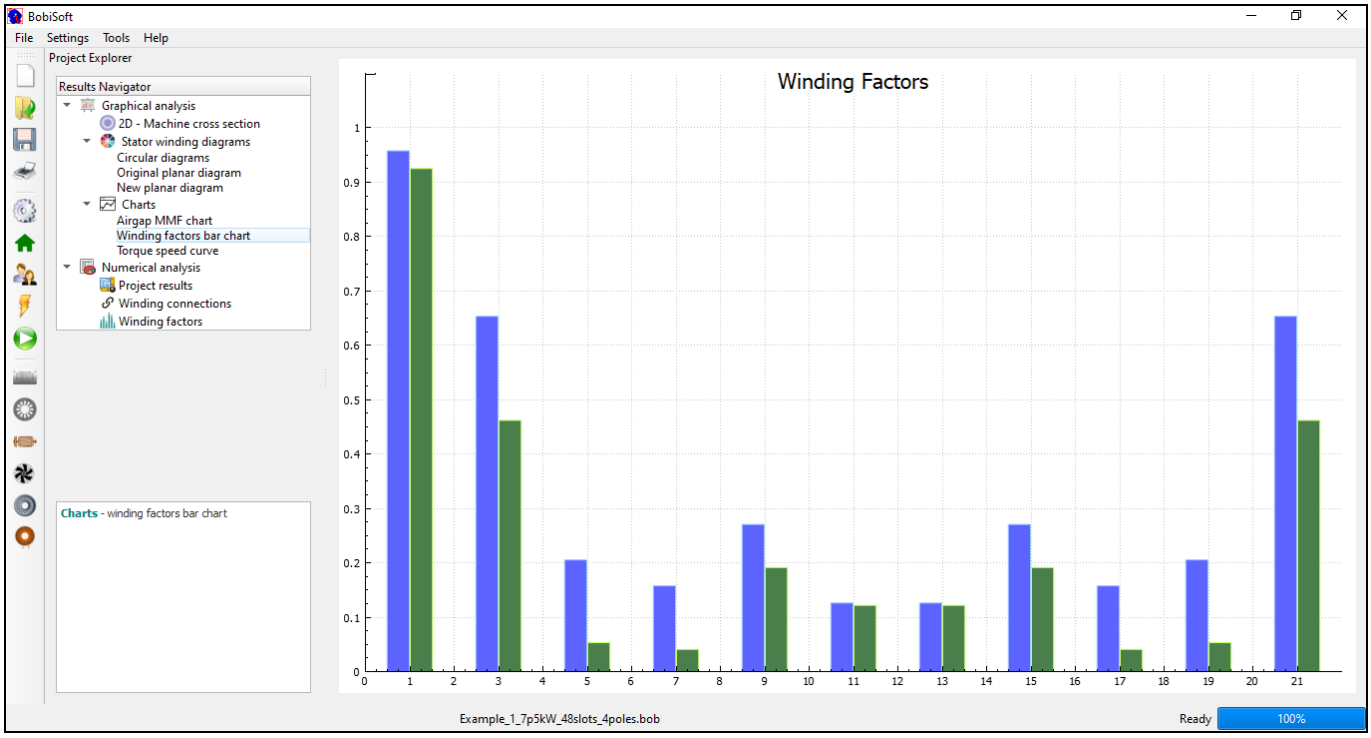


Fig. 41

Clicking in the tool “Charts / Torque Speed Curve”, the torque-speed curves of the induction motor for both original and new windings are presented in the main window, as shown in Fig. 42.

