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# Magnetic Builder User Manual

A Switching Power Converter Design  
Platform on the Internet

**[www.powerEsim.com](http://www.powerEsim.com)**



## Design Better Power Supply



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## **Powered by**

Apache Tomcat <http://jakarta.apache.org>

MySQL <http://www.mysql.com>

SUN JAVA <http://java.sun.com>



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## 1 Introduction

### 1.1 A New CAD tool on the Internet for Switching Power Supplies

PowerEsim, [www.powerEsim.com](http://www.powerEsim.com), is a new Web based design and simulation tool for switching power supplies. The basic operation does not require login or subscription; it is a free tool for users all around the world. Users can enjoy advanced features by entering PowerEsim through the "Sponsor Link," these links can be seen at "Free Account" page. This new concept eliminates complicated licensing and software installation process. Design service is readily available anytime, anywhere. It is so easy to use through a generic Web browser that you need no training.

Its huge component database contains thousands of items available in the market. Complete Bill of Materials is available at a click on the mouse. Reports are ready and no more effort to produce tedious documents.

### 1.2 A Tool for Engineers

Choose a circuit topology, put in your power supply specifications and click. A complete design is ready. Engineer can optimize the design automatically or manually to produce the best product performance.

### 1.3 A Tool for Managers

Fast response to RFQs, more control on product cost and better product quality. Surprise your customers by the speed and details of your proposals with the help of ready to use reports from PowerEsim. A multi users and floating seat corporate license can make all engineers enjoy the full features of PowerEsim and bring the design process becomes standardize.

### 1.4 A Tool for Component Vendors

Promote your components directly to product design engineers through PowerEsim. No more application notes needed. Reduce delay due to design mistakes.

### 1.5 A Tool for Trainees

Students and trainees learn quickly through PowerEsim. Simulated waveforms and analysis give real life demonstration.

## 2 System Requirement

Flash Player 8, IE 6.0 on Windows XP OS, Safari on MAC OS

### 3 Magnetic Builder

#### 3.1 What is magnetic builder?

Magnetic Builder is a tool for users to create a magnetic component, e.g. transformer or inductor, by selecting different ferrite core, bobbin type and winding method. Engineering drawing will be automatically produced to reduce user workload.

All the transformer build can be saved and reused onto a power supply in PowerEsim, as long as the winding number are matched.

#### 3.2 Create a new transformer or inductor

##### 3.2.1 Click the button "Magnetic Builder"



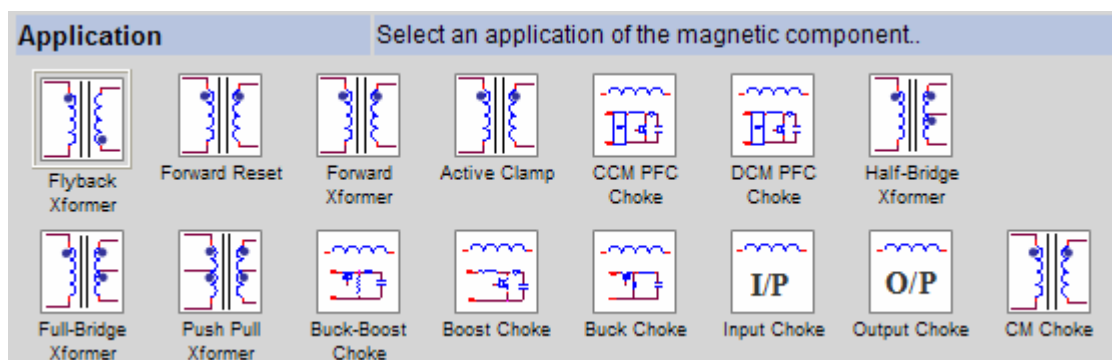
Tools will be seen at the front page when user goes to [www.powerEsim.com](http://www.powerEsim.com), click the tool Magnetic Builder will direct the user go to the front page of Magnetic Builder.

### 3.2.2 Front page of Magnetic Builder



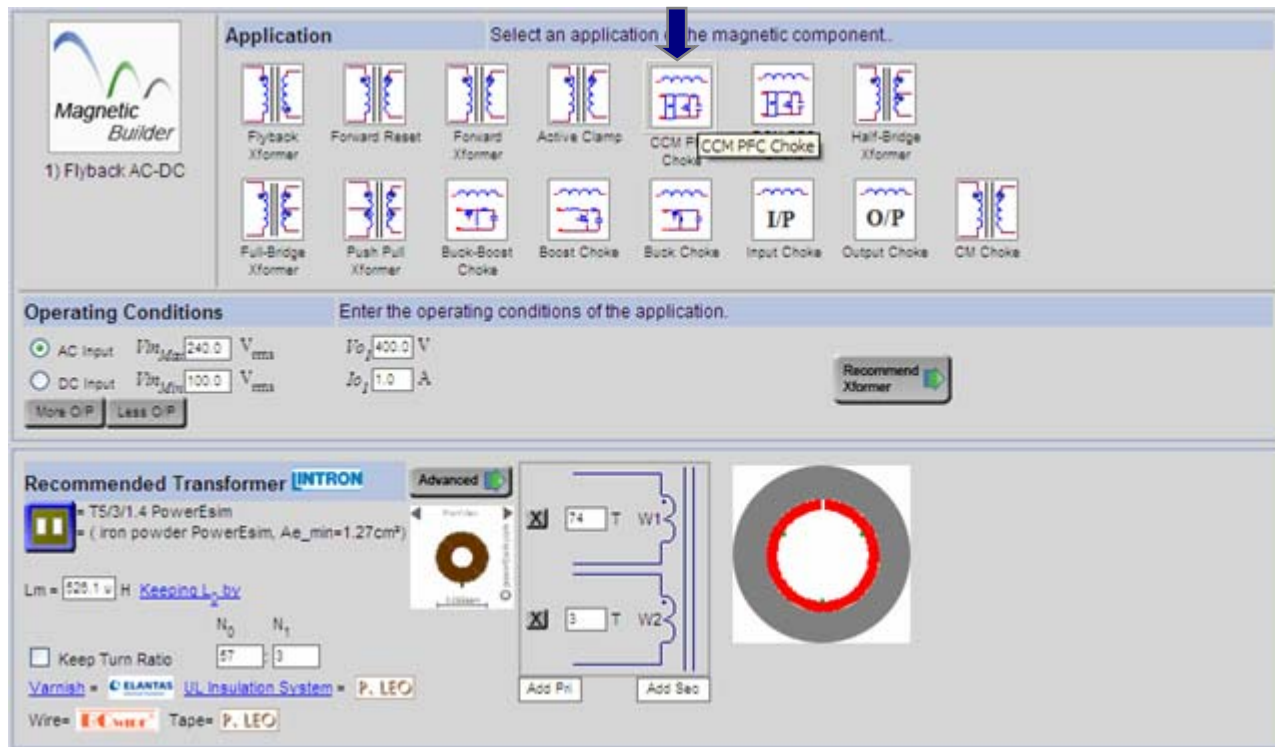
The front page of the Magnetic Builder is designed to help user to design magnetic component with least information. In tradition, there can be a lot of engineering rules to govern the design of a transformer, but the most simple and sufficient question for designing a transformer is simply as "I want a transformer used in a 12V@4A Flyback converter with input range from 100V to 200V." An expert system has been built to help user to get a transformer or inductor design by asking very simple question. See below to show how we do that.

#### 3.2.2.1 Application of the magnetic component

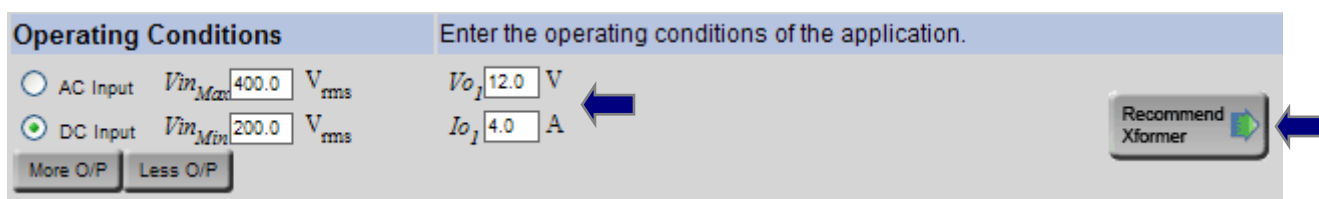


User can firstly select an application of the magnetic components; it can be the main transformer in a Flyback converter, a common mode choke for EMI purpose, a PFC choke, etc.

For example, user can click the "CCM PFC Choke" in the Application region, the expert system will recommend a toroid to the user as shown below.



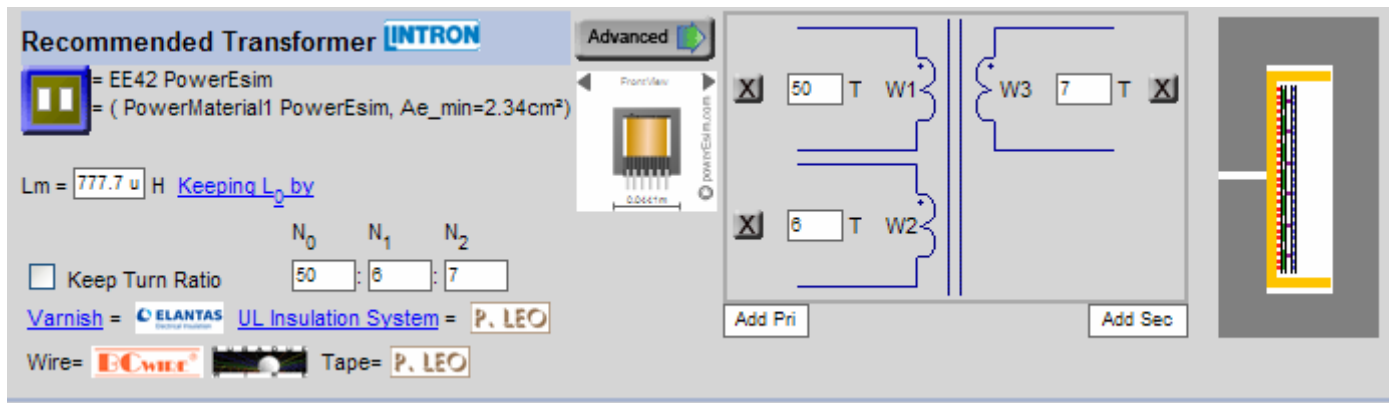
### 3.2.2.2 Operating conditions of the application



To give sufficient information to our expert system behind, user should enter the operating condition of the application, e.g. input is 200Vdc - 400Vdc and output is 12V 4A. Then click the button "Recommend Xformer," a transformer will winding details will be shown as below.

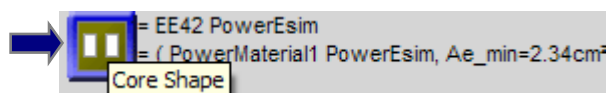


### 3.2.2.3 Simplified Magnetic Builder



A simplified version of Magnetic Builder can be found on the bottom of the front page. User can change the core used, wire used, number of turn, etc for the transformer; most importantly, the arrangement of wire in the winding window will be updated with the corresponding change.

### 3.2.2.4 Change to different magnetic cores



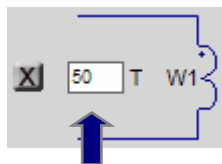
Clicking the Core Shape button will direct user to a Component Finder page where user can extract magnetic core from the PowerEsim server database by filling the proper range and change other cores for that application.

