

# 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 is a new Web based, [www.powerEsim.com](http://www.powerEsim.com), design and simulation tool for switching power supplies. The basic operation does not require login or subscription; it is a free tool for user all around the world. User 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 user 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"



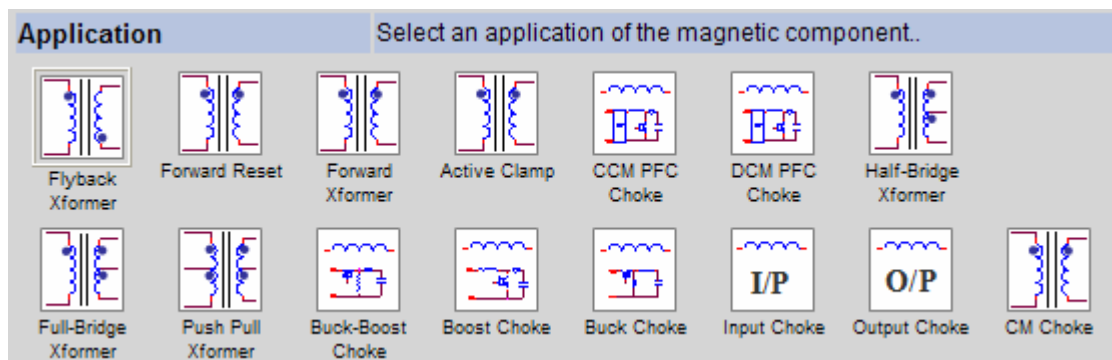
Tools will be seen at the front page when user goes to [www.powerEsim.com](http://www.powerEsim.com), click the tool Magnetic Builder will direct the user go to the front page of Magnetic Builder.

### 3.2.2 Front page of Magnetic Builder



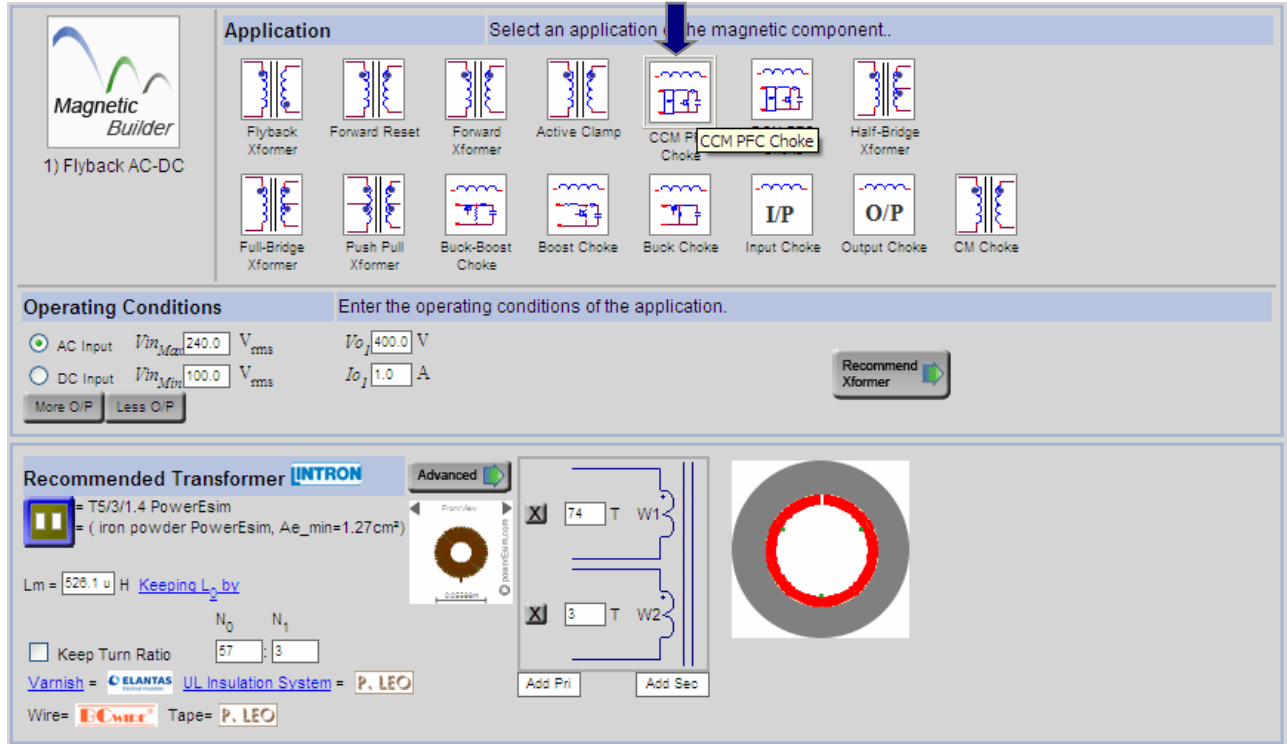
The front page of the Magnetic Builder is designed to help user to design magnetic component with least information. In tradition, there can be a lot of engineering rule to govern the design of a transformer, but the most simple and sufficient question for designing a transformer is simply as "I want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

#### 3.2.2.1 Application of the magnetic component

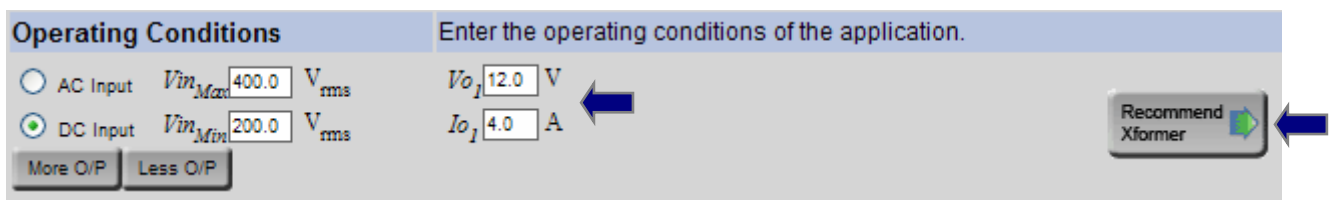


User can firstly select an application of the magnetic components; it can be the main transformer in a Flyback converter, a common mode choke for EMI purpose, a PFC choke, etc.

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



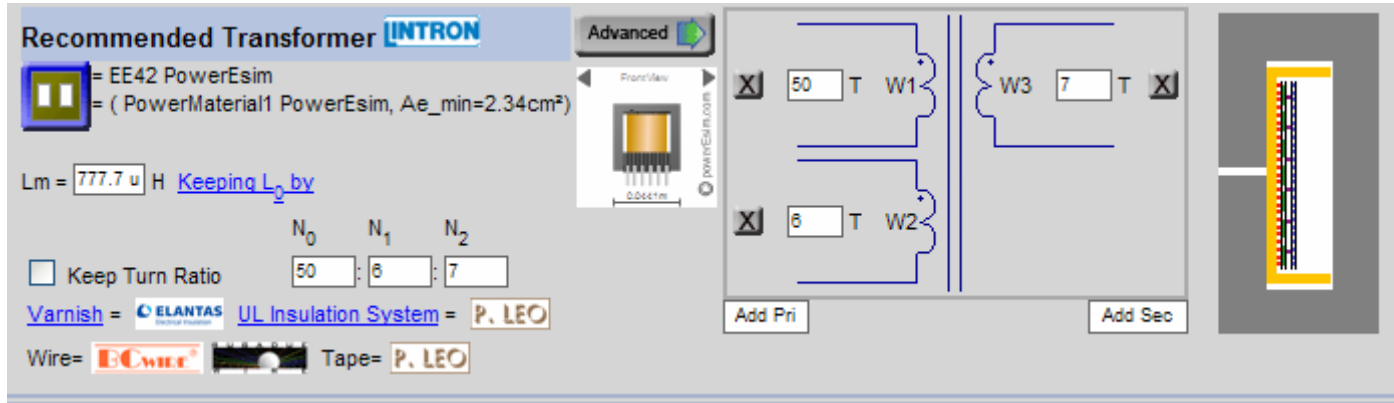
### 3.2.2.2 Operating conditions of the application



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 winding details will be shown as below.