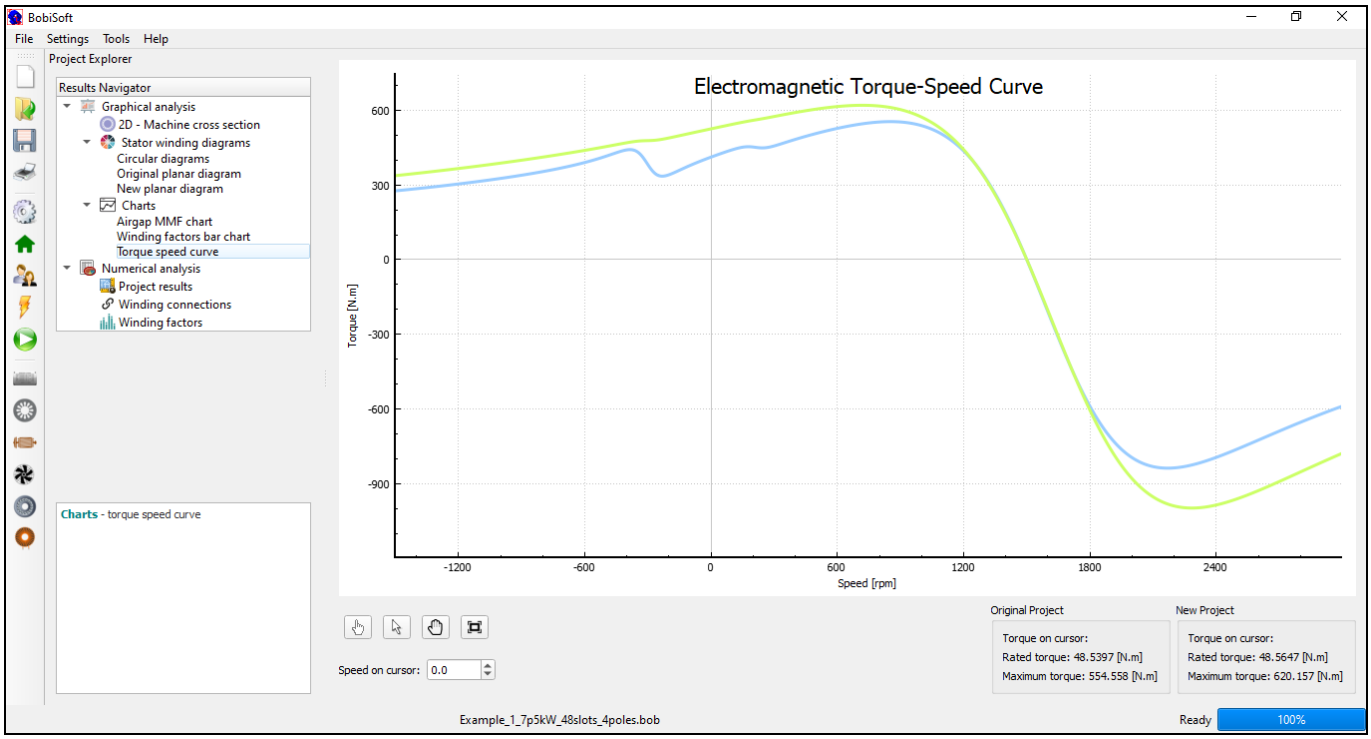
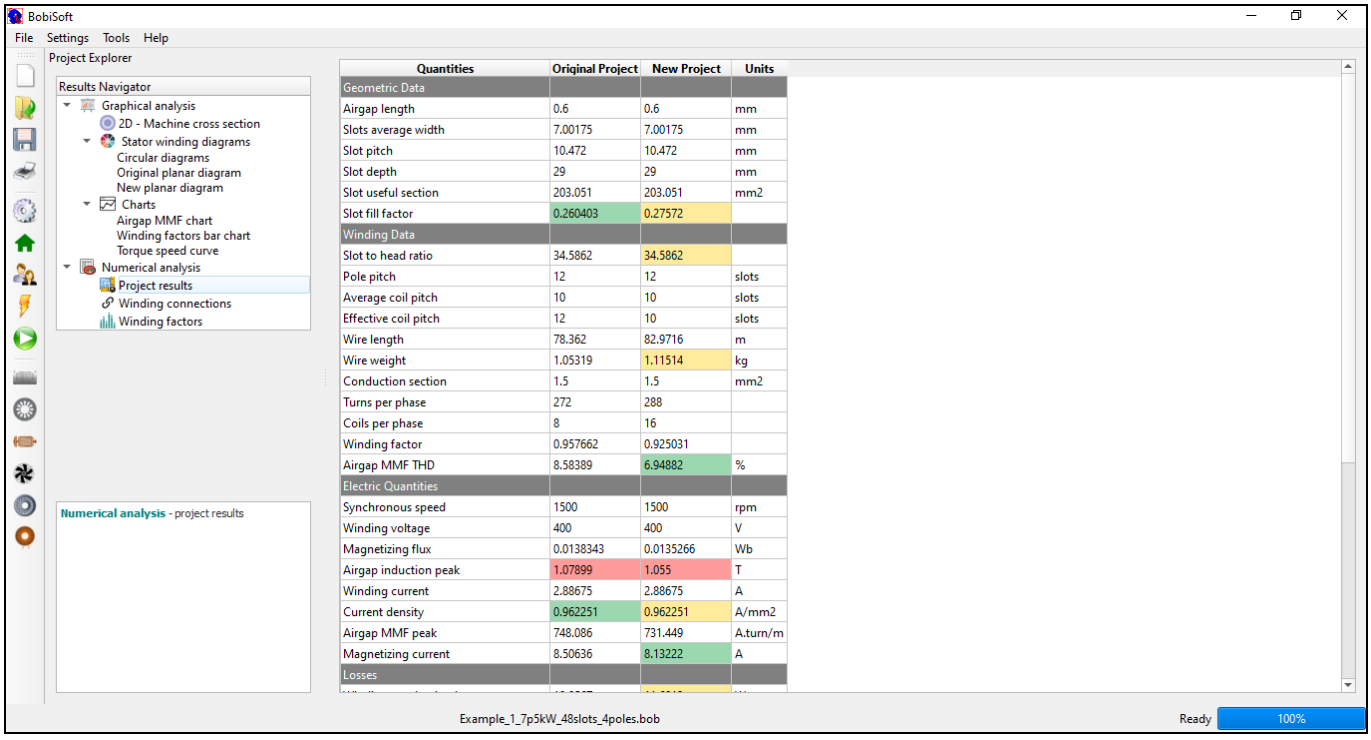