### 3.2.2.5 Change to different magnetizing inductance



User can edit the value in the text box corresponding to  $L_0$ , which is the magnetizing inductance of the transformer, the expert system behind will either change the gap length or number of turn to fulfill the user's wish. User can choose which way our system determines the item being changed by clicking into "[keep  \$L\_0\$  by](#)" page.

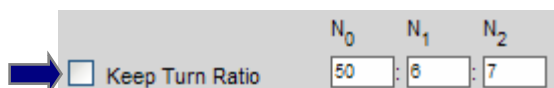
### 3.2.2.6 Change number of turn



User can edit the value in the text box besides each winding to change the number of turn at that winding. In default setting, user can change each winding's number of turn separately without concerning any turn ratio relationship between each winding.

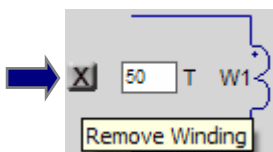
Once the value change the corresponding winding structure picture will be updated automatically too, user can immediately know how much space is left in the winding window.

### 3.2.2.7 Change turns ratio



Some users like to keep the turn ratio when changing one number of turn, so the other winding's number of turn will change according when one main turn is changing its absolute number of turn. This can be done by clicking the check box "Keep Turn Ratio" as shown above. The wanted turn ratio between each winding can be edited in the text box as shown above too.

### 3.2.2.8 Delete a winding



A winding can be deleted by clicking the "Remove Winding" button beside the number of turn text box.

### 3.2.2.9 Add windings



Windings can be added by clicking the button "Add Pri" to add a winding at primary side or click "Add Sec" to add a winding at secondary side.

### 3.2.2.10 Changing other details

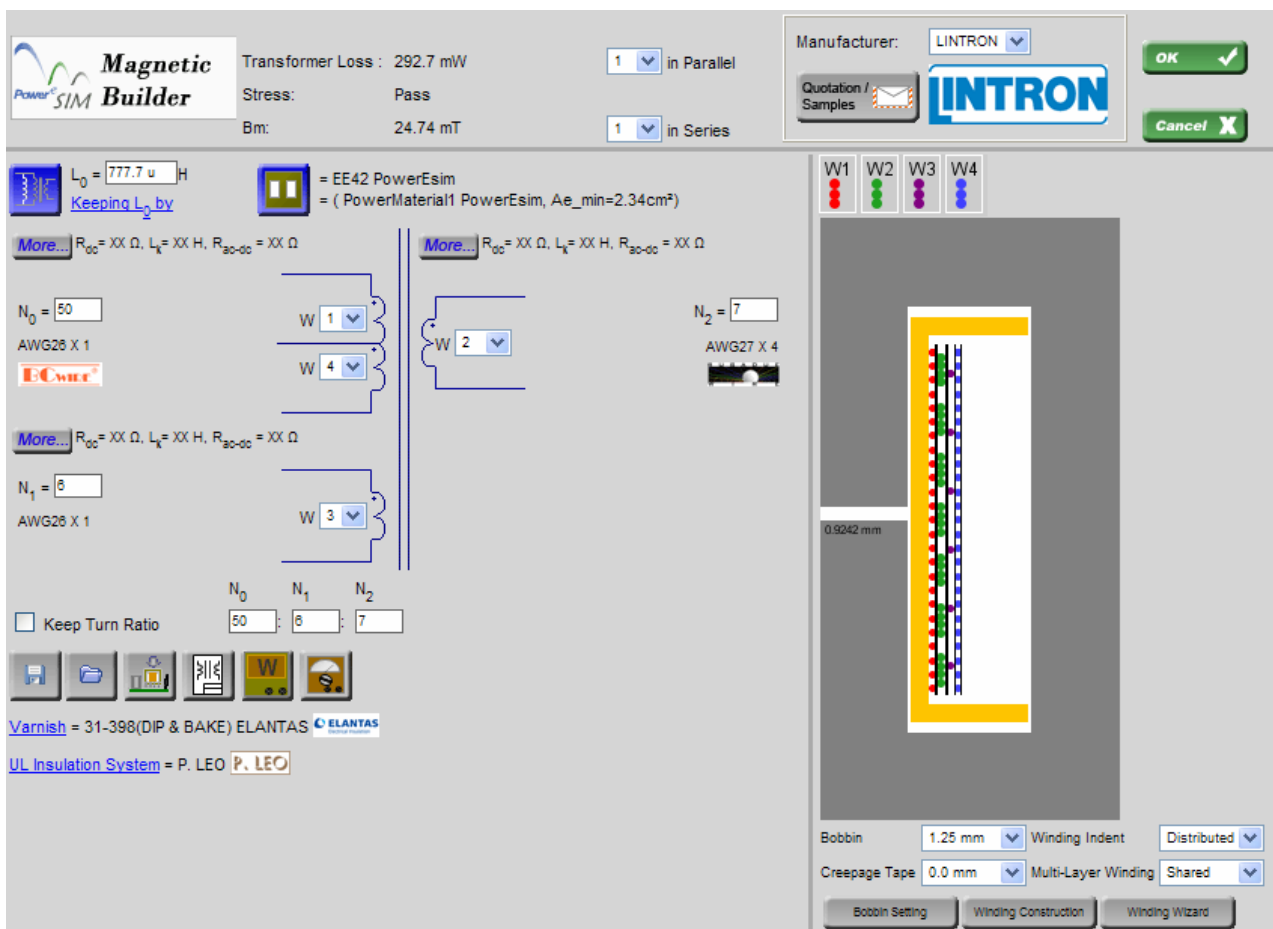


Other details like Varnish, UL insulation system can also be edited by clicking into the "Varnish" and "UL Insulation System" page.

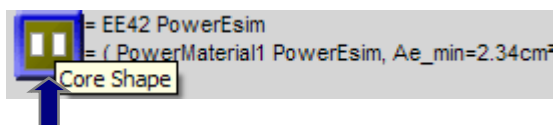
### 3.3 Advanced page of Magnetic Builder



Magnetic Builder can do a lot more than the features shown on a simplified version. By clicking the button "Advanced" user can go to the advanced page of Magnetic Builder. The advanced page can be reached by clicking the magnetic component on a power supply schematic too.

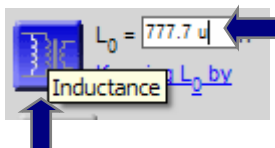


#### 3.3.1 Change different magnetic cores at Magnetic Builder advanced page



Clicking the Core Shape button will direct user to a Component Finder page where user can extract magnetic core from the PowerEsim server database by filling the proper range and change other cores for that application.

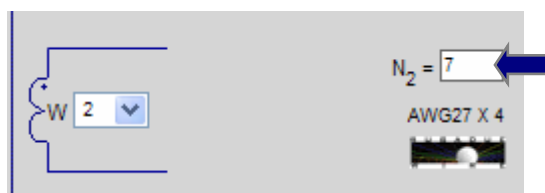
### 3.3.2 Change magnetizing inductance at Magnetic Builder advanced page



User can edit the value in the text box corresponding to  $L_0$ , which is the magnetizing inductance of the transformer, the expert system behind will either change the gap length or number of turn to fulfill the user's wish. User can choose which way our system determines the item being changed by clicking into "[keep  \$L\_0\$  by](#)" page.

A list of inductance can be generated by clicking into the button "Inductance," user will be directed to a Component Finder, which turn the value inductances into a component. That is very useful in the optimization of a power supply, as user can immediately know the performance of different inductances affecting the total losses and the transformer losses by simply highlighting the elements in the list.

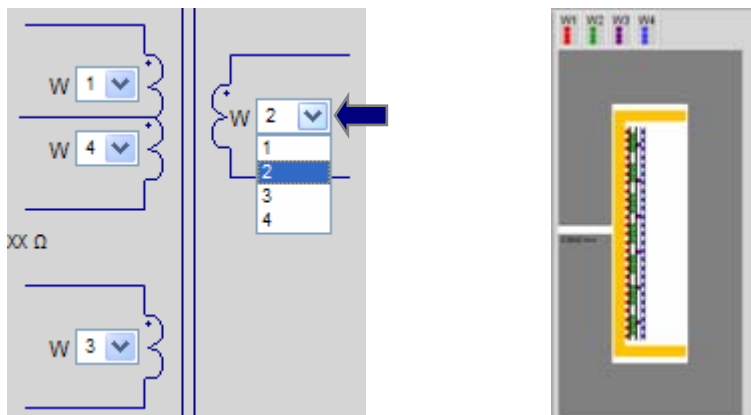
### 3.3.3 Change number of turn at Magnetic Builder advanced page



User can edit the value in the text box besides each winding to change the number of turn at that winding. In default setting, user can change each winding's number of turn separately without concerning any turn ratio relationship between each winding.

Once the value change the corresponding winding structure picture will be updated automatically too, user can immediately know how much space is left in the winding window.

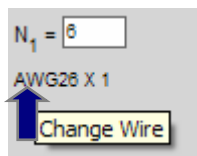
### 3.3.4 Change the sequence of windings Magnetic Builder advanced page



User can arrange the winding sequence of all winding by clicking the combo box besides winding at the transformer schematic. The number shows in the combo box is the winding sequence -- the smaller the number means the winding is closer to the inside wall of the bobbin, the larger the number means the winding will be at the outer side.

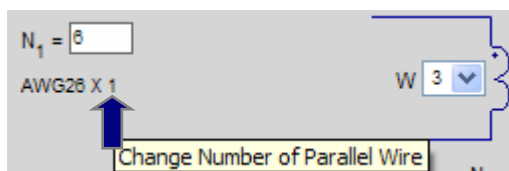
The corresponding change of the winding structure will be immediately updated and displayed at the left side of the page. Different colors are used for user to distinguish the winding sequence too.

### 3.3.5 Change wire used Magnetic Builder advanced page



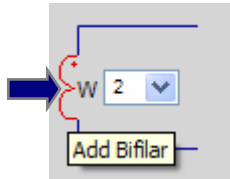
The size, brand or wire type can be changed by clicking the wire wording besides the corresponding winding. It will redirect user to the Component Finder page, a list of wire can be generated, and any one of them can be selected too.

### 3.3.6 Change number of parallel wire at Magnetic Builder advanced page



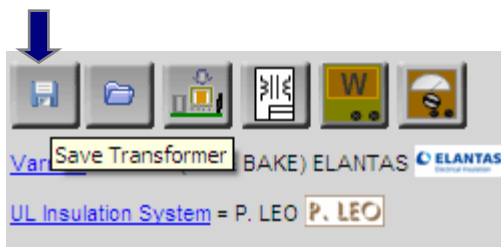
The number of parallel wires can be determined by the user, click the number beside the wire used, it will redirect user to a Component Finder page, which will treat the number of parallel wire to be a component, hence a list of numbers can be generated and any one of them can be selected too.

### 3.3.7 Bifilar winding



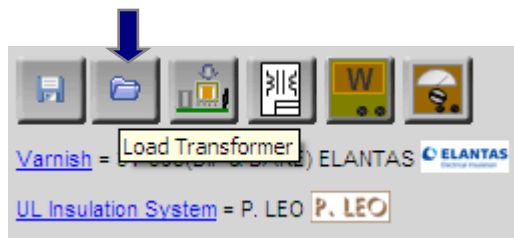
Click the winding that is supposed to be bifilar with other winding, a page will be displayed showing other possible bifilar winding, click the check box to choose the other bifilar winding.