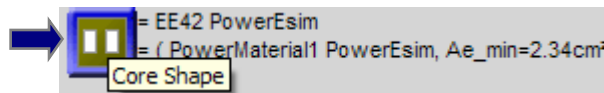


### 3.2.2.3 Simplified Magnetic Builder



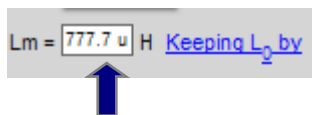
A simplified version of Magnetic Builder can be found on the bottom of the front page. User can change the core used, wire used, number of turn, etc for the transformer; mostly importantly, the arrangement of wire in the winding window will be updated with the corresponding change.

### 3.2.2.4 Change to different magnetic cores



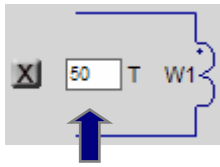
Click the Core Shape button will direct user to a Component Finder page where user can extract magnetic core from the PowerEsim server database by filling the proper range and change other cores for that application.

### 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 wish. User can choose which way our system determines the item being changed by clicking into "[keep  \$L\_0\$  by](#)" page.

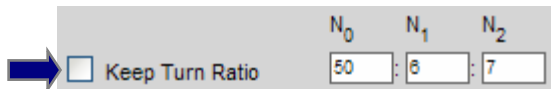
## 3.2.2.6 Change number of turn



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.

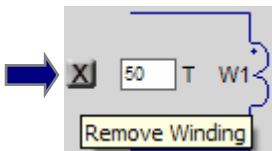
Once the value change the corresponding winding structure picture will be updated automatically too, user can immediately know how much space is left in the winding window.

## 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 edit 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



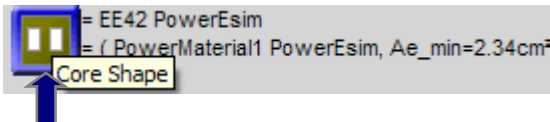
Magnetic Builder can do a lot more than the features shows on simplified version. By click the button "Advanced" user can go to the advanced page of Magnetic Builder. The advanced page can be reach by clicking the magnetic component on a power supply schematic too.

The screenshot displays the advanced configuration page for a transformer in Magnetic Builder. Key parameters include:

- Transformer Loss:** 292.7 mW
- Stress:** Pass
- Bm:** 24.74 mT
- Manufacturer:** LINTRON
- Core Material:** EE42 PowerEsim (PowerMaterial1 PowerEsim,  $A_e_{min}=2.34\text{cm}^2$ )
- Winding Configuration:**
  - W1: 50 turns (AWG28 X 1)
  - W2: 7 turns (AWG27 X 4)
  - W3: 8 turns (AWG28 X 1)
  - W4: 7 turns (AWG27 X 4)
- Turn Ratio:**  $N_0 : N_1 : N_2 = 50 : 8 : 7$
- Bobbin:** 1.25 mm
- Creepage Tape:** 0.0 mm

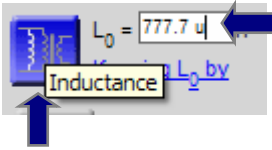
Buttons for 'Bobbin Setting', 'Winding Construction', and 'Winding Wizard' are visible at the bottom.

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



Click 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.

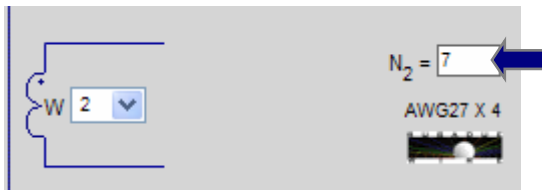
### 3.3.2 Change magnetizing inductance at Magnetic Builder advanced page



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 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 click into the button "Inductance," user will be direct to 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 highlight the elements in the list.

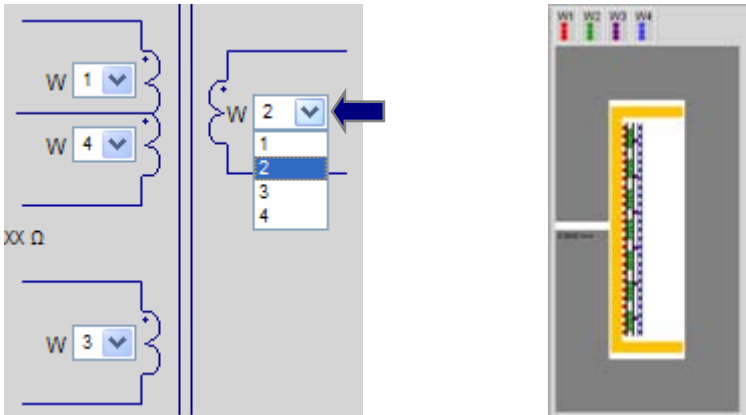
### 3.3.3 Change number of turn at Magnetic Builder advanced page



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.

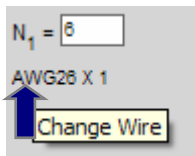
### 3.3.4 Change the sequence of windings Magnetic Builder advanced page



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.

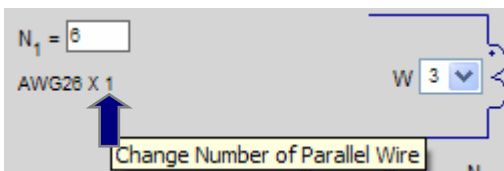
The corresponding change of the winding structure will be immediately updated and displayed at the left side of the page. Different colors are used for user to distinguish the winding sequence too.

### 3.3.5 Change wire used Magnetic Builder advanced page



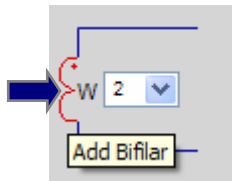
The size, brand or wire type can be changed by clicking the wire wording besides the corresponding winding. It will redirect user to the Component Finder page, a list of wire can be generated, and any one of them can be selected too.

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



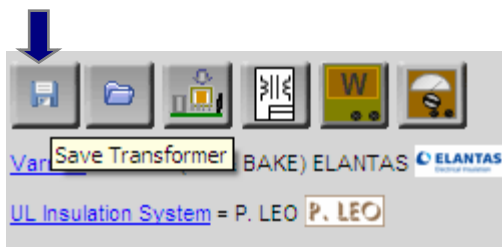
The number of parallel wires can be determined by the user, click the number beside the wire used, it will redirect user to a Component Finder page, which will treat the number of parallel wire to be a component, hence a list of number can be generated and any one of them can be selected too.

### 3.3.7 Bifilar winding



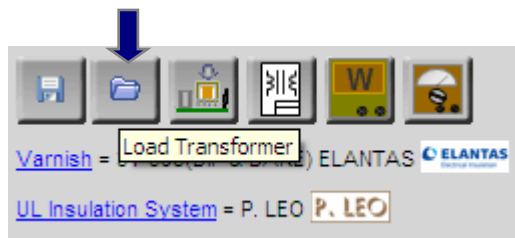
Click the winding that is supposed to be bifilar with other winding, a page will be displayed, and showing other possible bifilar winding, click the check box to choose the other bifilar winding.

### 3.3.8 Save a transformer



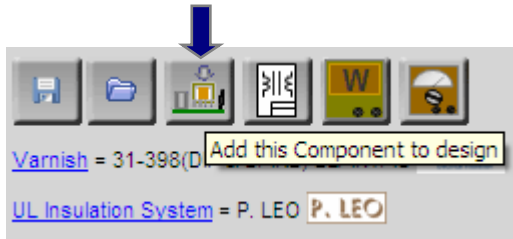
Click the "Save Transformer" button will activate user's side OS and user can save the transformer in user's computer or user's side network drive and reuse as a stand-alone transformer or replace a existing transformer in a power supply.

### 3.3.9 Load or open a transformer



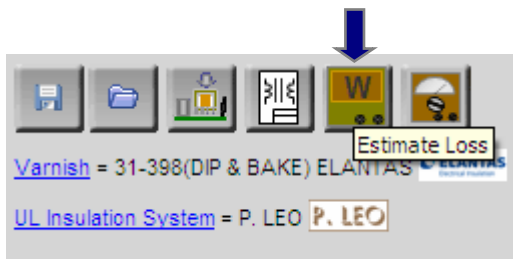
Click the "Load Transformer" button will activate user's side OS and user can load the transformer file in user's computer or user's side network drive. It can be reused as a stand-alone transformer or replace a existing transformer in a power supply.