Fig. 42

Clicking in the tool “Numerical Analysis / Project Results”, a summary of the numerical results for both original and new windings is presented in the main window, as shown in Fig. 43.



Quantities	Original Project	New Project	Units
Geometric Data			
Airgap length	0.6	0.6	mm
Slots average width	7.00175	7.00175	mm
Slot pitch	10.472	10.472	mm
Slot depth	29	29	mm
Slot useful section	203.051	203.051	mm2
Slot fill factor	0.260403	0.27572	
Winding Data			
Slot to head ratio	34.5862	34.5862	
Pole pitch	12	12	slots
Average coil pitch	10	10	slots
Effective coil pitch	12	10	slots
Wire length	78.362	82.9716	m
Wire weight	1.05319	1.11514	kg
Conduction section	1.5	1.5	mm2
Turns per phase	272	288	
Coils per phase	8	16	
Winding factor	0.957662	0.925031	
Airgap MMF THD	8.58389	6.94882	%
Electric Quantities			
Synchronous speed	1500	1500	rpm
Winding voltage	400	400	V
Magnetizing flux	0.0138343	0.0135266	Wb
Airgap induction peak	1.07899	1.055	T
Winding current	2.88675	2.88675	A
Current density	0.962251	0.962251	A/mm2
Airgap MMF peak	748.086	731.449	A.turn/m
Magnetizing current	8.50636	8.13222	A
Losses			

Fig. 43

Clicking in the tool “Numerical Analysis / Winding Connections”, a summary of the numerical results for both original and new windings is presented in the main window, as shown in Fig. 44.

Clicking in the tool “Numerical Analysis / Winding Factors”, a summary of the numerical results for both original and new windings is presented in the main window, as shown in Fig. 45.