### 3.3.8 Save a transformer



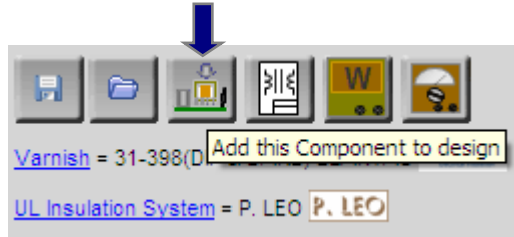
Clicking the "Save Transformer" button will activate user's side OS and user can save the transformer in user's computer or user's side network drive and reuse as a stand-alone transformer or replace a existing transformer in a power supply.

### 3.3.9 Load or open a transformer



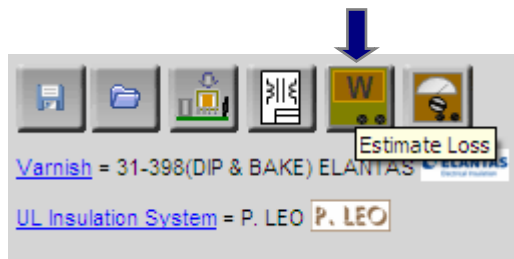
Clicking the "Load Transformer" button will activate user's side OS and user can load the transformer file in user's computer or user's side network drive. It can be reused as a stand-alone transformer or replace a existing transformer in a power supply.

### 3.3.10 Add a transformer in a existing power supply BOM

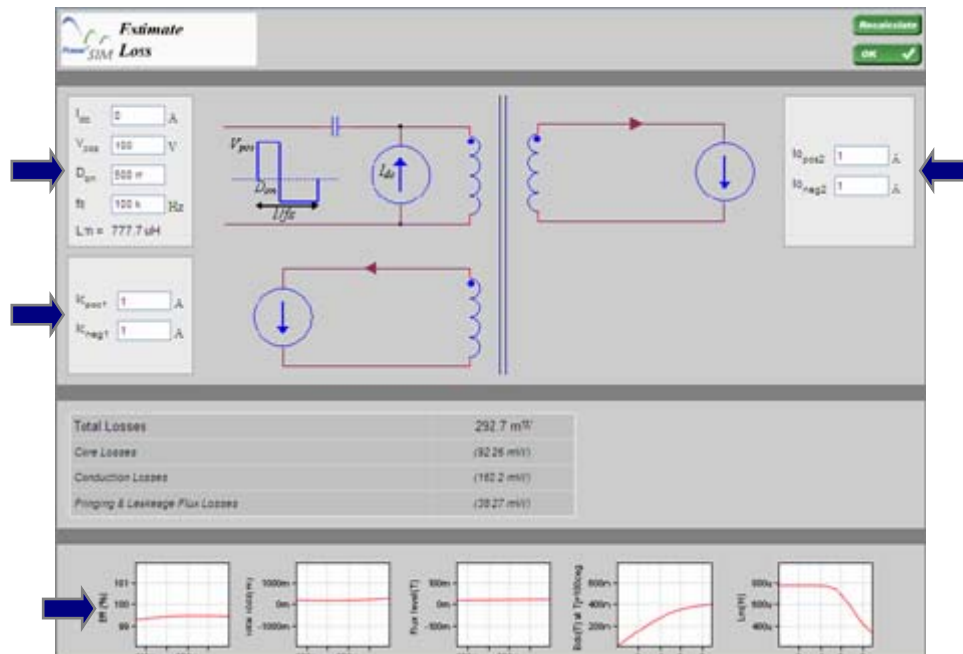


Click the "Add this Component to design" button will append this transformer into the existing power supply BOM as one extra component other than the component shown on the power supply schematic. .

### 3.3.11 Estimate the performance and losses of a transformer

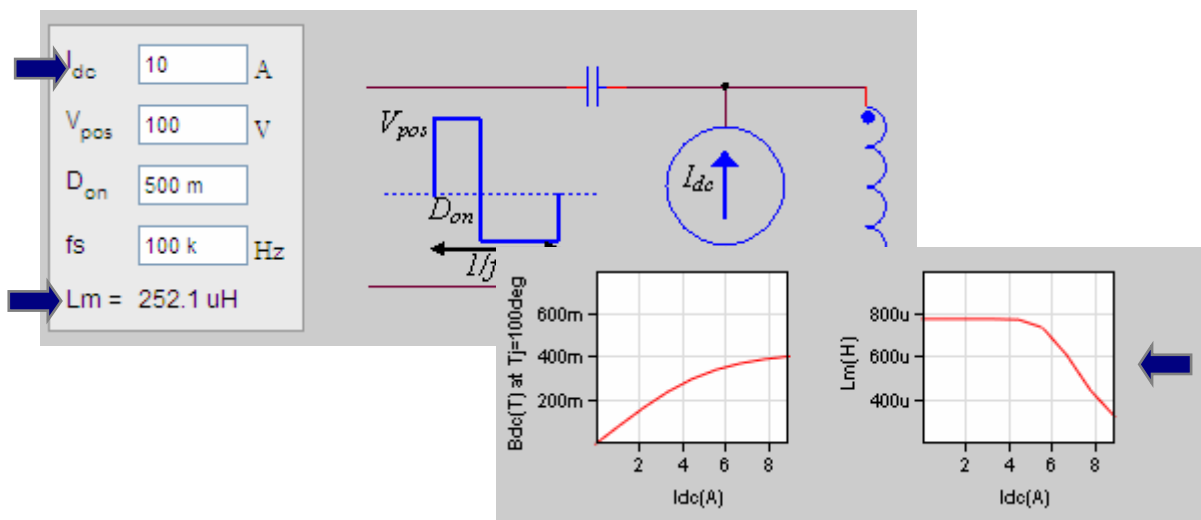


Clicking the "Estimate Loss" button will redirect user to estimate loss page as shown below.



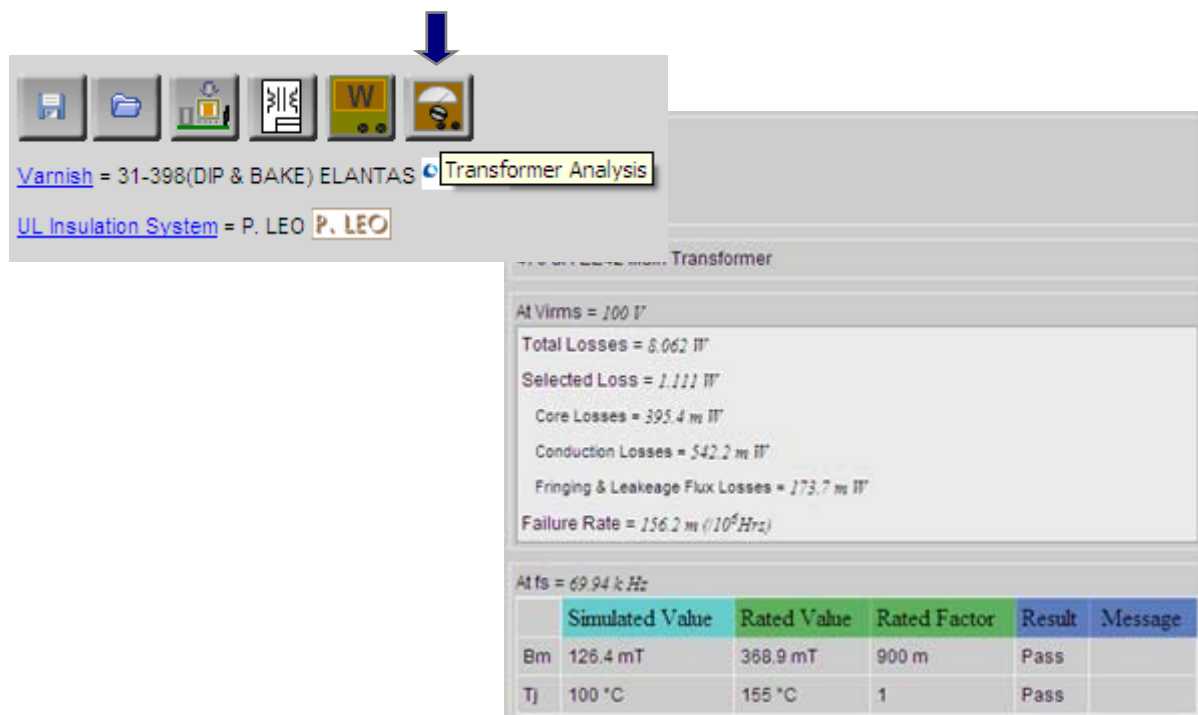
User can simulate the loss and other performance of the transformer by applying an ac square wave with programmable positive duty cycle  $D_m$ , peak positive voltage  $V_{pos}$ , switching frequency  $f_s$  and dc bias current  $I_{dc}$ . Other winding can also program a positive and negative loading current which will be conducted corresponding to the dot sign and in ac square wave. Corresponding performance curve is shown at the bottom of the page.

### 3.3.11.1 Inductance against dc bias current



User can know the inductance of an inductor or transformer under dc current bias. Inductances shown on the Estimate Loss page will be changed accordingly with the dc bias current  $I_{dc}$ . A corresponding curve can be found at the bottom of the page too.

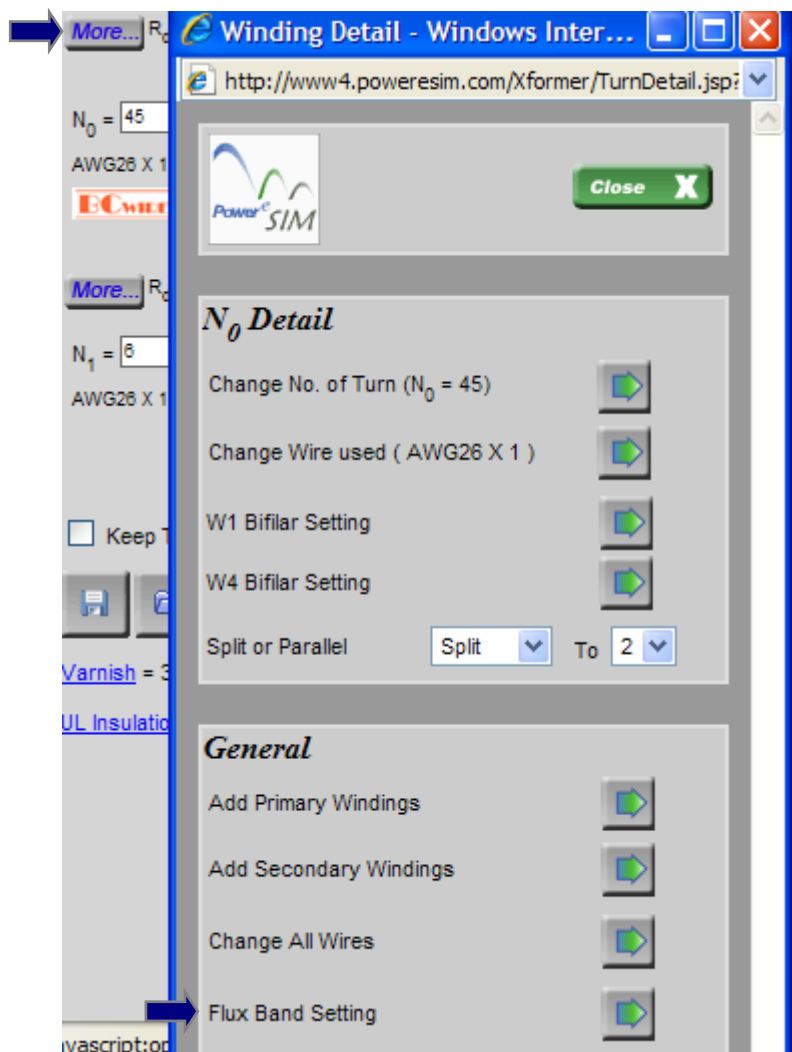
### 3.3.12 Analysis the loss and other details of the transformer



