



MAGNETISiM

Defining Round: Tools

GUI Overview

TAB MENU

Core Geometry Tab (Ctrl+1)

Winding Geometry Tab (Ctrl+2)

Sim Config Tab (Ctrl+3)

Magnet Tab (Ctrl+4)

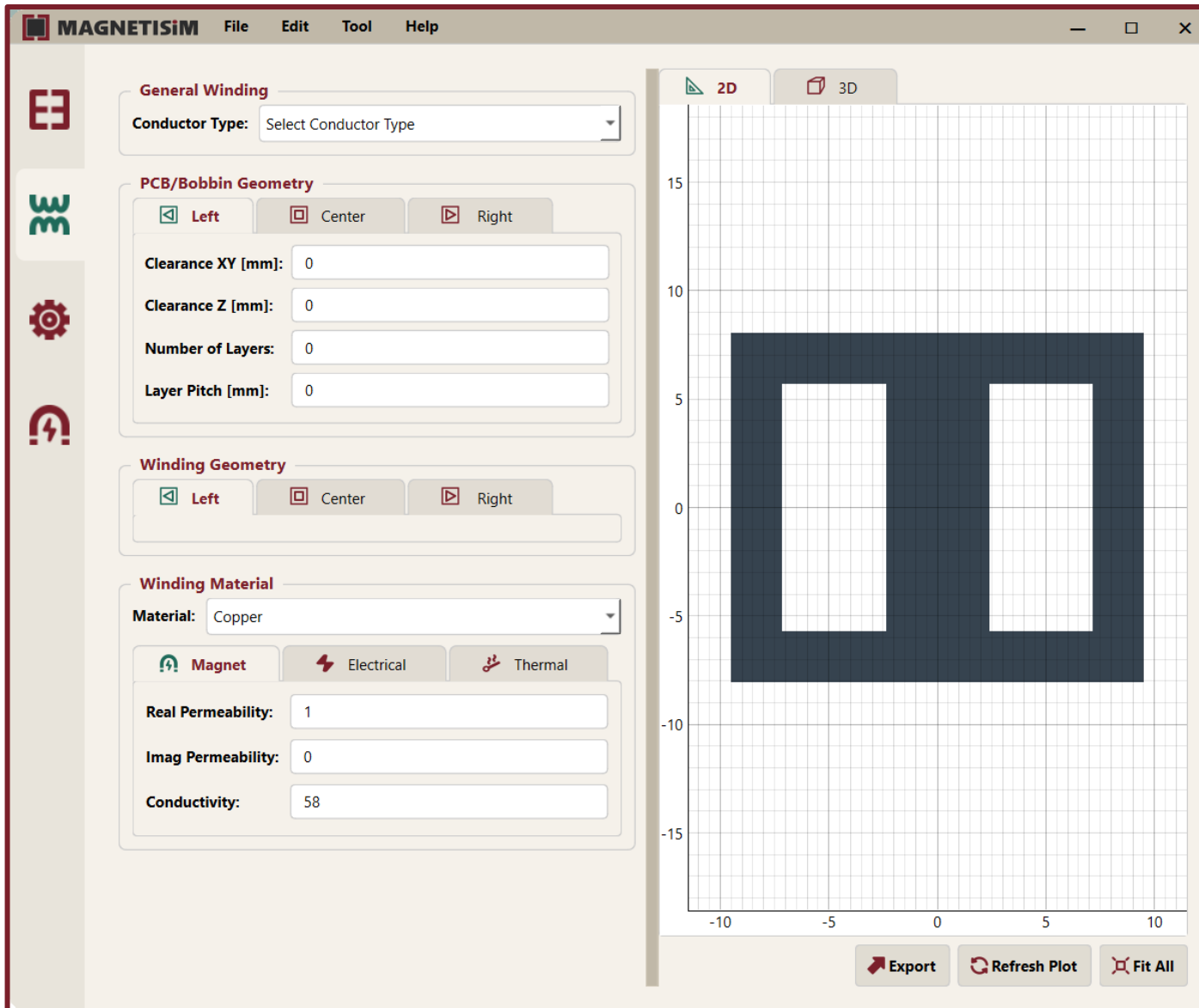
INPUT FRAME

The screenshot displays the MAGNETISiM software interface. At the top, a menu bar includes 'File', 'Edit', 'Tool', and 'Help'. The main window is divided into two primary sections. On the left is the 'INPUT FRAME', which contains two main panels: 'Core Geometry' and 'Core Material'. The 'Core Geometry' panel features dropdown menus for 'Manufacturer', 'Geometry Core', and 'Core Reference', followed by input fields for dimensions A [mm], B [mm], Bp [mm], C [mm], Cp [mm], D [mm], E [mm], F [mm], G [mm], I [mm], and Gap [mm], all currently set to 0. The 'Core Material' panel includes a 'Material' dropdown, four tabs for 'Magnet', 'Power Loss', 'Electrical', and 'Thermal', and input fields for 'Real Permeability', 'Imag Permeability', and 'Conductivity', all set to 0. A button labeled 'Add Permeability(f) Curve' is present, along with a checkbox for 'Permeability(f) from Internal-Database'. On the right is the 'MODELER WINDOW', which shows a 2D plot area with a grid. The plot axes range from -0.6 to 0.6 on both the x and y axes. At the bottom of the plot area are three buttons: 'Export', 'Refresh Plot', and 'Fit All'. A 'BAR TOOL' is indicated at the top right of the window.