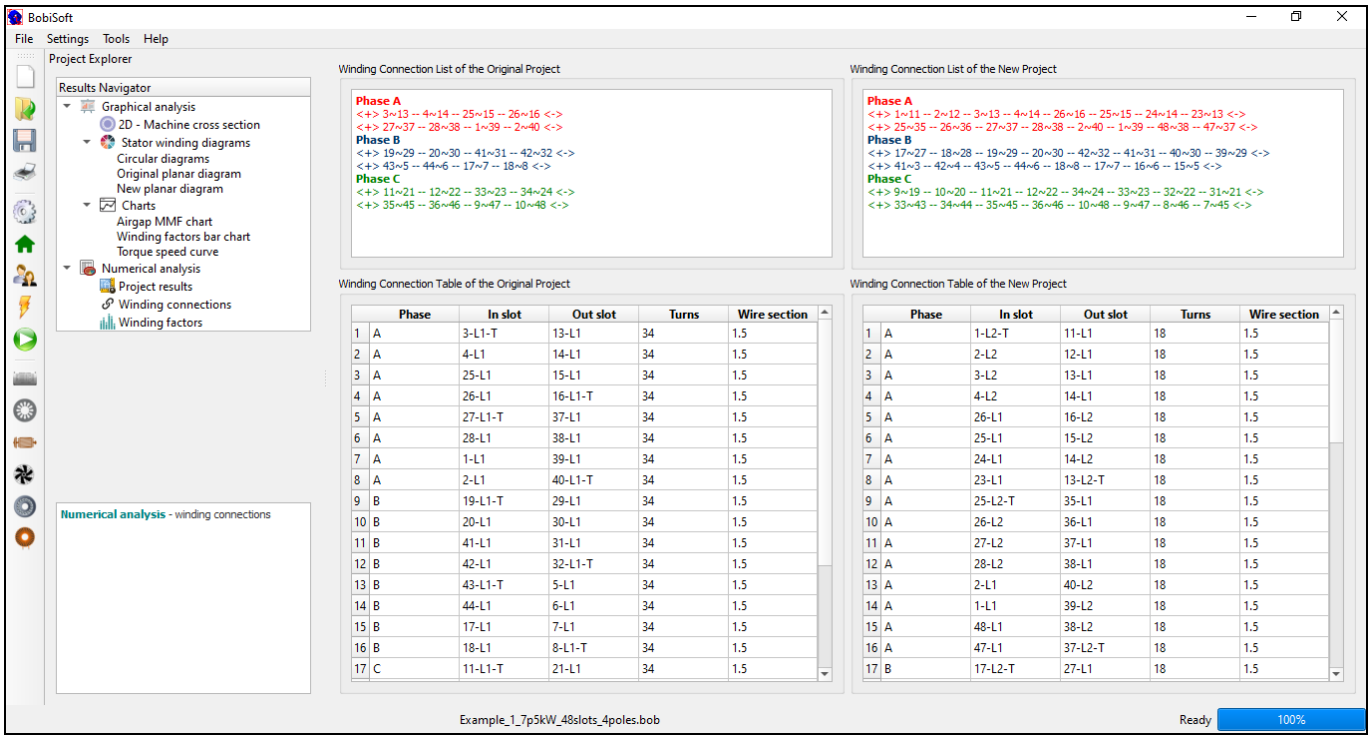


Fig. 44

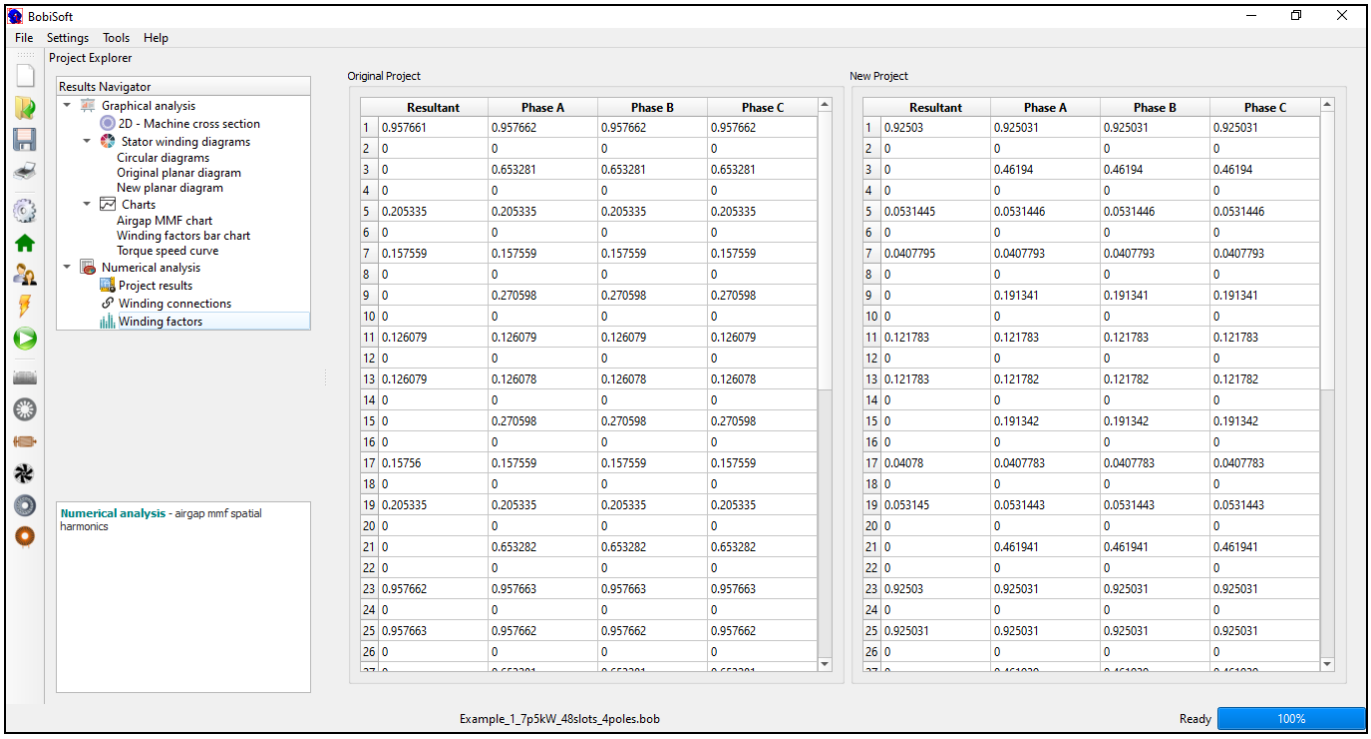


Fig. 45

The user can also print a report (directly to the printer or into a PDF) by clicking in the “Print” option, as shown in Fig. 46, which opens the window shown in Fig. 47. This window allows the user to select the information to be included in the report.

In the “Tools” menu (Fig. 48), there are some additional tools that may be useful for the user, such as the “Core Loss Test”, “Winding Optimizer”, “Motor Downsizing”, and “Winding Design Tool” panels, shown in Figs. 49, 50, 51, and 52, respectively.