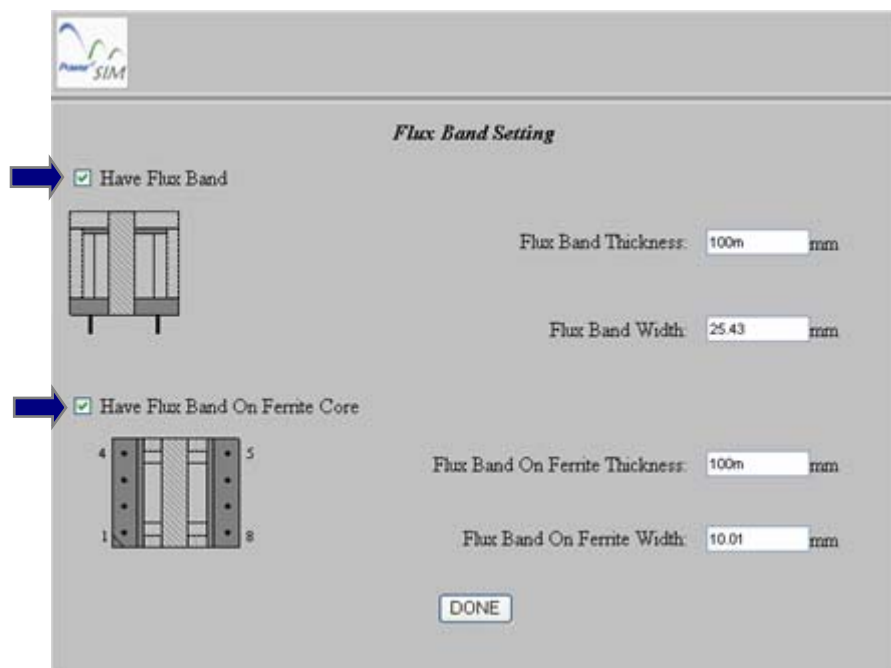
For transformer or inductor used in a power supply, the performance and losses under the operation of the power supply will be known by clicking the button "Transformer Analysis," it will redirect user to the Transformer Analysis page and the losses distribution, Bm and other details will be known.



### 3.3.13 Add a flux Band on a transformer or inductor

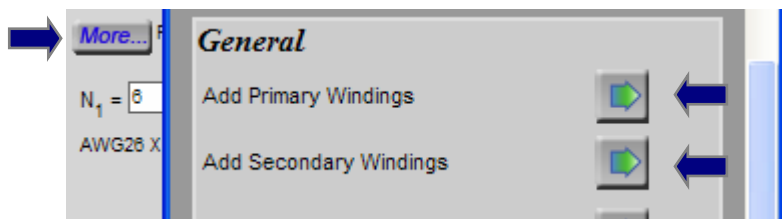


Click the button "More. . ." besides any winding, a window will pop up, which shows all the details for a winding. Click the button "Flux Band" and this will direct to a Flux Band Setting page as shown below.

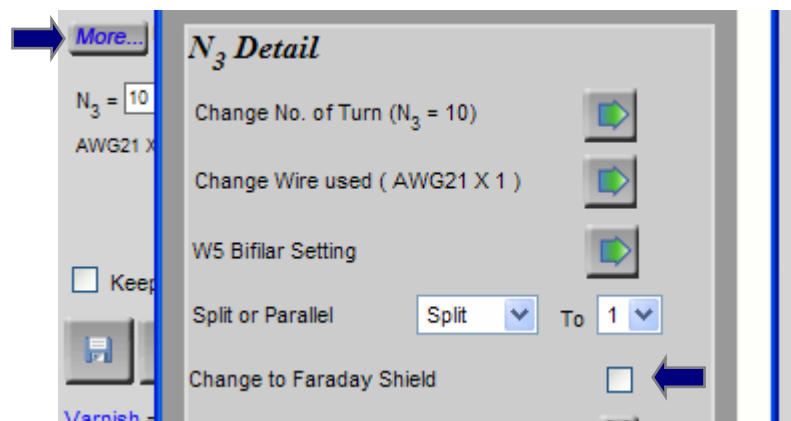


Two types of flux band are supported, which is flux band around the bobbin and flux band around the ferrite core. User can click the checkbox to choose for the type and enter corresponding flux band dimensions.

### 3.3.14 Add a Faraday shield in a transformer

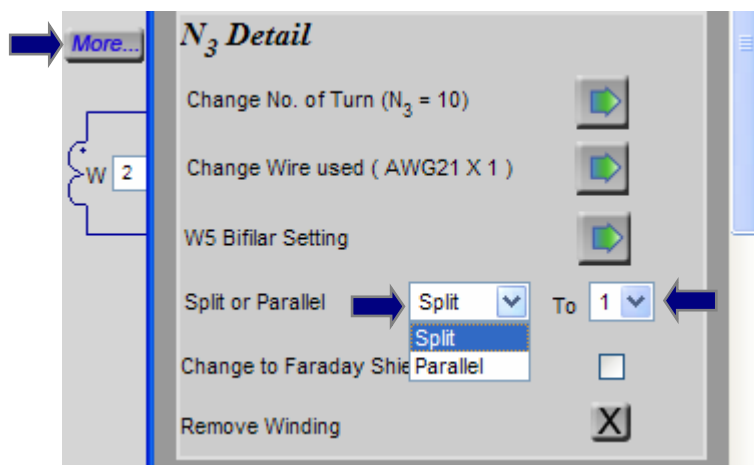


Click the "More . . ." button to go into winding details page, a Faraday shield is considered as an extra copper foil winding with terminated at one end. User should first add a winding on primary or secondary side first.



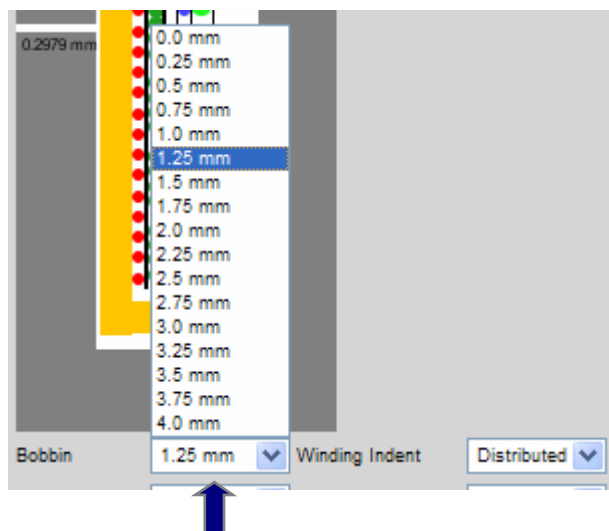
User can then change a particular winding to Faraday shield by clicking button "More. . ." and go into the winding details page. Clicking the check box "Faraday Shield" can turn the winding becomes Faraday shield. Only extra windings can be changed to Faraday's Shield.

### 3.3.15 Split a winding or parallel another winding on an existing winding



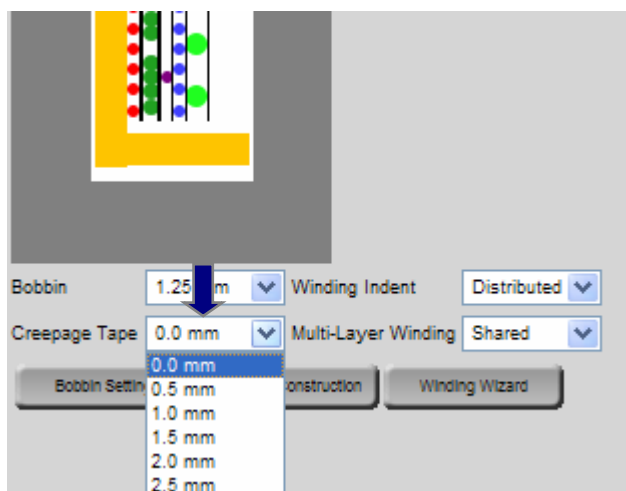
Click button "More. . ." to go into the winding details page, user can split a winding or make more winding parallel to the existing by choosing from the combo box "Split or Parallel." Number of winding being split or parallel can be chosen in the combo box "To"

### 3.3.16 Adjust overall bobbin thickness



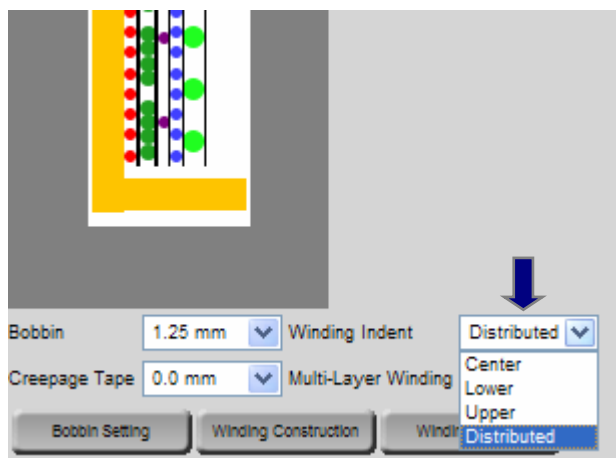
Overall bobbin thickness can be adjusted by choosing the combo box "Bobbin". All the left, upper and lower bobbin thickness will be updated at once.

### 3.3.17 Adjust the overall creepage tape width



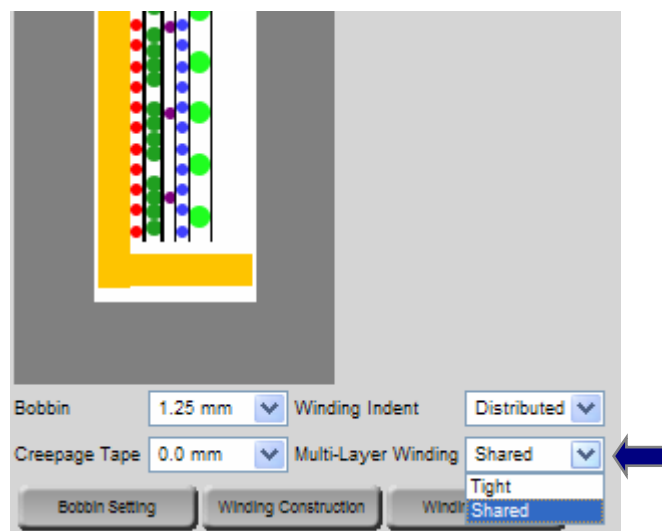
Overall creepage tape width can be adjusted by choosing the combo box "Creepage Tape." All the creepage tape will be set to the selected width.