BAR TOOL

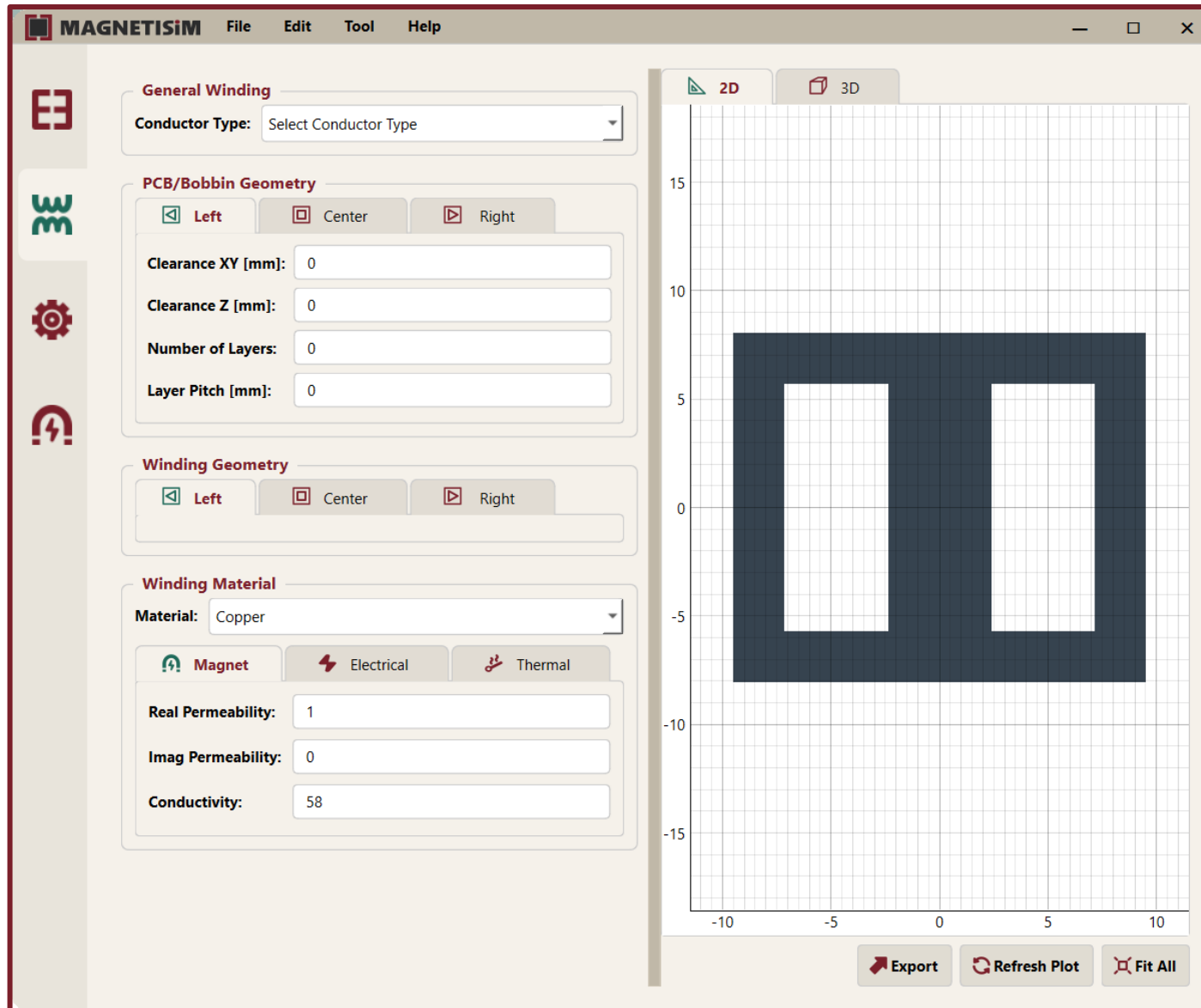
MODELER WINDOW

Winding Geometry Selection – PCB



Before configuring the winding details, make sure your core geometry is properly selected and visualized in the modeler window.