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

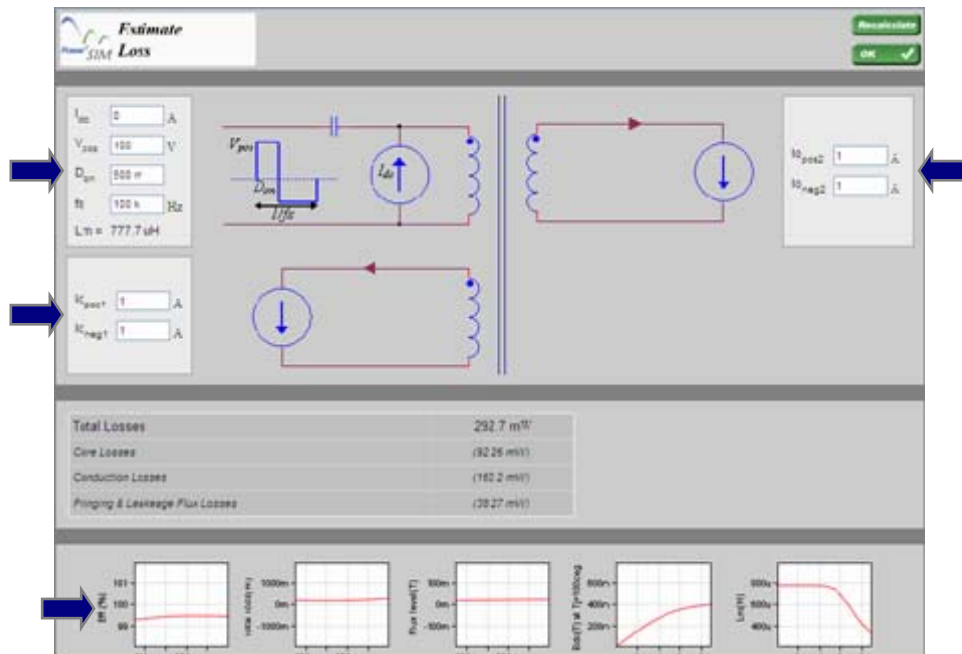


Click the "Add this Component to design" button append this transformer into the existing power supply BOM as one extra component other than the component shown on the power supply schematic. .

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

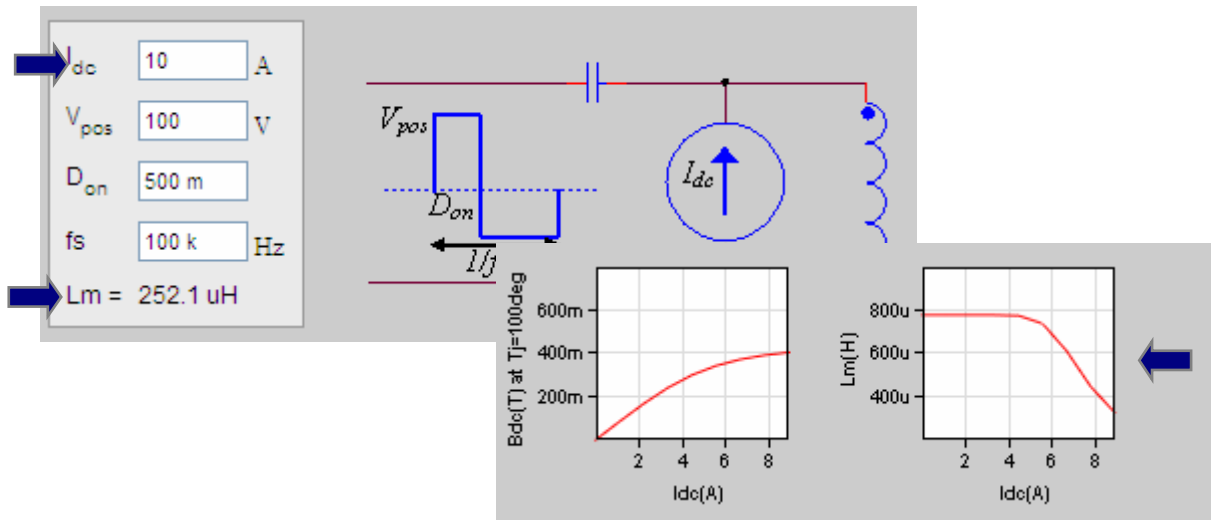


Click the "Estimate Loss" button will redirect user to estimate loss page as shown below.



User can simulate the loss and other performance of the transformer by apply an ac square wave with programmable positive duty cycle  $D_{on}$ , 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 conduct 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 change 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

Varnish = 31-398(DIP & BAKE) ELANTAS  
UL Insulation System = P. LEO

**Transformer**

At  $V_{rms} = 100 V$

Total Losses = 6.062 W  
Selected Loss = 1.111 W  
Core Losses = 395.4 m W  
Conduction Losses = 542.2 m W  
Fringing & Leakage Flux Losses = 173.7 m W  
Failure Rate = 156.2 m ( $10^6 Hz$ )

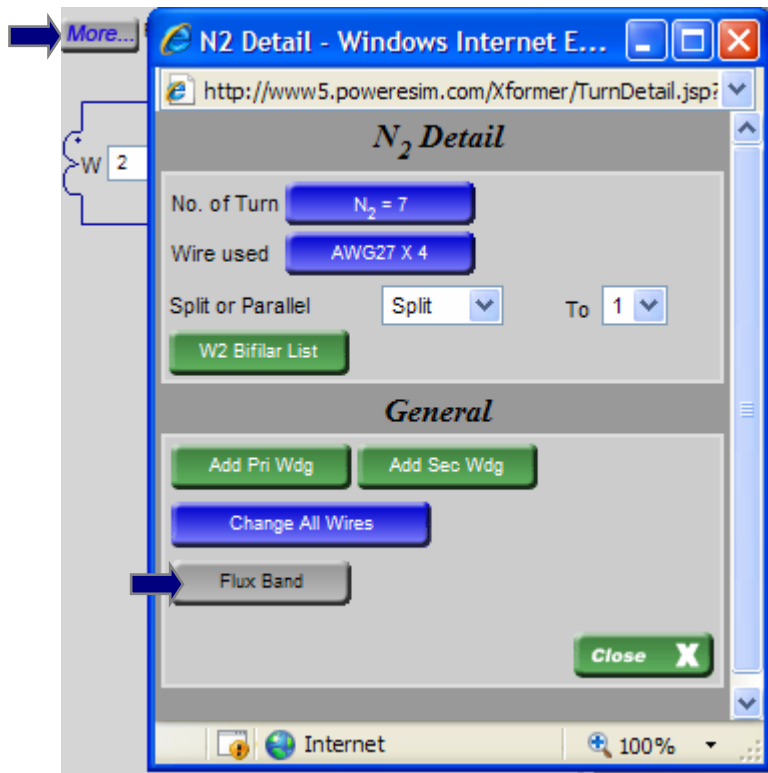
At  $f_s = 69.94 k Hz$

	Simulated Value	Rated Value	Rated Factor	Result	Message
Bm	126.4 mT	368.9 mT	900 m	Pass	
Tj	100 °C	155 °C	1	Pass	

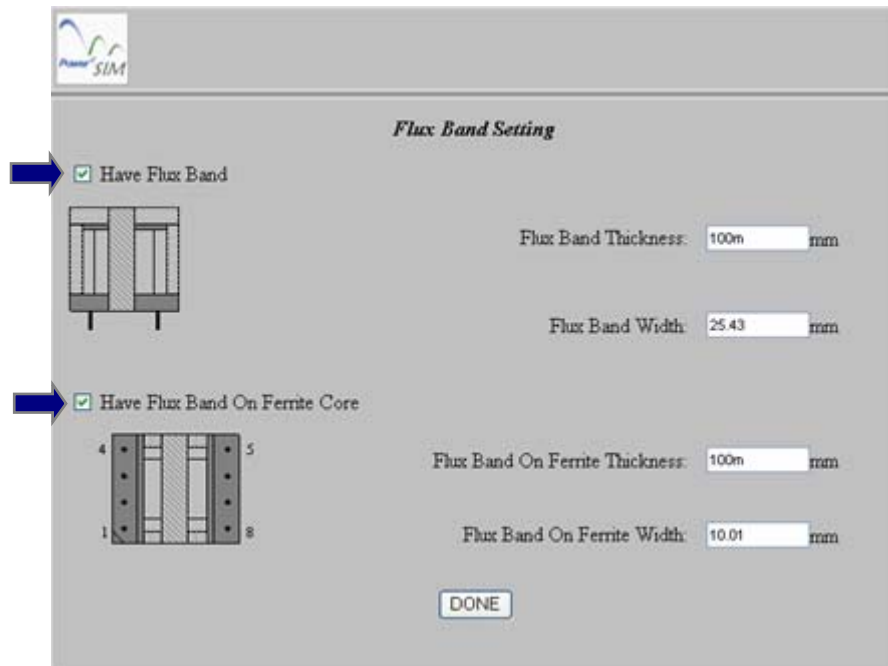
For transformer or inductor used in a power supply, the performance and losses under the operation of the power supply will be know by clicking the button "Transformer Analysis," it will redirect user to the Transformer Analysis page and the losses distribution, Bm and other details will be known.