### 3.3.18 Adjust the Overall winding indent



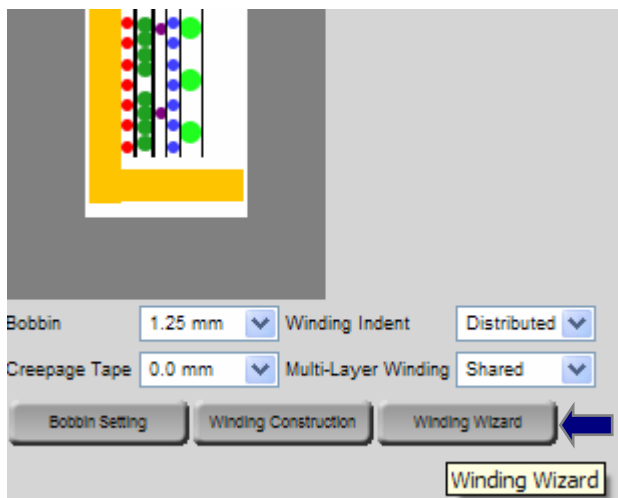
Overall winding indent can be chosen at the combo box "Winding Indent." All winding will be wound according to the selected winding procedure. "Center" means all windings will be located at the center of the layer, "Lower" means all windings will be located at the lower part of the layer; "Upper" means all windings will be located at the upper part of the layer, "Distributed" means all winding will be located evenly at the layer.

### 3.3.19 Adjust the Overall Multi-Layer Winding setting

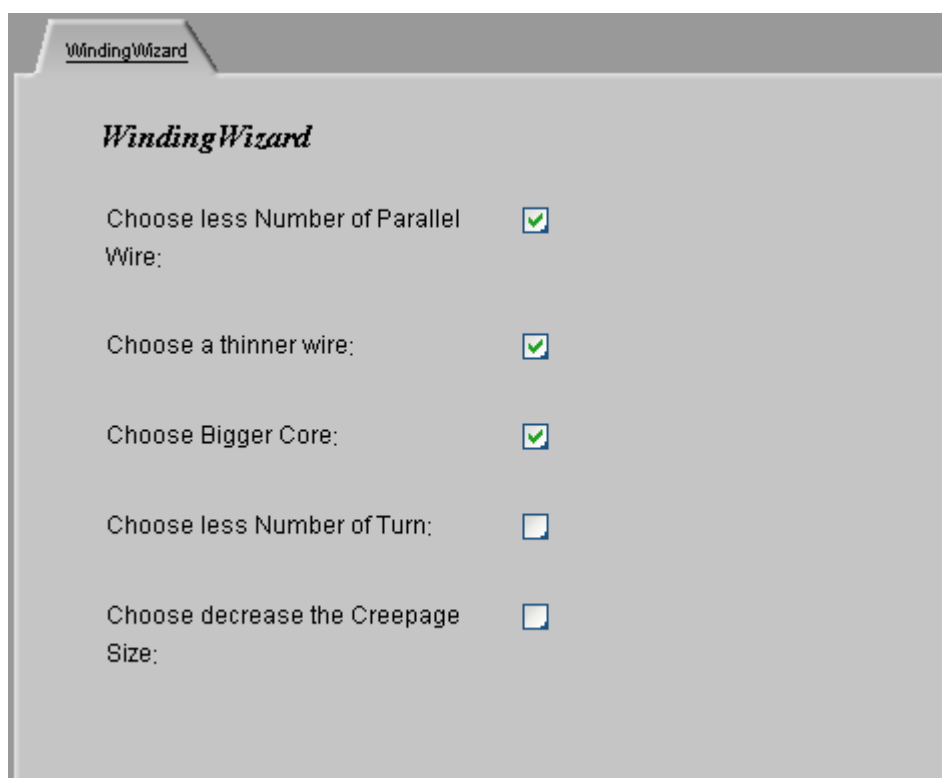


Overall wire distribution at multi-layer winding can be chosen at the combo box "Multi-Layer Winding." The number of turn in all multi-layer winding will be packed according to the selected winding procedure. "Share" means the number of turns it will try to make equal in all layers for one winding, "Tight" means all turns will try to pack as tight as possible in all layers for one winding.

### 3.4 Change the Winding Wizard option.



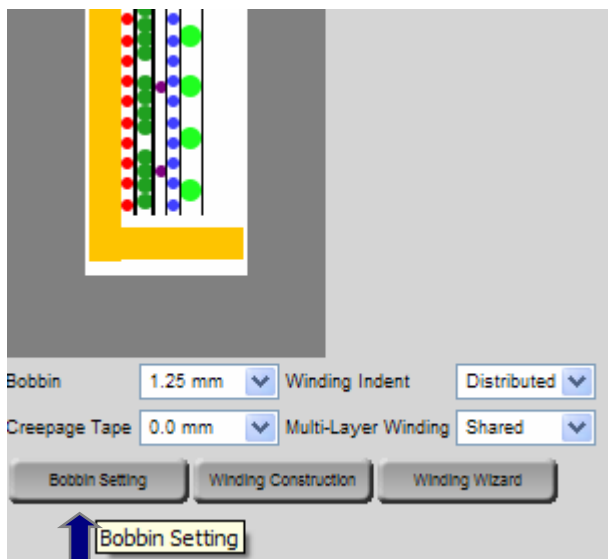
Winding wizard is a page with rules for helping user to rebuild a transformer that is physically not possible to build. Click the button “Winding Wizard”, user can see the following page and set the winding wizard option.



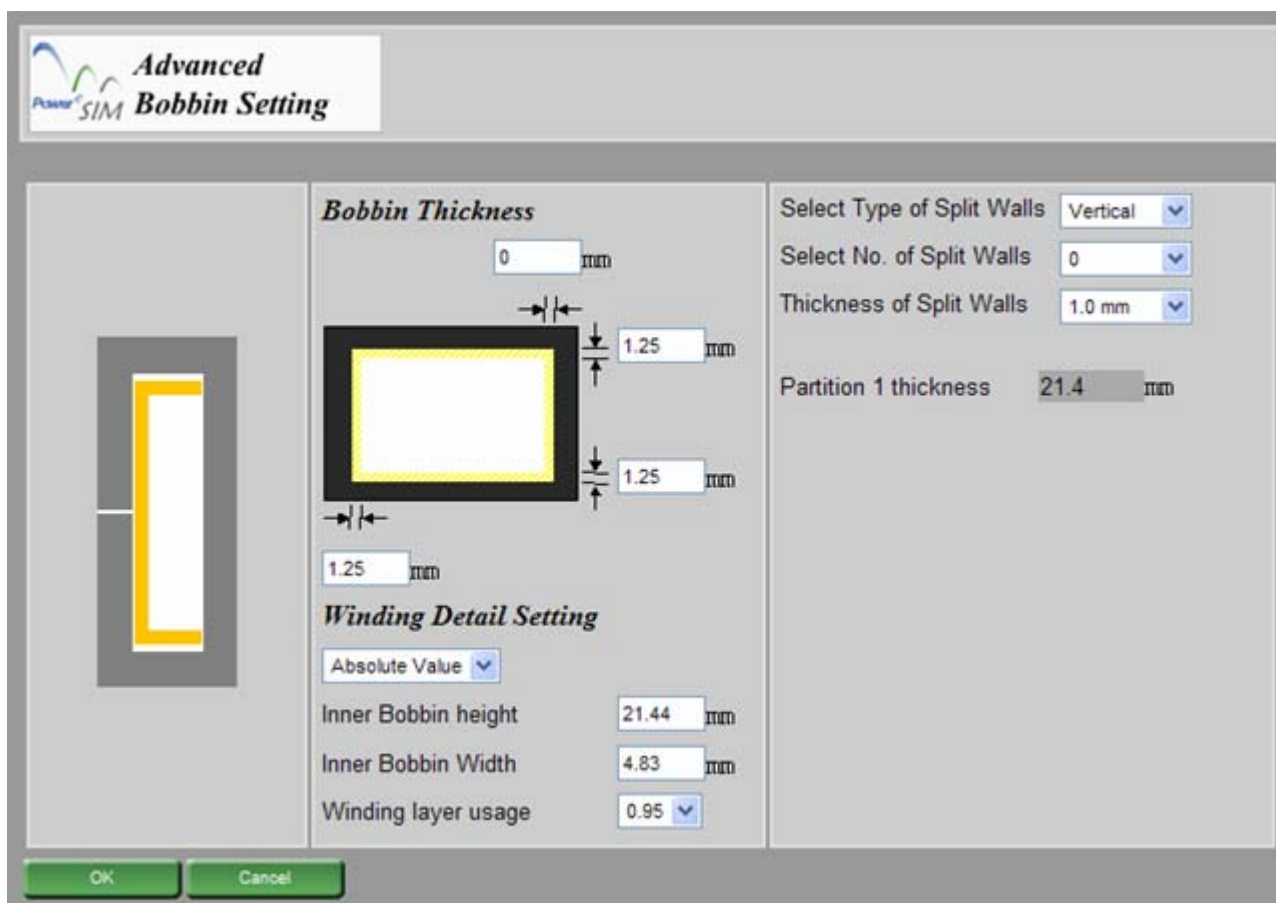
The check box in the “Winding Wizard” page provides a list of rules to rebuild the transformer, once user select some choices the transformer cannot be physically build.

### 3.5 Advanced bobbin setting and construction

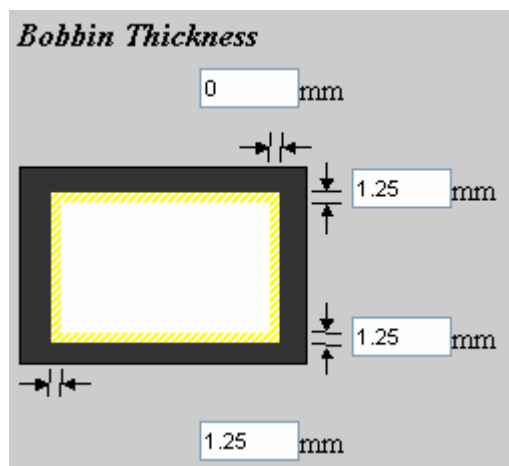
Advanced Bobbin Setting page provides the features for the user to customize a bobbin for the core used. User can make split bobbin, define the bobbin walls thickness, the window usage, etc.



After pressing the button “Bobbin Setting”, it will redirect user to the "Advanced Bobbin Setting" page as below.



### 3.5.1 Change individual bobbin wall thickness



All four sides of the bobbin can be individually adjusted in advanced bobbin setting page.