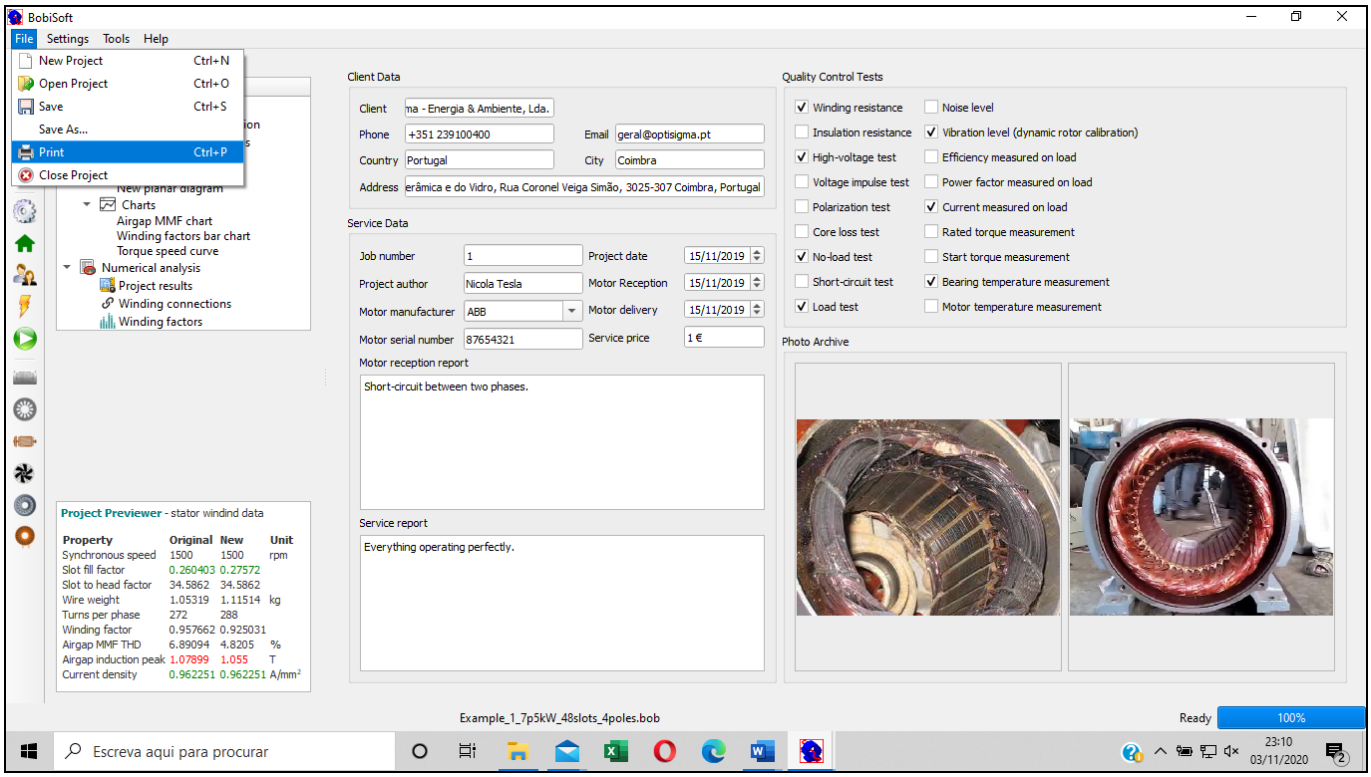


Fig. 46

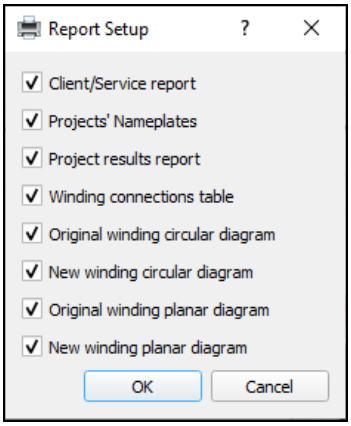


Fig. 47