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

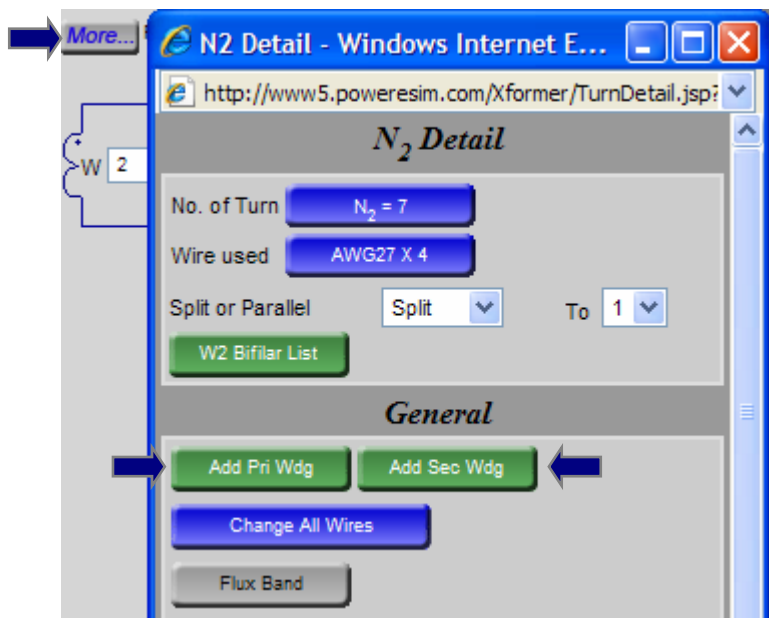


Click the button "More. . ." besides any winding, a window will pop up, which shows all the details for a winding. Click the button "Flux Band" will direct to a Flux Band Setting page as below.

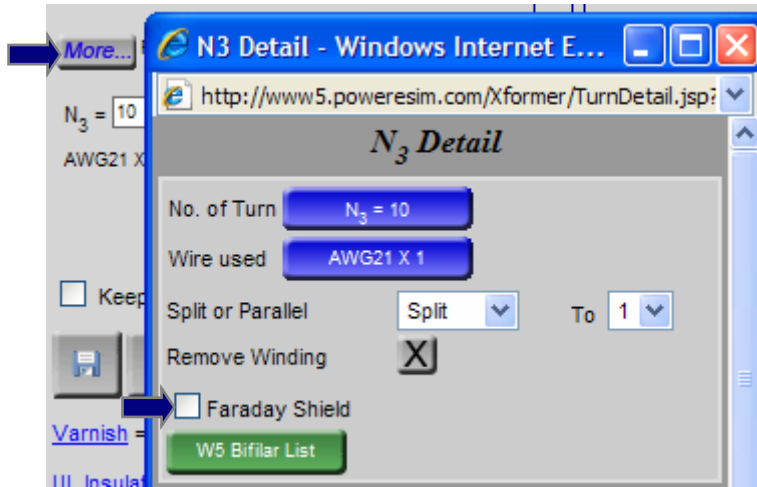


Two type of flux band are supported, which is flux band around the bobbin and flux band around the ferrite core. User can click the checkbox to choose for the type and enter corresponding flux bank dimensions.

### 3.3.14 Add a Faraday shield in a transformer

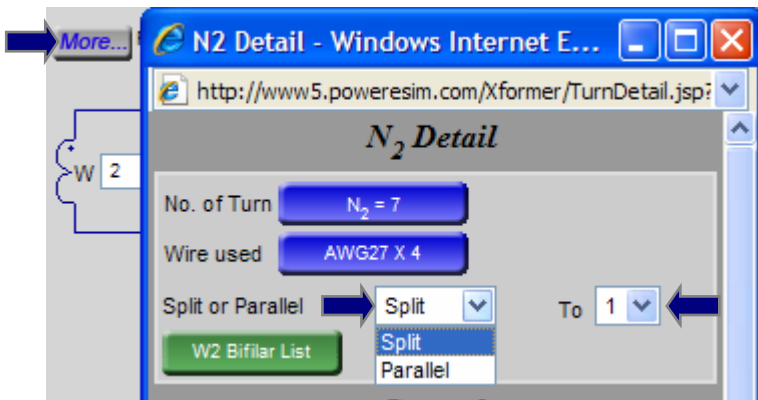


Click the "More . . ." button to go into winding details page, a Faraday shield is considered as an extra copper foil winding with terminated at one end. User should first add a winding on primary or secondary side first.



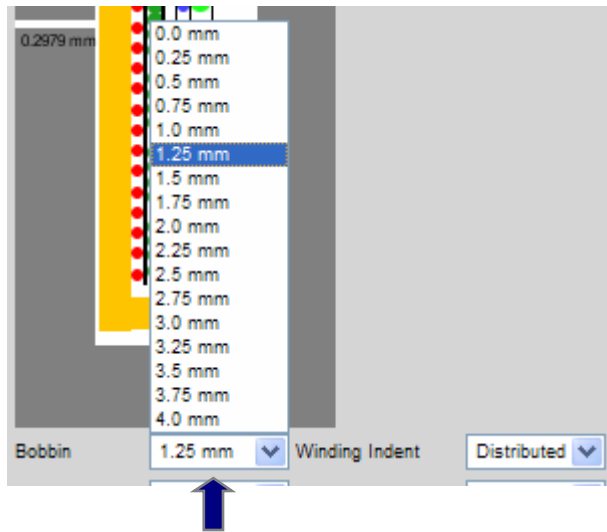
User can then change a particular winding to Faraday shield by clicking button "More. . ." and go into the winding details page. Click the check box "Faraday Shield" can turn the winding becomes Faraday shield. Only extra windings can be changed to Faraday's Shield.

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



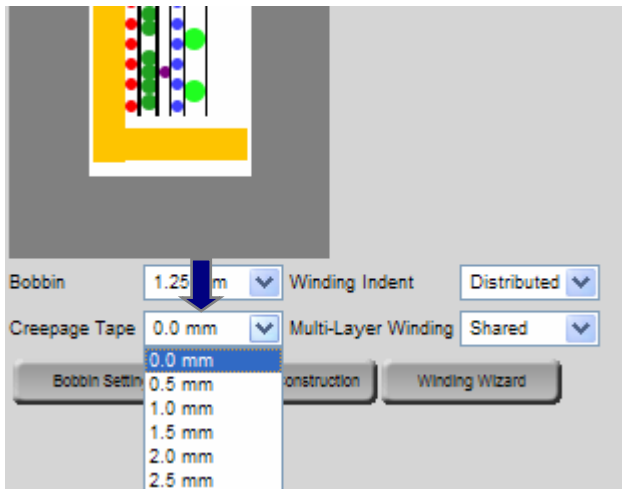
Click button "More. . ." to go into the winding details page, user can split a winding or make more winding parallel to the existing by choosing from the combo box "Split or Parallel." Number of winding being split or parallel can be chosen in the combo box "To"

### 3.3.16 Adjust overall bobbin thickness



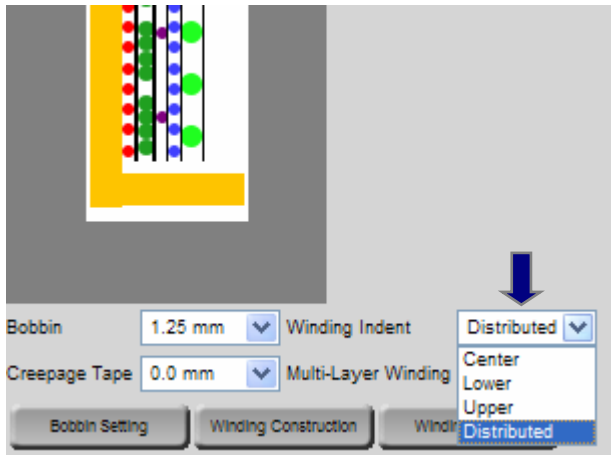
Overall bobbin thickness can be adjusted by choosing the combo box "Bobbin" All the left, upper and lower bobbin thickness will be updated at once.