### 3.5.2 Configure the bobbin winding window dimension

|                     |          |
|---------------------|----------|
| Absolute Value ▾    |          |
| Inner Bobbin height | 21.44 mm |
| Inner Bobbin Width  | 4.83 mm  |
| Winding layer usage | 0.95 ▾   |

The usage and other details of the winding window can be set at advanced bobbin setting page

### 3.5.3 Configure the bobbin with split walls or partition bobbin setting

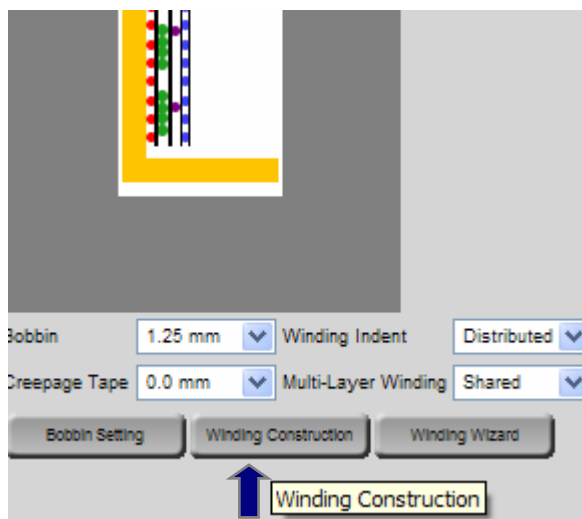
|                            |            |
|----------------------------|------------|
| Select Type of Split Walls | Vertical ▾ |
| Select No. of Split Walls  | 0 ▾        |
| Thickness of Split Walls   | 1.0 mm ▾   |
| Partition 1 thickness      | 21.4 mm    |

User can choose "Vertical" or "Horizontal" type of split wall at combo box "Select Type of Split Walls" to make a partition bobbin. Number of partition can be chosen at combo box "Select No. of split Walls" The split wall thickness can be changed at combo box "Thickness of Split Walls." The dimension of each partition can be changed at combo box "Partition x thickness"



### 3.6 Advanced winding construction and setting

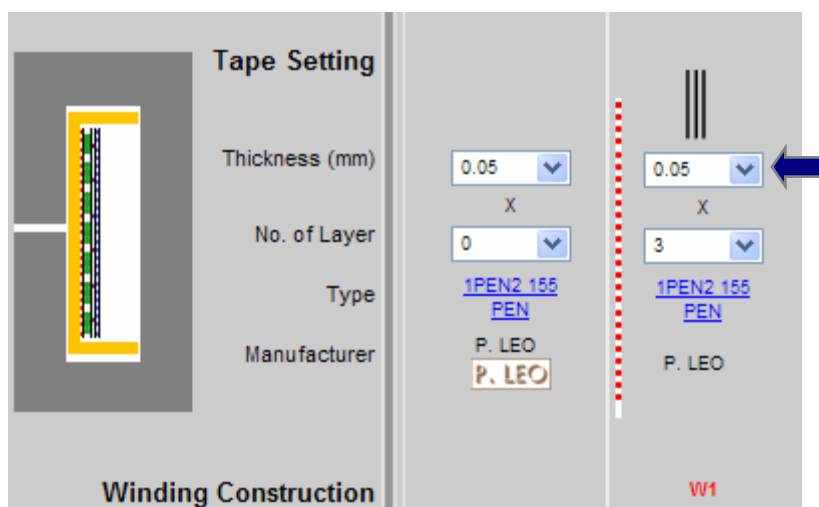
Advanced Winding Construction page provides the features for the user to customize all winding. User can arrange how the wire is to be wired, location of the wire, location and dimension of the creepage tapes, placement of insulation tapes, etc. User can make use of it to build virtually any transformer construction in a professional way.



Clicking the button “Winding Construction” will redirect user to the “Advanced Winding Construction” page as below.

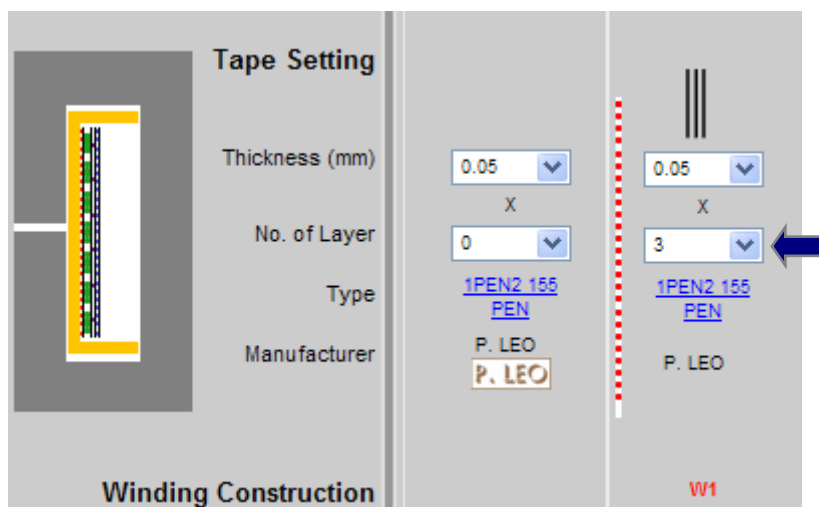


### 3.6.1 Configure the insulating tape thickness of each winding



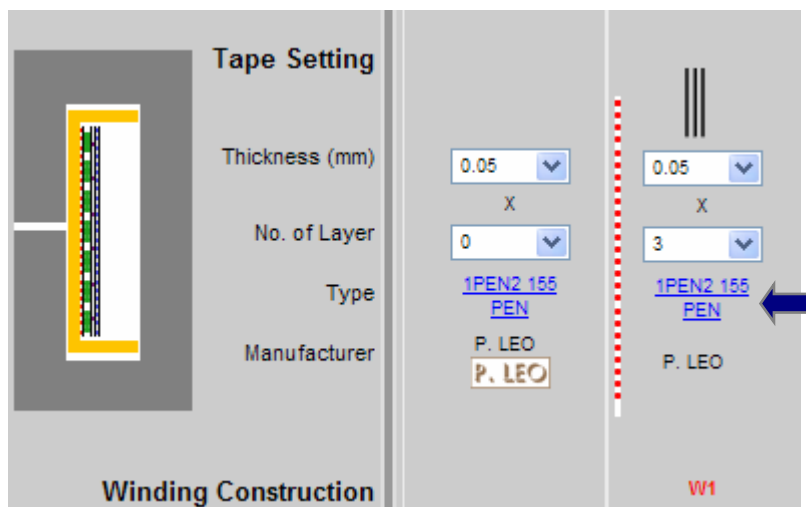
User can change the thickness of insulating tape by changing the value in the combo box "Thickness" at the Tape Setting region.

### 3.6.2 Configure the number of layer in each winding



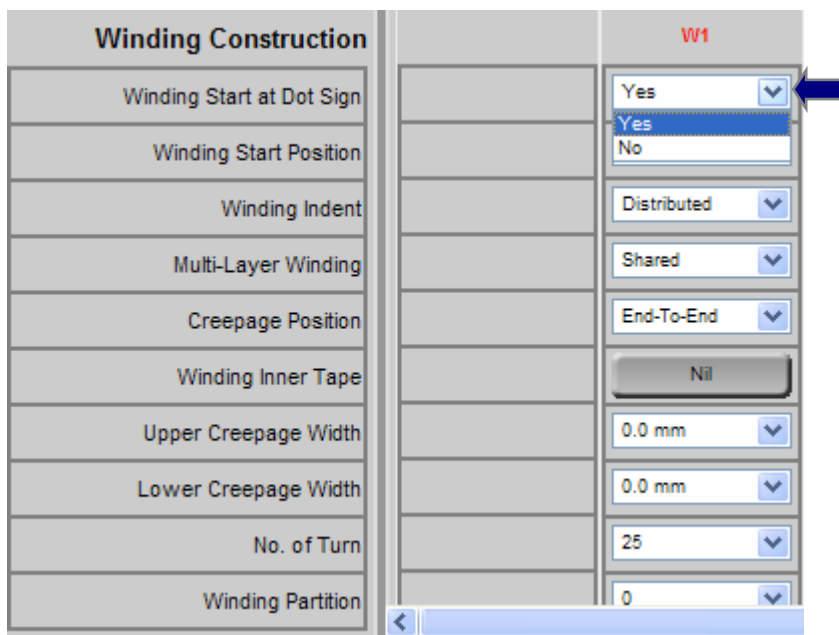
User can change the number of layer of the insulating tape by changing the value in the combo box "No. of Layer" at the Tape Setting region.

### 3.6.3 Configure the tape type used in each winding



User can change the type and manufacturer of the insulating tape by choosing in the combo box "Type" at the Tape Setting region.

### 3.6.4 Configure the dot sign of each winding



User can choose whether the dot sign is lie with winding started by choosing "Yes" or "No" at the combo box "Winding Start at Dot Sign." "Yes" means winding starts at dot sign; "No" means winding is opposed with dot sign.

### 3.6.5 Define the winding start position of each winding

| Winding Construction      |  | W1         |
|---------------------------|--|------------|
| Winding Start at Dot Sign |  | Yes        |
| Layers Start Position     |  | Upper      |
| Winding Indent            |  | Lower      |
| Multi-Layer Winding       |  | Upper      |
| Creepage Position         |  | All Lower  |
| Winding Inner Tape        |  | All Upper  |
| Upper Creepage Width      |  | End-To-End |
| Lower Creepage Width      |  | Nil        |
| No. of Turn               |  | 3.5 mm     |
| Winding Partition         |  | 3.5 mm     |
|                           |  | 23         |
|                           |  | 0          |

User can choose the start location of the each winding at the combo box "Layers Start Position." "Upper" means the first layer of the winding starts at the upper part of the available space while each next layer start at opposite end. "Lower" means the first layer of the winding starts at the lower part of the available space while each next layer start at opposite end. "All Upper" means all layer of the winding are start at upper part of the available space. "All Lower" means all layer of the winding are start at lower part of the available space.

### 3.6.6 Configure the winding indent of each winding

| Winding Construction      |  | W1                                      |
|---------------------------|--|-----------------------------------------|
| Winding Start at Dot Sign |  | Yes                                     |
| Winding Start Position    |  | Upper                                   |
| Winding Indent            |  | Distributed                             |
| Multi-Layer Winding       |  | Center<br>Lower<br>Upper<br>Distributed |
| Creepage Position         |  | Nil                                     |
| Winding Inner Tape        |  | 0.0 mm                                  |
| Upper Creepage Width      |  | 0.0 mm                                  |
| Lower Creepage Width      |  | 0.0 mm                                  |
| No. of Turn               |  | 25                                      |
| Winding Partition         |  | 0                                       |

User can choose the winding indent of the wire at the combo box "Winding Indent." "Distributed" means wire will evenly wind in the available layer; "Center" means wire will be packed tight at the center of the available layer; "Low" means wire will be packed tight at lower part of the available layer; "Upper" means wire will be packed tight at the upper part of the available layer.

### 3.6.7 Configure the characteristic of multi-layer winding of each winding

| Winding Construction      |  | W1          |
|---------------------------|--|-------------|
| Winding Start at Dot Sign |  | Yes         |
| Winding Start Position    |  | Upper       |
| Winding Indent            |  | Distributed |
| Multi-Layer Winding       |  | Shared      |
| Creepage Position         |  | Tight       |
| Winding Inner Tape        |  | Nil         |
| Upper Creepage Width      |  | 0.0 mm      |
| Lower Creepage Width      |  | 0.0 mm      |
| No. of Turn               |  | 25          |
| Winding Partition         |  | 0           |

User can choose how to distribute wire in multi-layer condition at the combo box "Multi-Layer Winding." "Share" means number of turn it will try to make equal in all layers for one winding, "Tight" means all turn will try to pack as tight as possible in all layers for one winding.

### 3.7 Creepage position

| Winding Construction      |  | W1          |
|---------------------------|--|-------------|
| Winding Start at Dot Sign |  | Yes         |
| Winding Start Position    |  | Upper       |
| Winding Indent            |  | Distributed |
| Multi-Layer Winding       |  | Shared      |
| Creepage Position         |  | End-To-End  |
| Winding Inner Tape        |  | End-To-End  |
| Upper Creepage Width      |  | 0.0 mm      |
| Lower Creepage Width      |  | 0.0 mm      |
| No. of Turn               |  | 25          |
| Winding Partition         |  | 0           |

User can choose the location of the creepage tape at the combo box "Creepage Position." "End-To-End" means creepage tape will be placed at both ends of the available layer; "Tight" means creepage tape will stick to the wire's end rather than the layer's end.