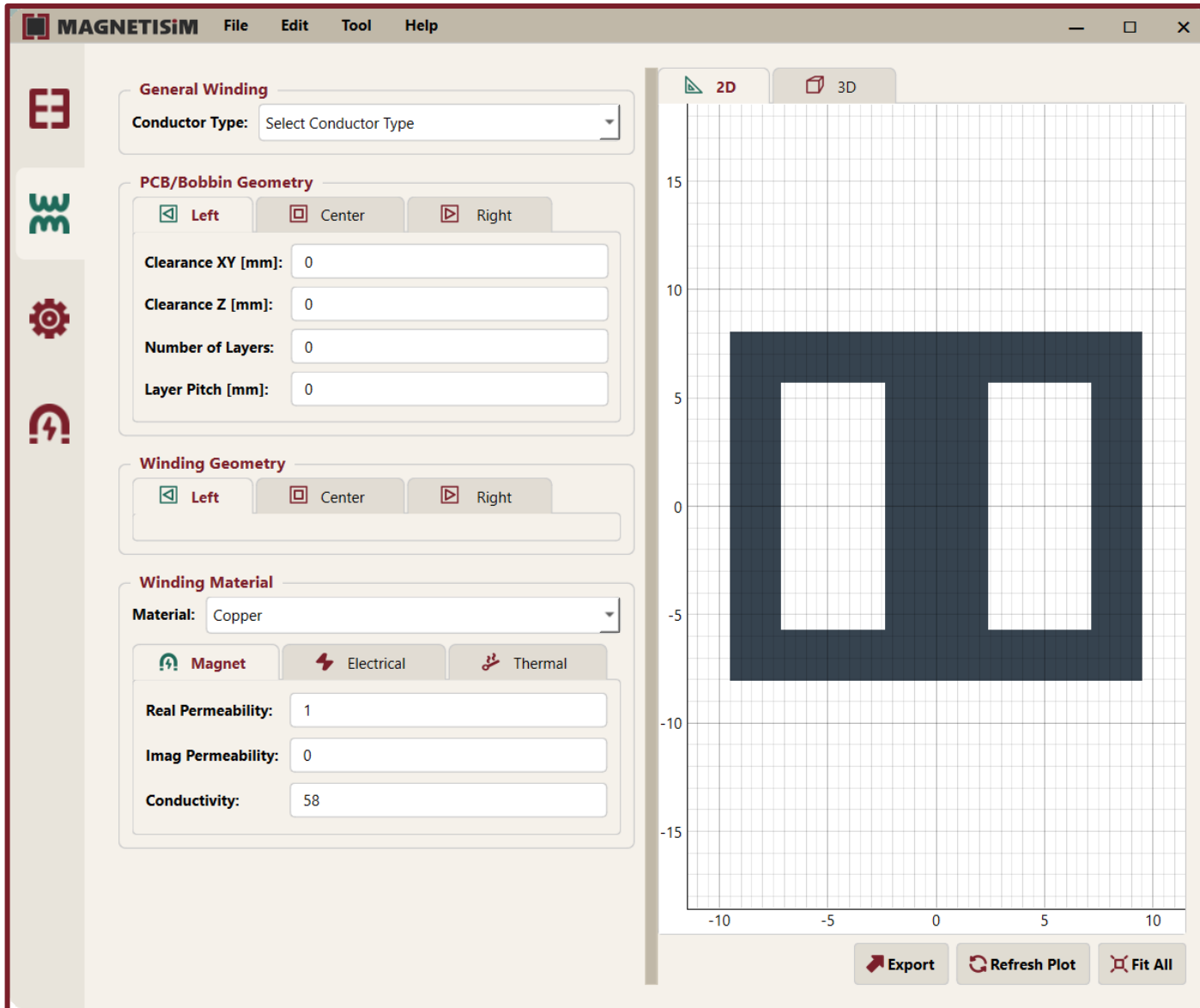
PCB/Bobbin Geometry



Once in the **Winding Geometry tab**, the first step is to configure the overall boundaries of your board in the **PCB/Bobbin Geometry section**.

- **Clearance XY** - This sets the horizontal safety margin or distance between the PCB traces and the core walls.
- **Clearance Z** - This defines the vertical safety distance.
- **Number of Layers** - Here you specify the total number of conductive copper layers your PCB design will have.
- **Layer Pitch** - This dictates the vertical separation between each of those PCB layers.