### 3.3.17 Adjust the overall creepage tape width



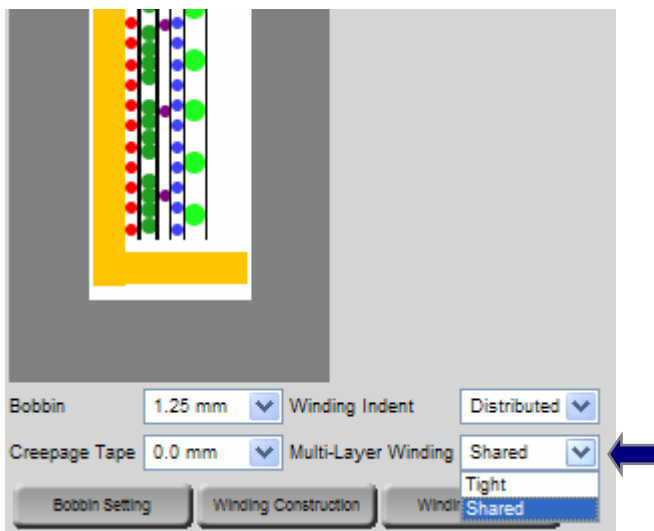
Overall creepage tape width can be adjusted by choosing the combo box "Creepage Tape." All the creepage tape will be set to the selected width.

### 3.3.18 Adjust the Overall winding indent



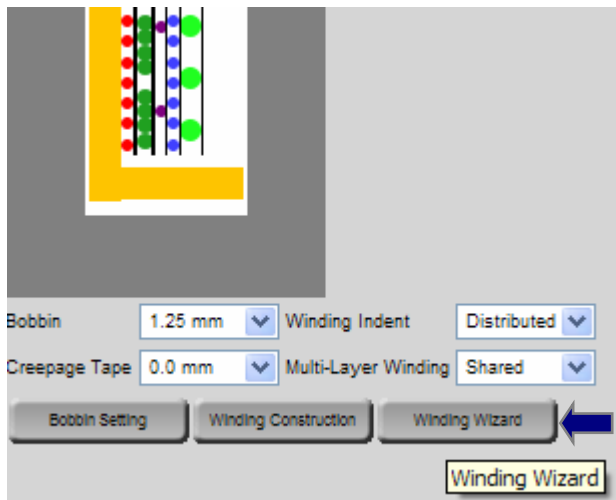
Overall winding indent can be chosen at the combo box "Winding Indent." All winding will be wound according to the selected winding procedure. "Center" means all windings will locate at the center of the layer, "Lower" means all windings will locate at the lower part of the layer; "Upper" means all windings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

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

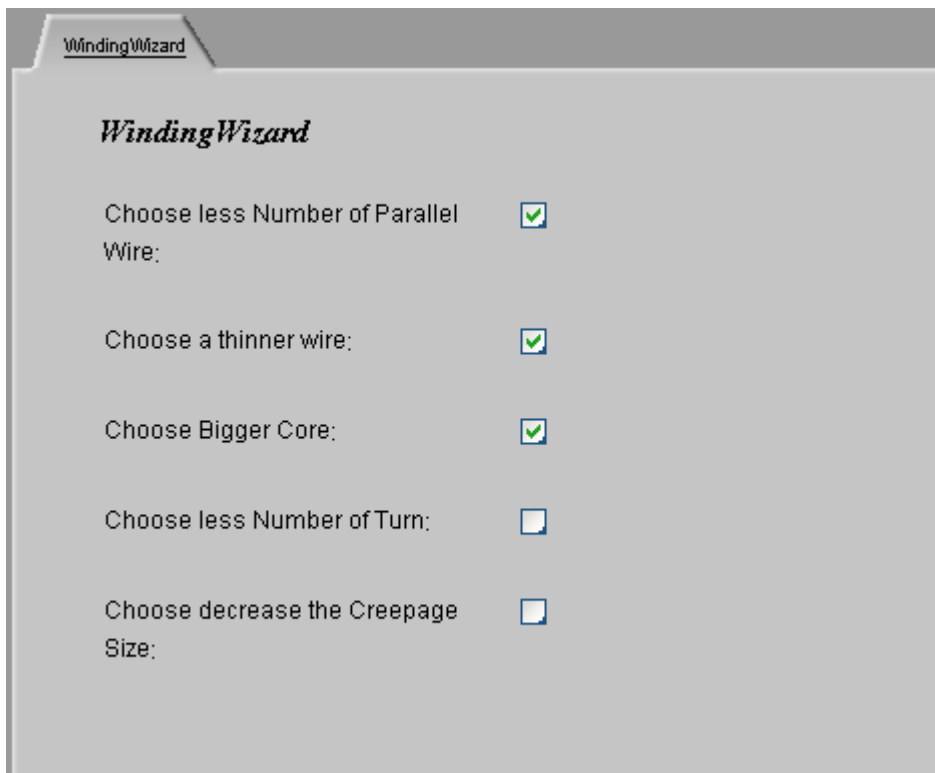


Overall wire distribution at multi-layer winding can be chosen at the combo box "Multi-Layer Winding." The number of turn in all multi-layer winding will be packed according to the selected winding procedure. "Share" means number of turn will try to make equal in all layer for one winding, "Tight" means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

### 3.4 Change the Winding Wizard option.



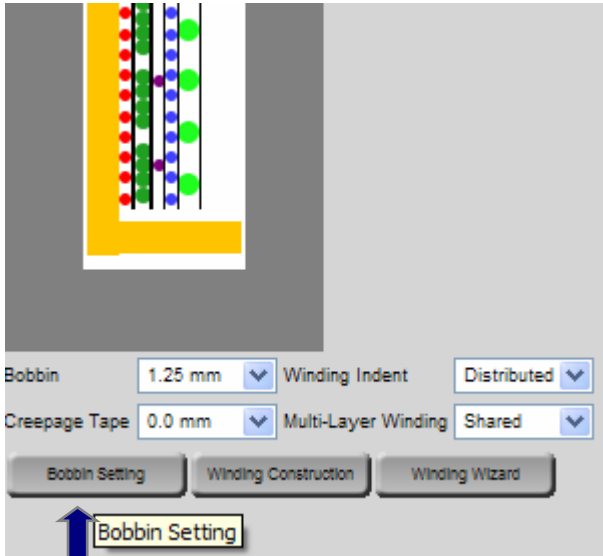
Winding wizard is a page with rules for helping user to rebuild a transformer that is physically not possible to build. Click the button “Winding Wizard”, user can see the following page and set the winding wizard option.