### 3.7.1 Creepage width of each winding

| Winding Construction      |  | W1          |
|---------------------------|--|-------------|
| Winding Start at Dot Sign |  | Yes         |
| Winding Start Position    |  | Upper       |
| Winding Indent            |  | Distributed |
| Multi-Layer Winding       |  | Shared      |
| Creepage Position         |  | End-To-End  |
| Winding Inner Tape        |  | Nil         |
| Upper Creepage Width      |  | 0.0 mm      |
| Lower Creepage Width      |  | 0.0 mm      |
| No. of Turn               |  |             |
| Winding Partition         |  |             |

User can change the width of the creepage tapes at combo boxes “Upper Creepage Width” or “Lower Creepage Width”.

### 3.7.2 Change the number of turns in each split winding

| Winding Construction      |  | 17 |
|---------------------------|--|----|
| Winding Start at Dot Sign |  | 18 |
| Winding Start Position    |  | 19 |
| Winding Indent            |  | 20 |
| Multi-Layer Winding       |  | 21 |
| Creepage Position         |  | 22 |
| Winding Inner Tape        |  | 23 |
| Upper Creepage Width      |  | 24 |
| Lower Creepage Width      |  | 25 |
| No. of Turn               |  | 26 |
| Winding Partition         |  | 27 |

If more than 1 split winding are made, you can change the number of turns of each split winding at combo box “No. of Turn”.

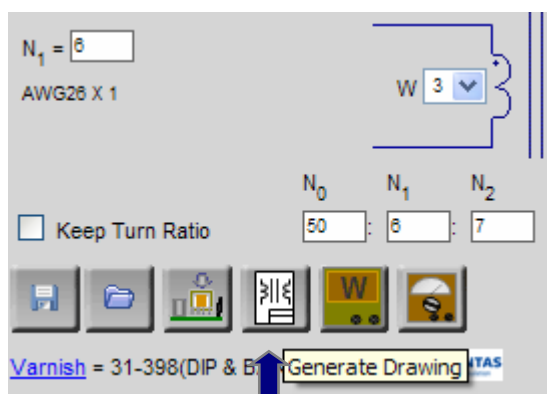
### 3.7.3 Locate the winding in different bobbin partition

| Winding Construction      |  | W1          |
|---------------------------|--|-------------|
| Winding Start at Dot Sign |  | Yes         |
| Winding Start Position    |  | Upper       |
| Winding Indent            |  | Distributed |
| Multi-Layer Winding       |  | Shared      |
| Creepage Position         |  | End-To-End  |
| Winding Inner Tape        |  | Nil         |
| Upper Creepage Width      |  | 0.0 mm      |
| Lower Creepage Width      |  | 0.0 mm      |
| No. of Turn               |  | 25          |
| Winding Partition         |  | 0           |

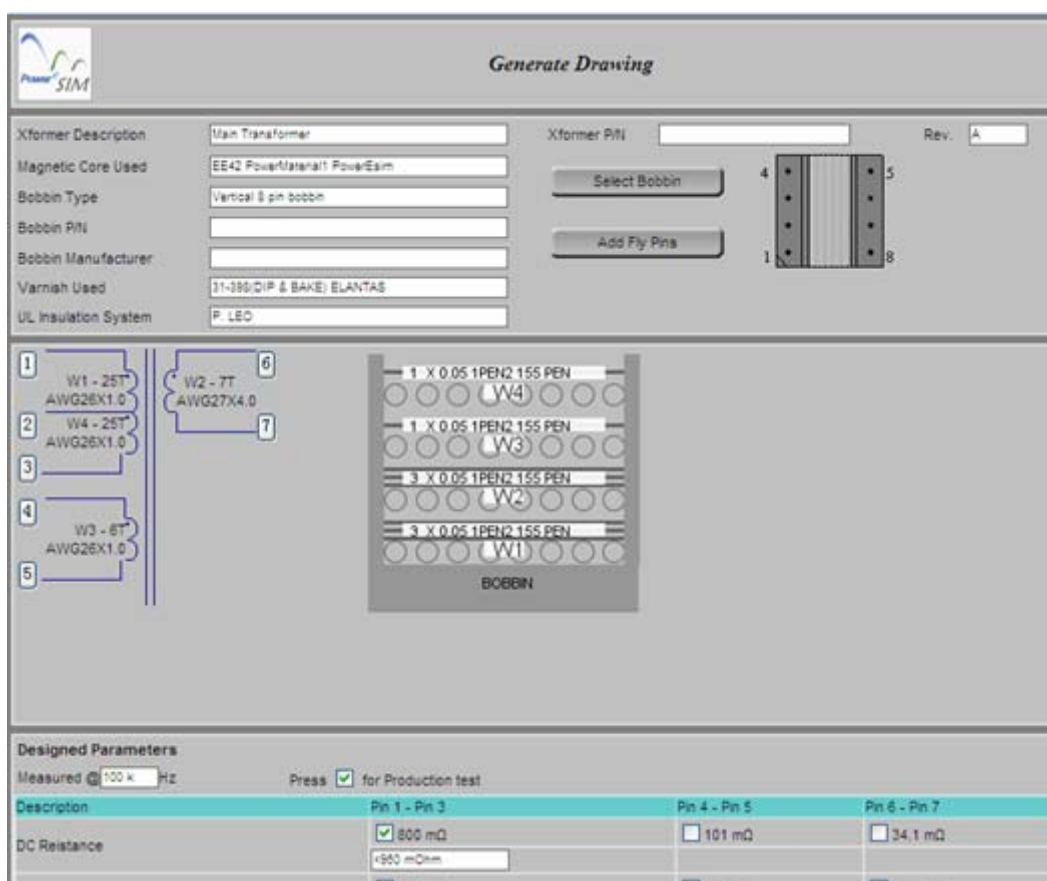
If more than one partition is made in a bobbin, user can locate the winding in any partition at combo box “Winding’s Partition”.



### 3.8 Generate Transformer Drawing



Click the icon “Generate Drawing”, it will redirect user to generate drawing page as shown below.



User can define the termination of the wires; details of the transformer e.g. part number, description, etc.

### 3.8.1 Change the designed and testing details of the transformer

| Designed Parameters                                                                    |                                                                |                                   |                                   |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Measured @ 100 k Hz      Press <input checked="" type="checkbox"/> for Production test |                                                                |                                   |                                   |
| Description                                                                            | Pin 1 - Pin 3                                                  | Pin 4 - Pin 5                     | Pin 6 - Pin 7                     |
| DC Resistance                                                                          | <input checked="" type="checkbox"/> 800 mΩ<br>→ <500 mΩhm      | <input type="checkbox"/> 101 mΩ   | <input type="checkbox"/> 34.1 mΩ  |
| Magnetizing Inductance                                                                 | <input checked="" type="checkbox"/> 778 uH<br>→ *778 uH +/- 5% | <input type="checkbox"/> 11.2 uH  | <input type="checkbox"/> 15.2 uH  |
| Leakage Inductance                                                                     | <input checked="" type="checkbox"/> 2.58 uH<br>→ <3.1 uH       | <input type="checkbox"/> 0.055 uH | <input type="checkbox"/> 0.048 uH |

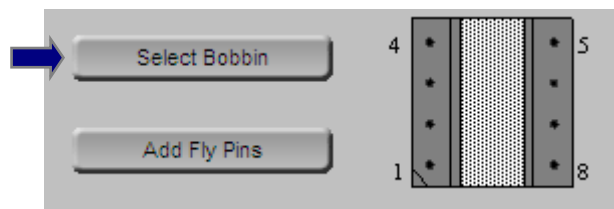
| Testing Details        |          |
|------------------------|----------|
| Hi-pot P - S Voltage   | 4000V AC |
| Hi-pot P- core Voltage | 4000V AC |
| Hi-pot S- core Voltage | 4000V AC |
| Hi-pot Period          | 1 Sec    |
| Remark                 |          |

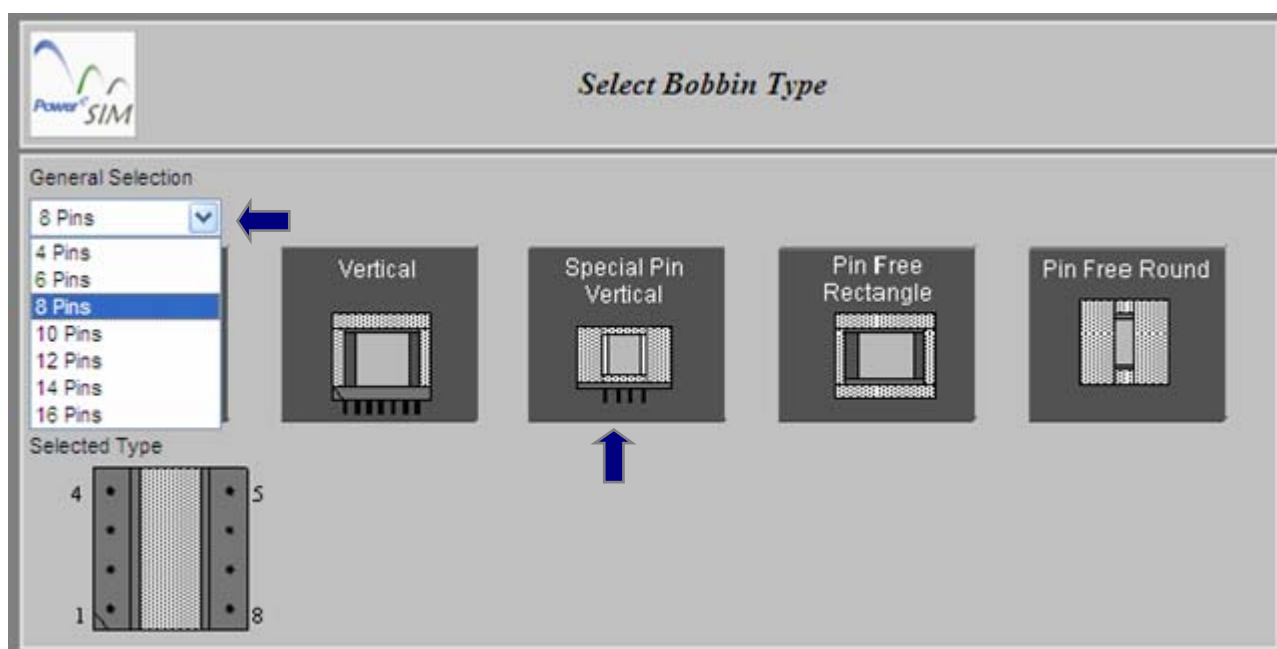
| Preview Preference                                         |
|------------------------------------------------------------|
| <input checked="" type="checkbox"/> Show Winding Direction |

User can fill in the testing details at the bottom of Generate Drawing page to make sure the production quality is with the range of the designed parameters. A calculated value on the DC resistance, magnetizing inductance and leakage inductance will be recommended to the user, and user can assign the tolerance or range of the value to ensure the quality of the final product.

### 3.8.2 Select the proper bobbin

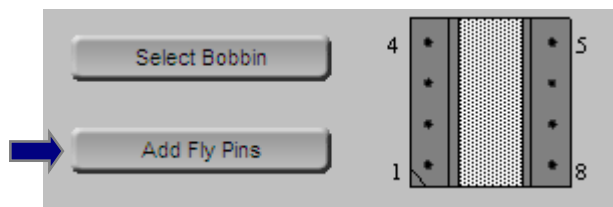


Click the button "Select Bobbin" at the top-right side of the Generate Drawing and user will see the Select Bobbin Type page.