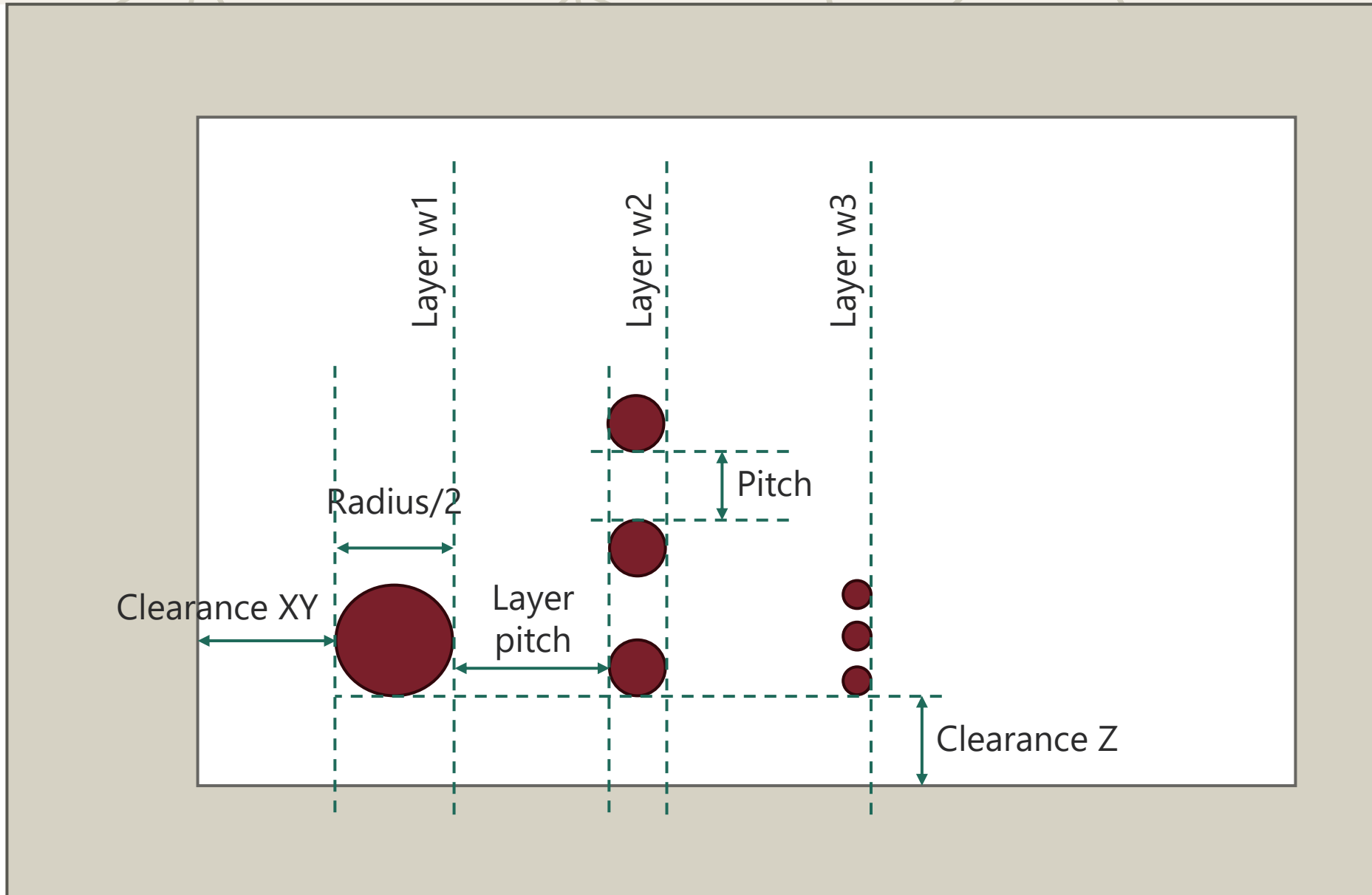
Winding Geometry



After defining the board structure, move to the **Winding Geometry section** to specify the physical dimensions of the tracks.

- **Distribution** - Distribution of the turns (Vertical or Horizontal).
- **Nturns** - The number of turns per layers.
- **Copper Radius** - The horizontal width of the copper trace.
- **Pitch** - The spacing between adjacent turns on the exact same layer.

Round Distribution parameters