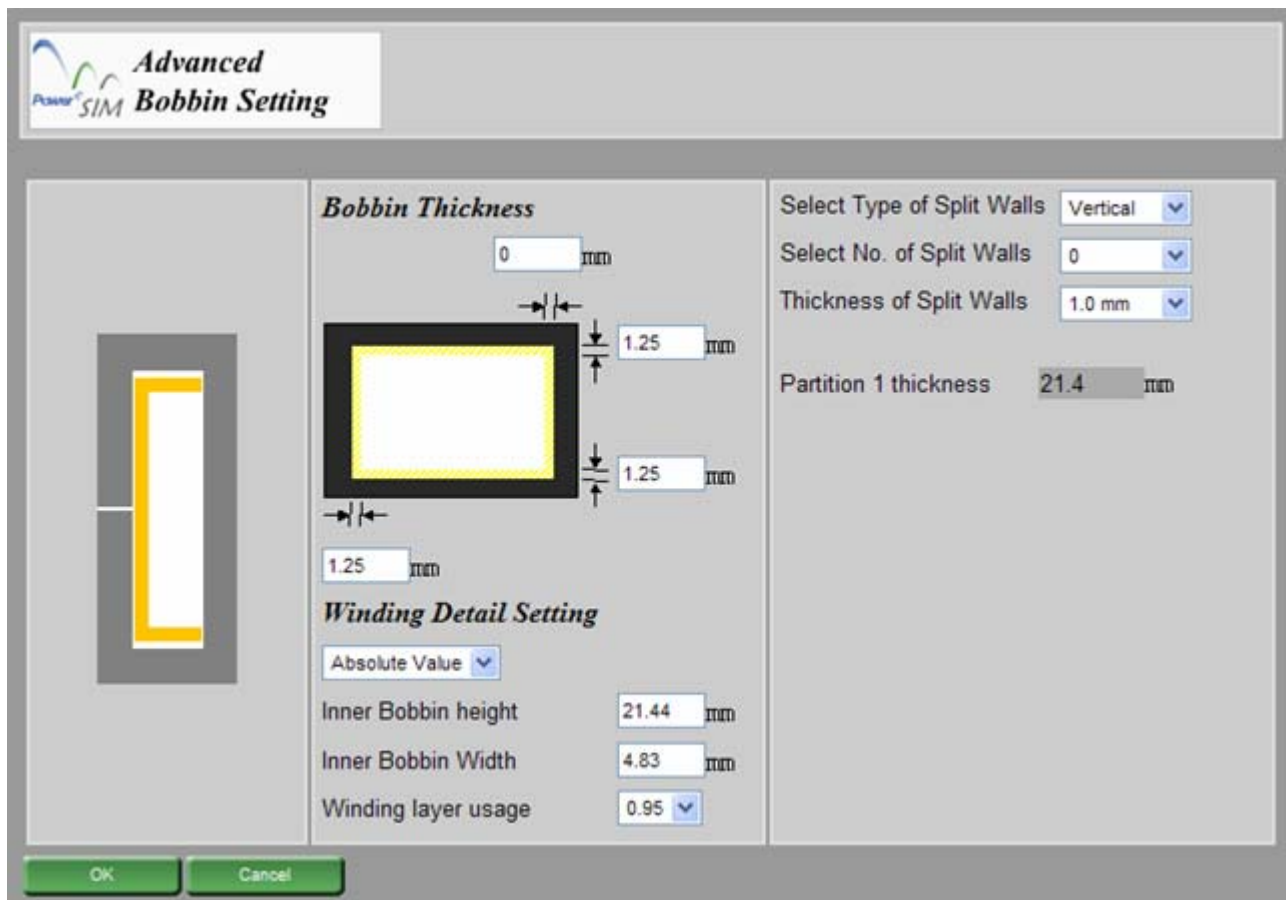
The check box in the “Winding Wizard” page provides a list of rules to rebuild the transformer, once user select some choice that make the transformer cannot be physically build.

### 3.5 Advanced bobbin setting and construction

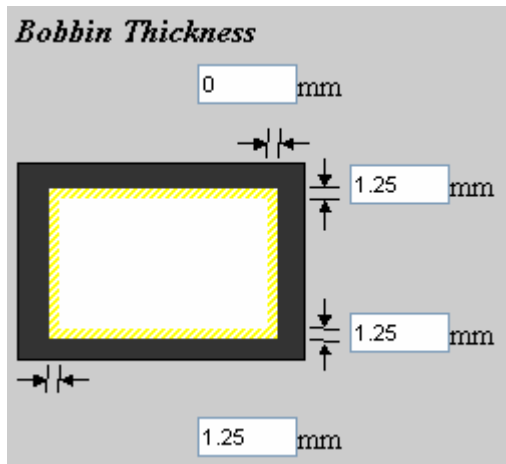
Advanced Bobbin Setting page provides the features for the user to customize a bobbin for the core used. User can make split bobbin, define the bobbin walls thickness, the window usage, etc.



After press 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 side 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

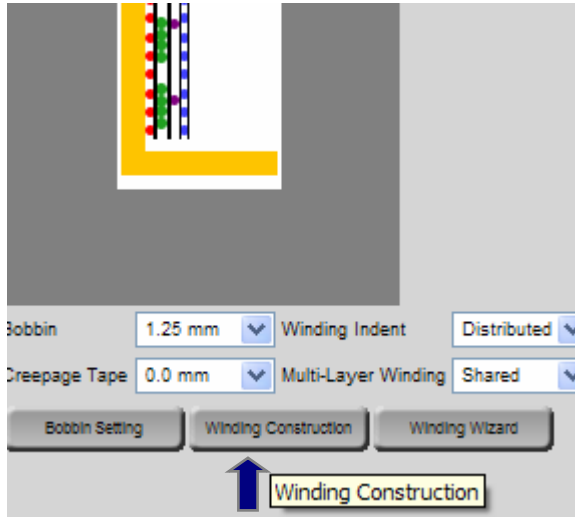
Select Type of Split Walls	Vertical
Select No. of Split Walls	0
Thickness of Split Walls	1.0 mm
Partition 1 thickness	21.4 mm

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 change 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 being wired, location of the wire, location and dimension of the creepage tapes, placement of insulation tapes, etc. User can makes use of it to build virtually any transformer construction in a professional way.

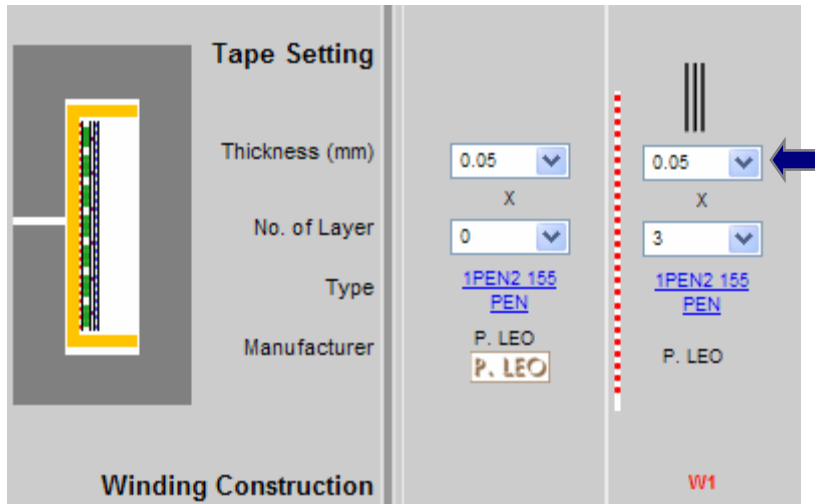


Click the button “Winding Construction” will redirect user to the “Advanced Winding Construction” page as below.



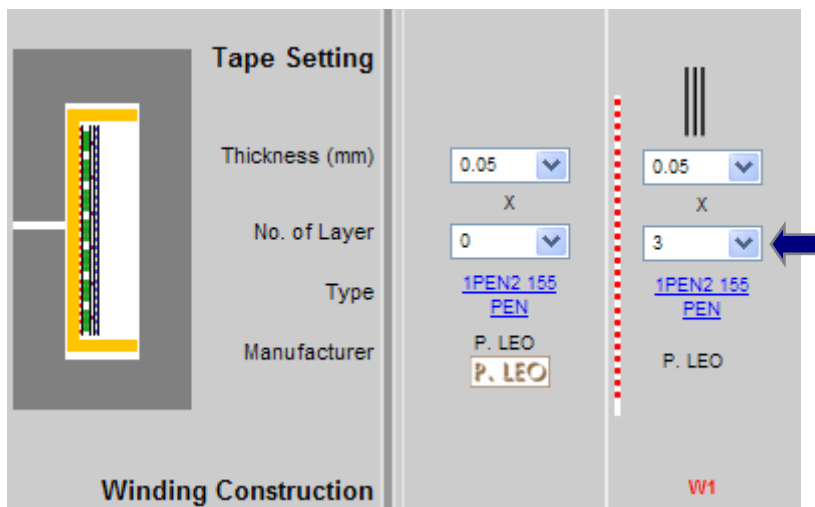
Each winding layer is defined by layers of winding construction following by layers of insulating tapes. User can change each winding construction at this Advance Winding Construction page.