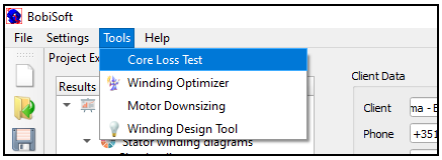


Fig. 48

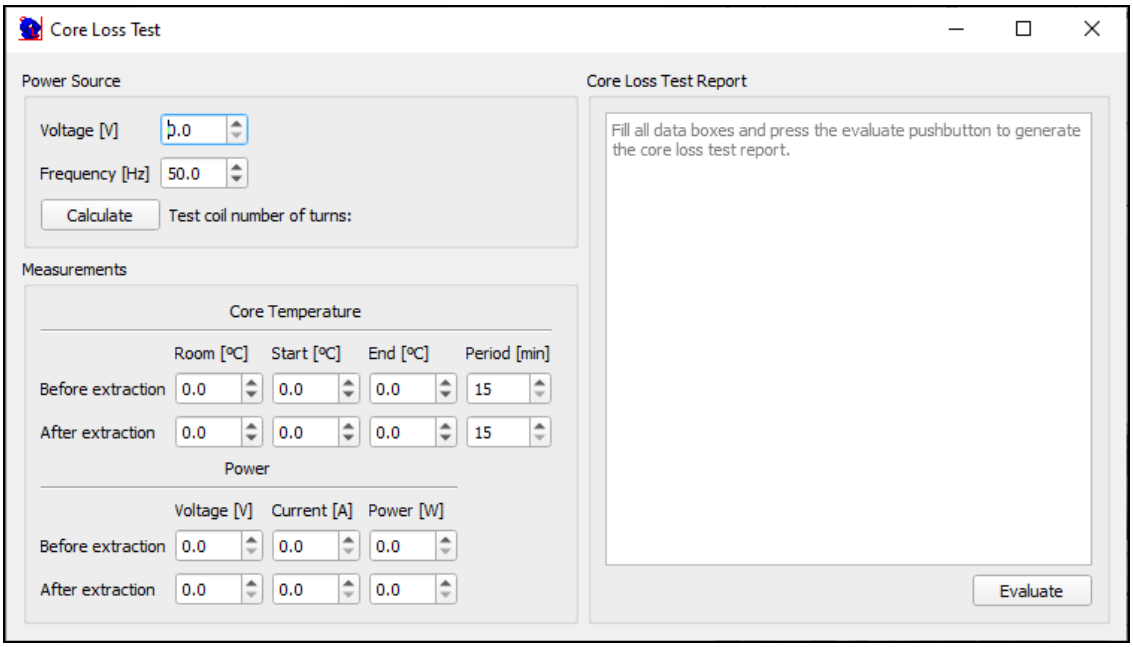


Fig. 49

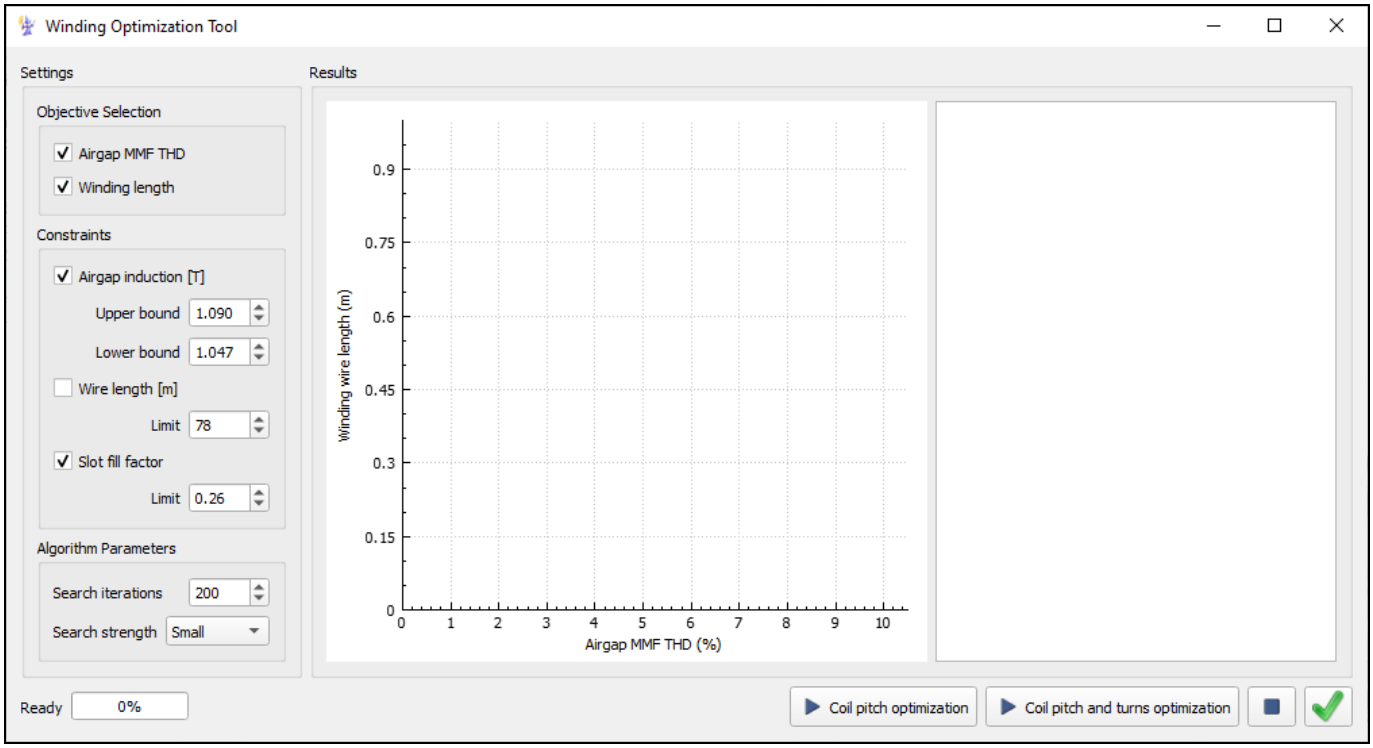