The image displays the MAGNETISiM software interface, showing the configuration for a winding geometry. The interface is divided into three main sections: PCB/Bobbin Geometry, Winding Geometry, and Winding Material.

PCB/Bobbin Geometry:

- Position: Center
- Clearance XY [mm]: 1
- Clearance Z [mm]: 1
- Number of Layers: 3
- Layer Pitch [mm]: 0.3

Winding Geometry:

- Position: Center
- Distribution: V
- Nturns: 3,2,1
- Copper Radius [mm]: 0.4
- Pitch [mm]: 0.6

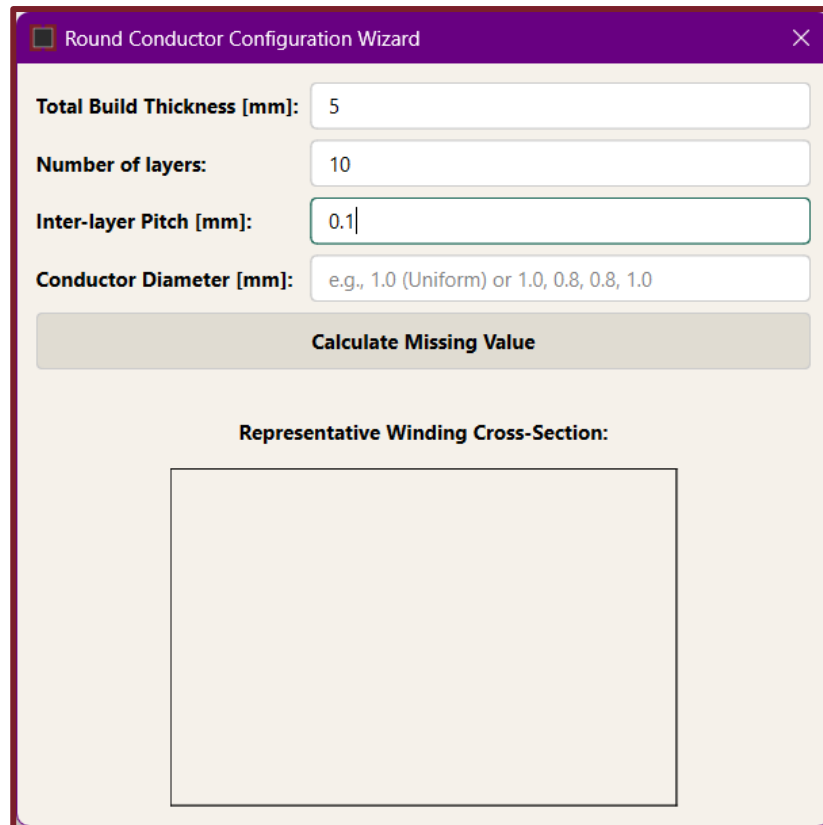
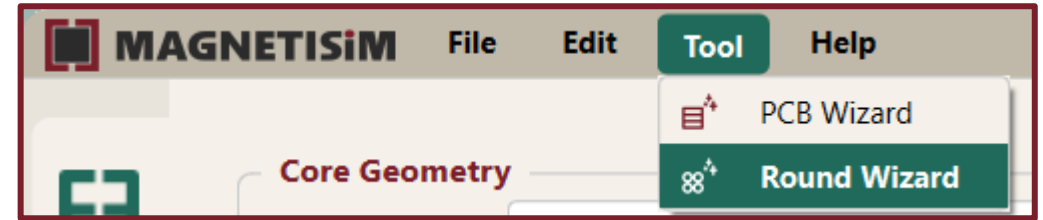
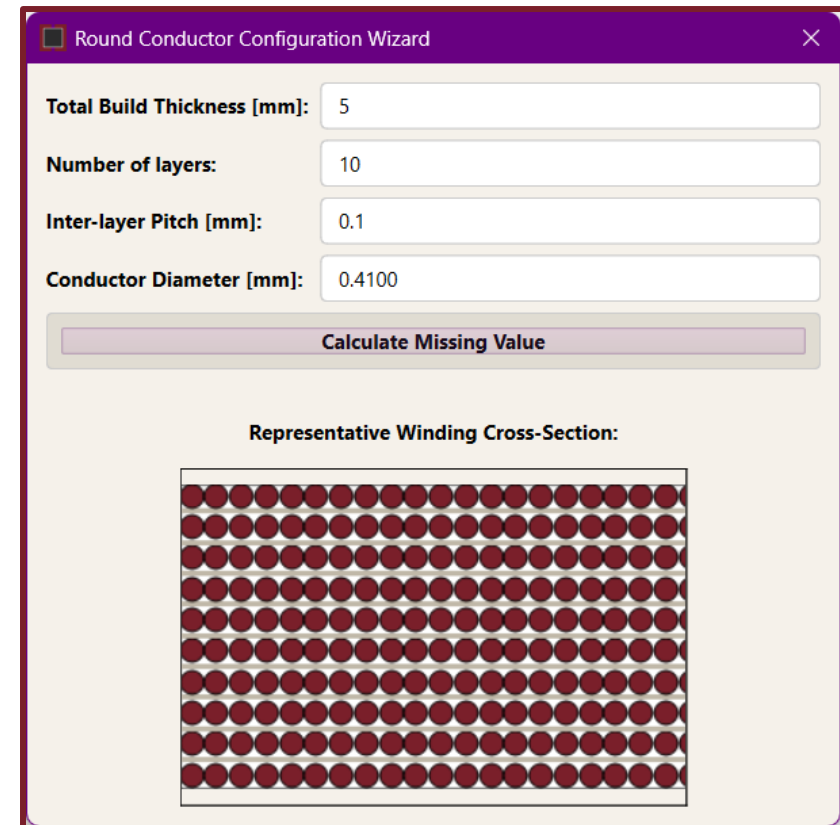
Winding Material:

- Material: Copper

The right side of the interface shows a 2D grid view of the winding geometry. The grid has a vertical axis from -1 to -5. Three winding windows are shown as red circles, labeled W1, W2, and W3. W1 is located at approximately (-1.5, -1.5). W2 is located at approximately (-3.0, -3.0). W3 is located at approximately (-4.5, -4.5).

Round Wizard

If your design uses conventional round wires instead of PCB traces, the **Round Wizard** is also available in the **Tool menu**. Here you define parameters like the **Total Build Thickness**, **Number of layers**, **Pitch**, and the **Conductor Diameter**. Again, by clicking "**Calculate Missing Value**", the system does the spatial calculations for you and displays a Representative Winding Cross-Section diagram, showing the exact distribution and packing of the round copper wires

A screenshot of the 'Round Conductor Configuration Wizard' dialog box. The title bar reads 'Round Conductor Configuration Wizard'. The dialog contains four input fields: 'Total Build Thickness [mm]' with the value '5', 'Number of layers' with the value '10', 'Inter-layer Pitch [mm]' with the value '0.1', and 'Conductor Diameter [mm]' with the text 'e.g., 1.0 (Uniform) or 1.0, 0.8, 0.8, 1.0'. Below these fields is a 'Calculate Missing Value' button. At the bottom, there is a section labeled 'Representative Winding Cross-Section:' followed by an empty rectangular box.A screenshot of the 'Round Conductor Configuration Wizard' dialog box, showing the results of the calculation. The 'Conductor Diameter [mm]' field now contains the value '0.4100'. The 'Calculate Missing Value' button is now disabled (greyed out). The 'Representative Winding Cross-Section:' section now displays a diagram of a square grid of red circles, representing the cross-section of the round copper wires.



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