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



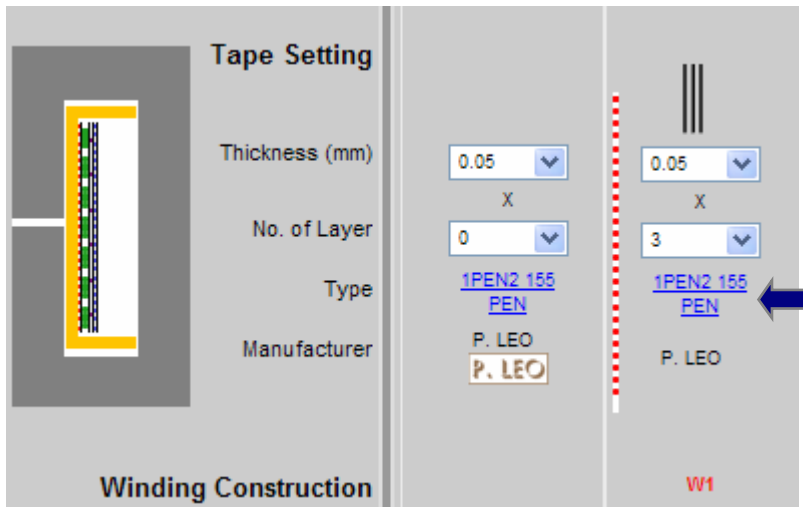
User can change the thickness of insulating tape by change the value in the combo box "Thickness" at the Tape Setting region.

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



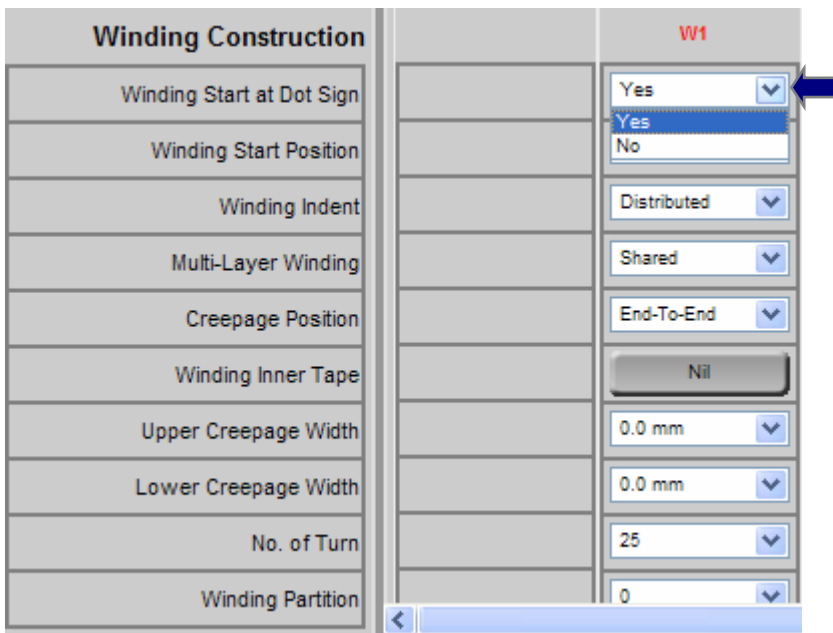
User can change the number of layer of the insulating tape by change the value in the combo box "No. of Layer" at the Tape Setting region.

### 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 is start with dot sign; "No" means winding is oppose with dot sign.

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

Winding Construction		W1
Winding Start at Dot Sign		Yes
Winding Start Position		Upper
Winding Indent		Lower Upper
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

User can choose the location of the wire start to wind at the combo box "Winding Start Position." "Upper" means winding is start at the upper part of the available layer; "Lower" means winding is start at the lower part of the available layer.

### 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 Center Lower Upper
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

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 center of the available layer; "Low" means wire will be packed tight at lower part of the available layer; "Upper" means wire will 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

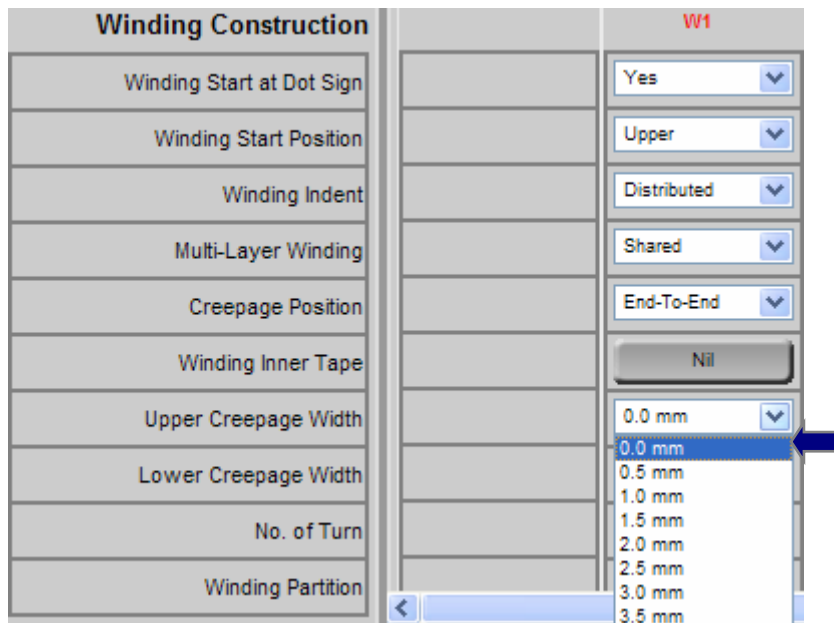
User can choose the how to distribute wire in multi-layer condition at the combo box "Multi-Layer Winding." "Share" means number of turn will try to make equal in all layer for one winding, "Tight" means all turn will try to pack as tight as possible in all layer for one winding.

### 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

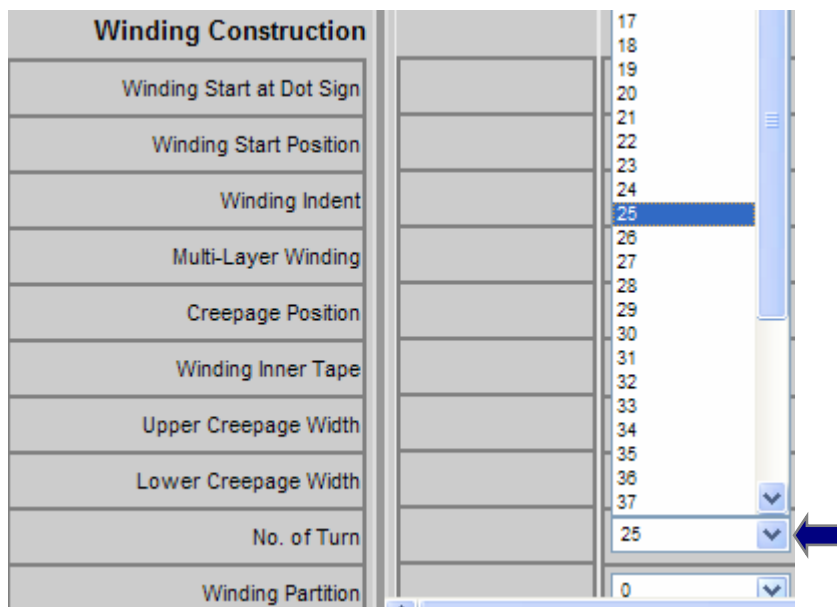
User can choose the location of the creepage tape at the combo box "Creepage Position." "End-To-End" means creepage tape will be placed at both end of the available layer; "Tight" means creepage tape will stick to the wire's end rather than the layer end.

### 3.7.1 Creepage width of each winding



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

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



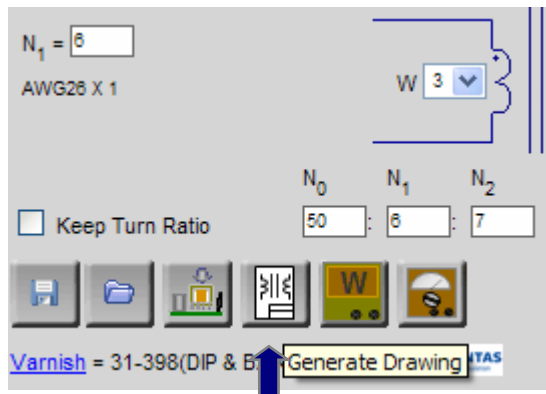
If more than 1 split winding are made, you can change the number of turns of the each split winding at combo box “No. of Turn”.

### 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

For 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.