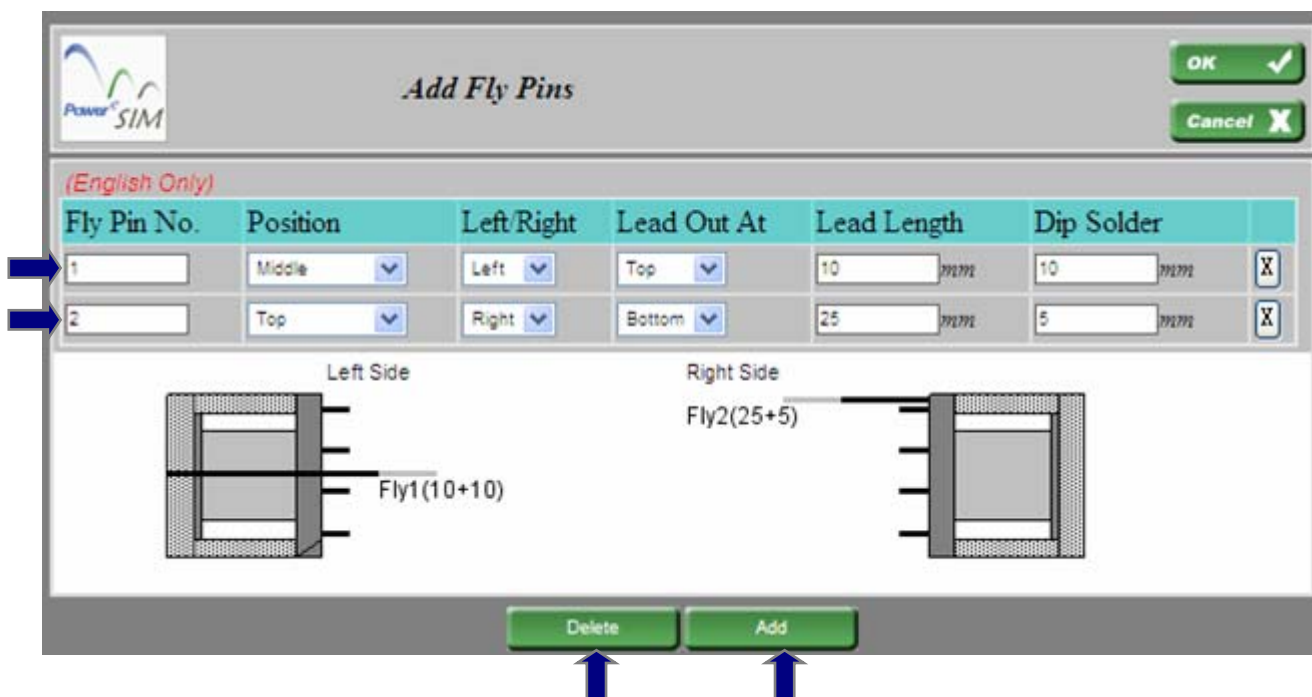


User can select the bobbin type by clicking the bobbin type and determine the number of pins at the combo box as shown above.

### 3.8.3 Add/ delete and configure fly pins



Clicking the button "Add Fly Pins" will redirect user to the Add fly Pin page as shown below.



**Add Fly Pins**

(English Only)

| Fly Pin No. | Position | Left/Right | Lead Out At | Lead Length | Dip Solder |   |
|-------------|----------|------------|-------------|-------------|------------|---|
| 1           | Middle   | Left       | Top         | 10          | 10         | X |
| 2           | Top      | Right      | Bottom      | 25          | 5          | X |

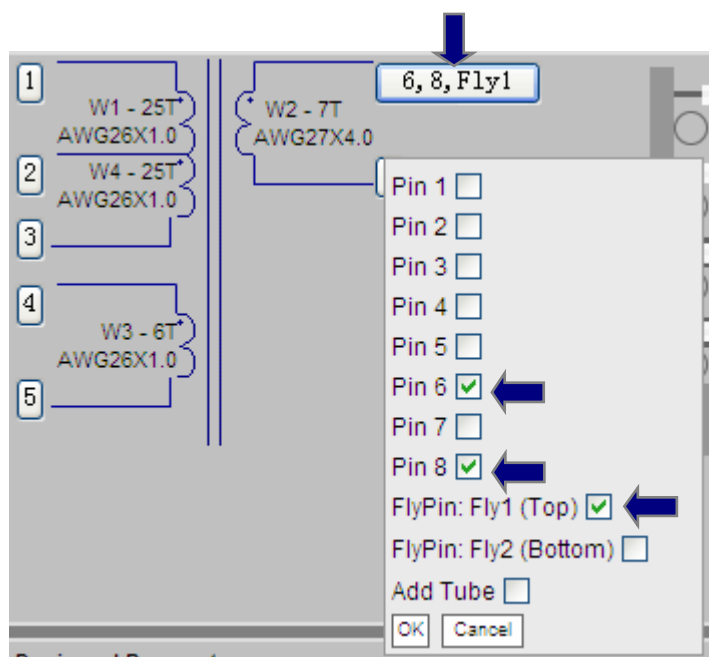
Left Side: Fly1 (10+10)

Right Side: Fly2 (25+5)

Buttons: Delete, Add

User can add or delete fly pins by pressing the corresponding button. User should assign each fly pin a number in the "Fly Pin No." text box. Define the lead out position at combo box "Position." To define where the wire is lead out at which side of the bobbin, clip the "Left/Right" at the combo box. To define whether the wire lead out at top or bottom of the bobbin clip the "Lead Out At" at combo box. Wire length and the dip solder length can be defined at text boxes "Lead Length" and "Dip Solder" too.

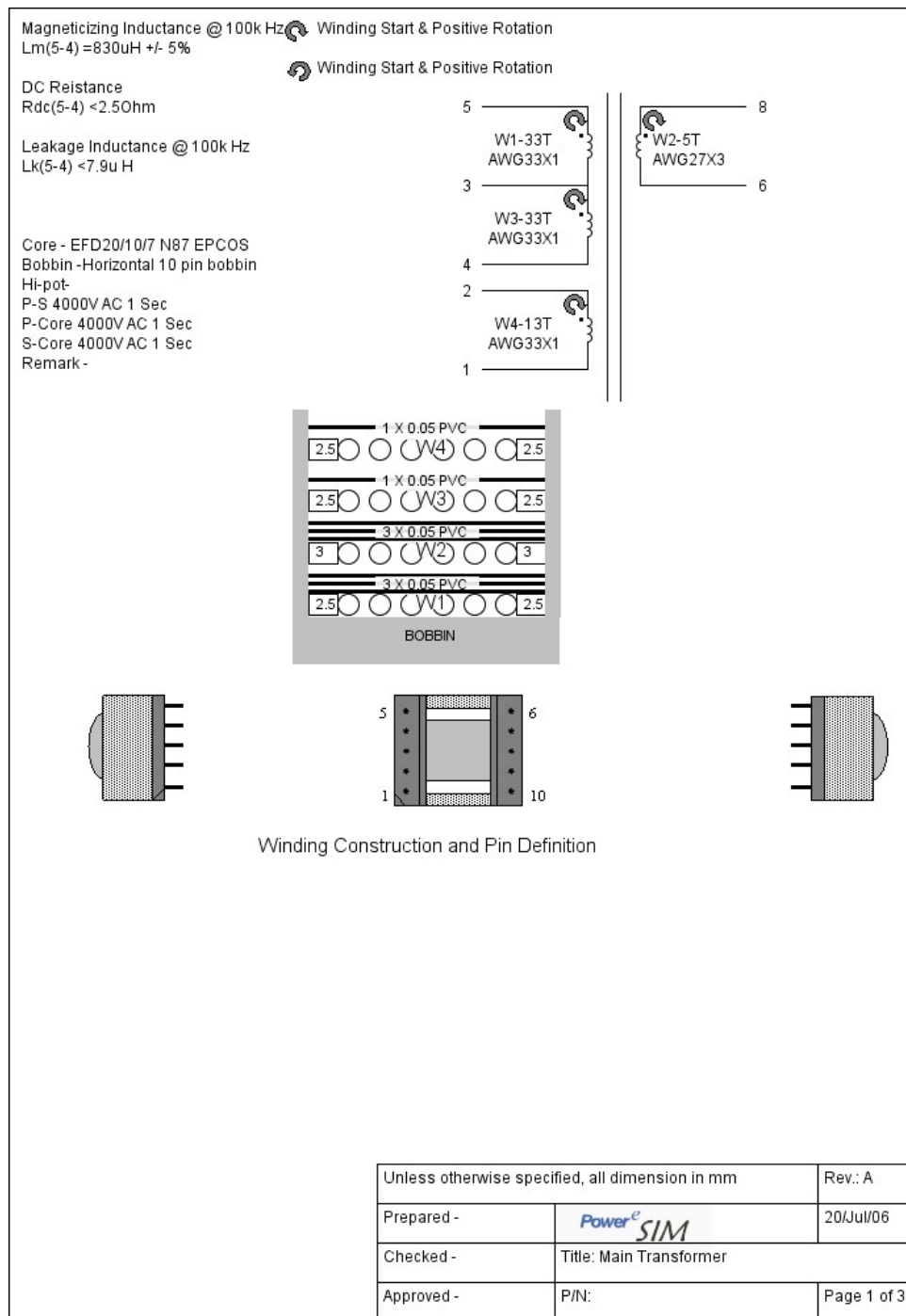
### 3.8.4 Define the termination pins of a winding



User can click the pin button next to the terminal of the transformer schematic in the Generate Drawing page, a window will pop up and show all possible pins that is available to be terminated. User can select pin at the bobbin or fly pins as defined above. Multi-pin is possible for one terminal too.

### 3.8.5 Preview, print and export the Transformer drawing page

Clicking the 'Preview' button at the Generate Drawing page can open a preview page of the transformer drawing. User can use browser's print function to print out the drawing or use "Export to Excel" to save it into an Excel file.





## 4 Troubleshooting

### 4.1 Run PowerEsim smoothly - security setting

In IE "**Internet Options**", go to Privacy/Settings. Set the Privacy level not higher than "**Medium**" or click on "**Security**" to add the [www.powerEsim.com](http://www.powerEsim.com) as the trusted site.

### 4.2 Enable ActiveX control for proper views

"Internet Explorer has blocked this site from using an ActiveX control in an unsafe manner. As a result, this page may not display correctly."

When you notice the message above shown at the top banner of the browser, this mean the "ActiveX control" is constrained and some JavaScript actions and Flash movie are disabled. You have to do following things for proper views in PowerEsim.

- 1) Go to "**Internet Options**" in IE
- 2) In the "**Security**", click "**Custom Level...**"
- 3) You can find the "**Run ActiveX controls and plug-ins**" and "**Script ActiveX Control**" marked
- 4) Check both to "**Enable**"
- 5) Restart the browser

### 4.3 Enable Status Bar Scripting

- 1) Open Internet Explorer, click the "**Tools**" button, click "**Internet Options**", and then click the "**Security**" tab.
- 2) Click "**Internet or Restricted sites**", and then click the "**Custom level**" button.
- 3) Scroll down to "**Allow status bar updates via script**", select "**Enable**".
- 4) Click "**OK**" until you return to Internet Explorer.



## 5 Appendix

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Conditions of Access version 1.0 Dated 15 April 2005



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