Fig. 50

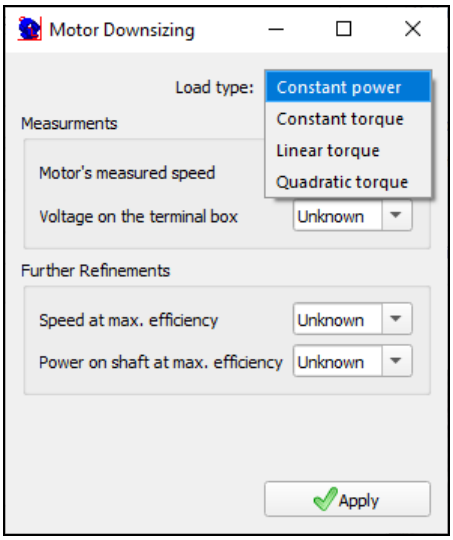


Fig. 51

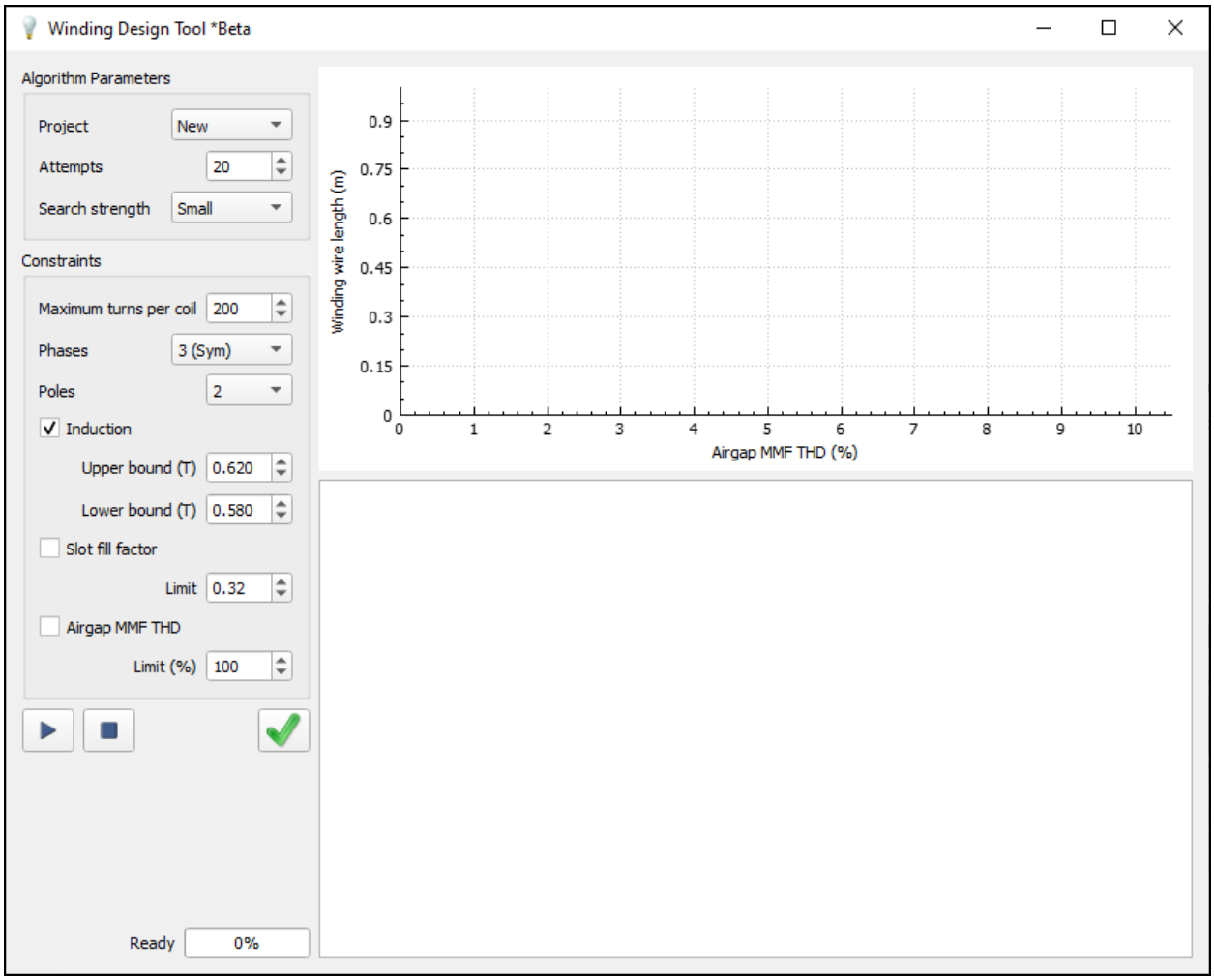


Fig. 52

4/11/2020