Generate Drawing

Xformer Description: <input type="text" value="Main Transformer"/> Magnetic Core Used: <input type="text" value="EE42 PowerMaterial PowerEsim"/> Bobbin Type: <input type="text" value="Vertical 8 pin bobbin"/> Bobbin P/N: <input type="text"/> Bobbin Manufacturer: <input type="text"/> Varnish Used: <input type="text" value="31-398(DIP &amp; BAKE) ELANTAS"/> UL Insulation System: <input type="text" value="P_LED"/>	Xformer P/N: <input type="text"/> Rev. <input type="text" value="A"/> <div style="text-align: center;"> <input type="button" value="Select Bobbin"/>  <input type="button" value="Add Fly Pins"/> </div>
--	--

Designed Parameters			
Measured @ <input type="text" value="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 <input type="text" value="+500 mΩmm"/>	<input type="checkbox"/> 101 mΩ	<input type="checkbox"/> 34.1 mΩ

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 <input type="text" value="&lt;900 mOhm"/>	<input type="checkbox"/> 101 mΩ	<input type="checkbox"/> 34.1 mΩ
Magnetizing Inductance	<input checked="" type="checkbox"/> 778 uH <input type="text" value="±778 uH +/- 5%"/>	<input type="checkbox"/> 11.2 uH	<input type="checkbox"/> 15.2 uH
Leakage Inductance	<input checked="" type="checkbox"/> 2.58 uH <input type="text" value="&lt;3.1 uH"/>	<input type="checkbox"/> 0.055 uH	<input type="checkbox"/> 0.048 uH

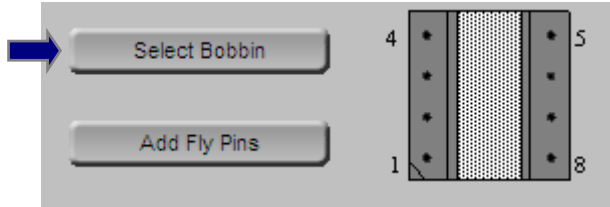
Testing Details	
Hi-pot P - S Voltage	<input type="text" value="4000V AC"/>
Hi-pot P- core Voltage	<input type="text" value="4000V AC"/>
Hi-pot S- core Voltage	<input type="text" value="4000V AC"/>
Hi-pot Period	<input type="text" value="1 Sec"/>
Remark	<input type="text"/>

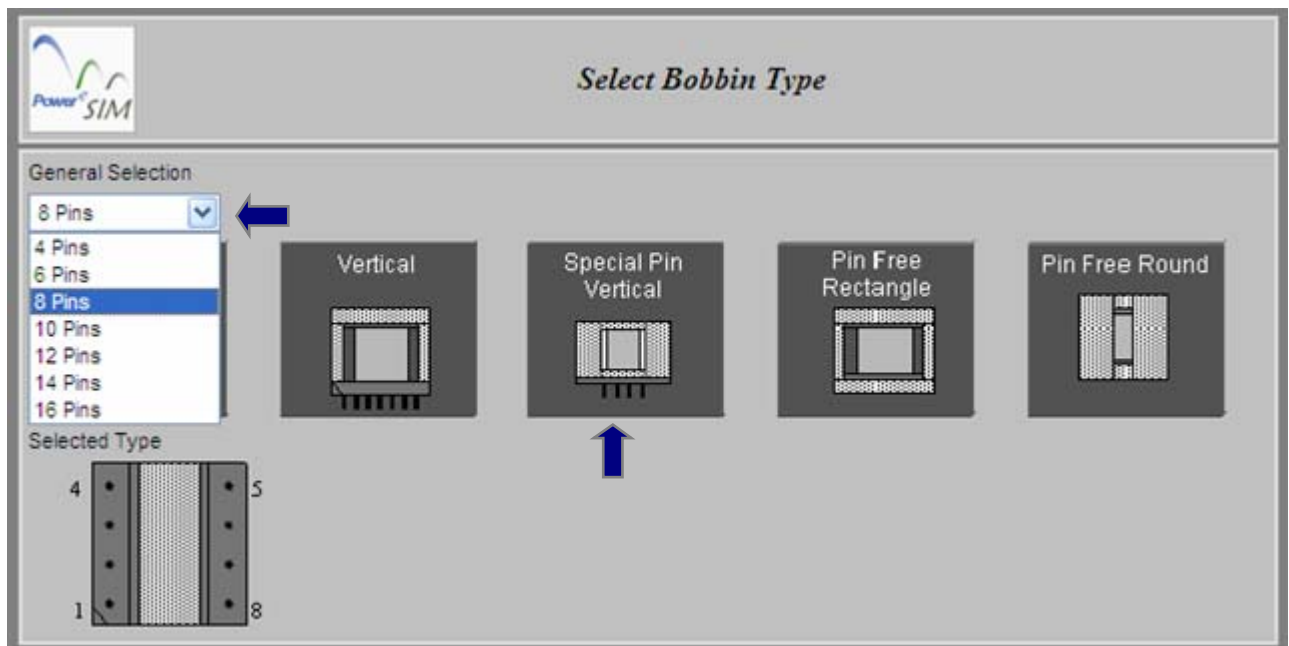
Preview Preference	
<input checked="" type="checkbox"/>	Show Winding Direction

User can fill in the testing details in 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

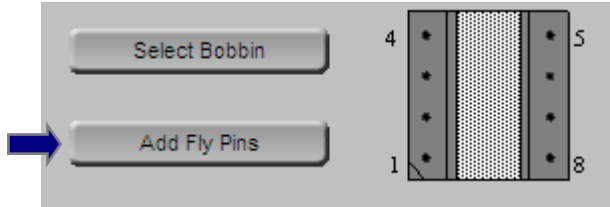


Click the button "Select Bobbin" at the top-right side of the Generate Drawing and will see the Select Bobbin Type page.



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



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

**Add Fly Pins**

(English Only)

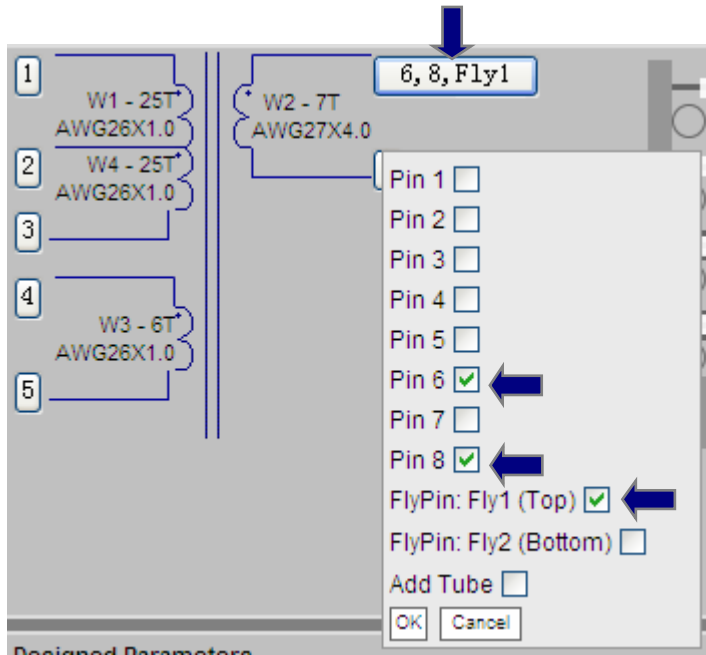
Fly Pin No.	Position	Left/Right	Lead Out At	Lead Length	Dip Solder	
1	Middle	Left	Top	10	10	X
2	Top	Right	Bottom	25	5	X

Left Side

Right Side

User can add or delete fly pins pressing 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." Define the wire is lead out at which side of the bobbin at combo box "Left/Right." Define the wire lead out at top or bottom of the bobbin at combo box "Lead Out At" 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 be pop up and showing all possible pin 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

Click 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.

Magneticizing Inductance @ 100k Hz Winding Start & Positive Rotation  
Lm(5-4) = 830uH +/- 5%

DC Reistance  
Rdc(5-4) < 2.50hm

Leakage Inductance @ 100k Hz  
Lk(5-4) < 7.9u H

Core - EFD20/10/7 N87 EPCOS  
Bobbin - Horizontal 10 pin bobbin  
Hi-pot-  
P-S 4000V AC 1 Sec  
P-Core 4000V AC 1 Sec  
S-Core 4000V AC 1 Sec  
Remark -

Winding Start & Positive Rotation

BOBBIN

Winding Construction and Pin Definition

Unless otherwise specified, all dimension in mm		Rev.: A
Prepared -		20/Jul/06
Checked -	Title: Main Transformer	
Approved -	P/N:	Page 1 of 3

## 4 Troubleshooting

### 4.1 Run PowerEsim smoothly - security setting

In "**Internet Options**" in IE, 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 on "**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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