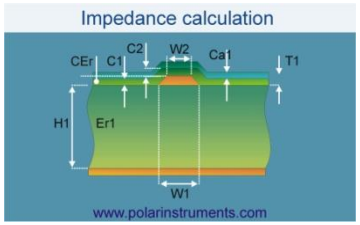
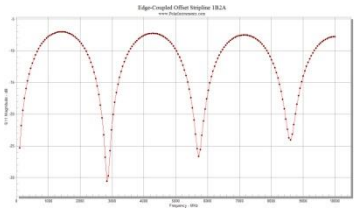
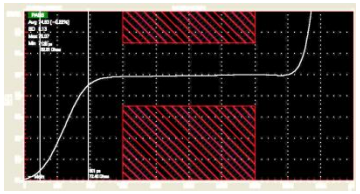
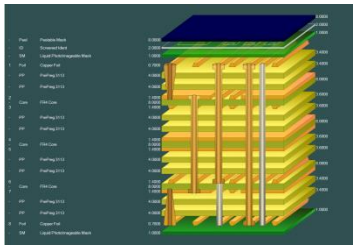
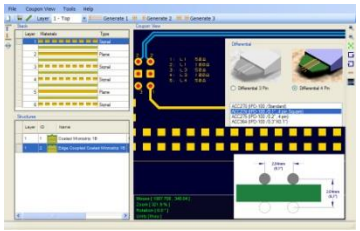










Speedstack 2017 Q2 Update

Richard Attrill / John Lee – April 2017 (Rev 1)

Introducing Speedstack 2017

Welcome to a preview of Speedstack 2017.

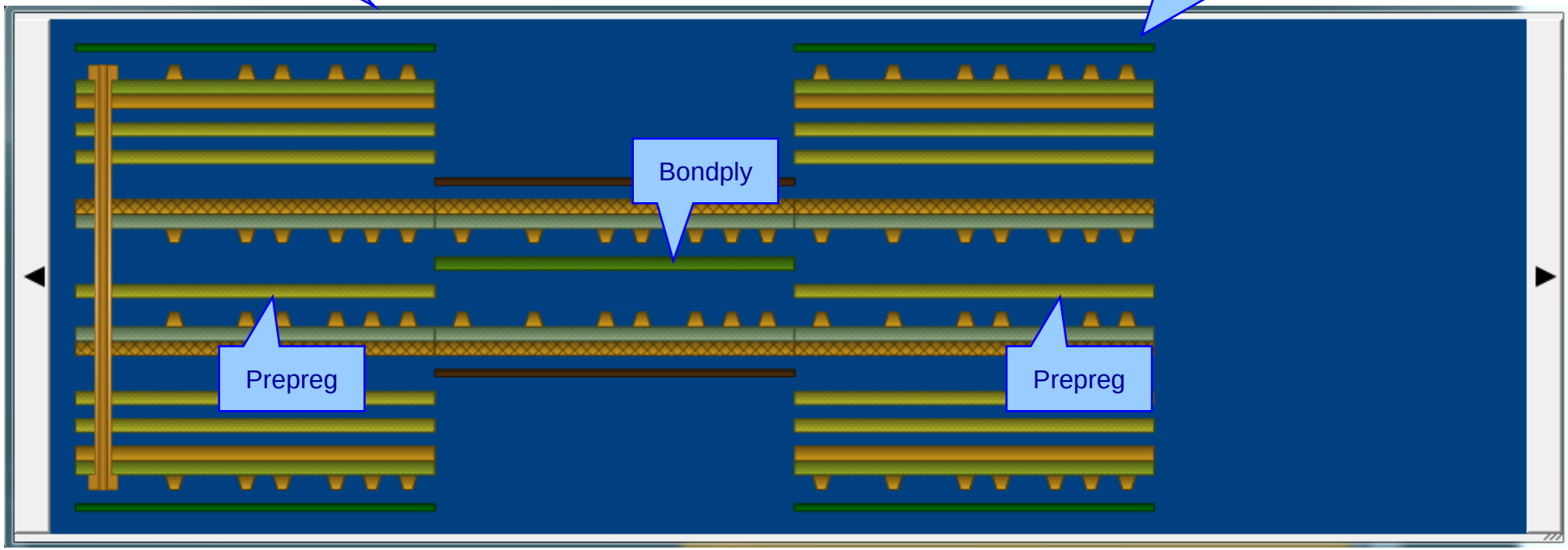
We have introduced a number of new features that have been requested through our Polarcare software maintenance service.

The following slides provide an overview of these new features. If you would like to have a web-based demonstration please contact your local Polar office, details are shown on the last slide of this presentation.

Speedstack Flex – Improved support for ‘bikini builds’

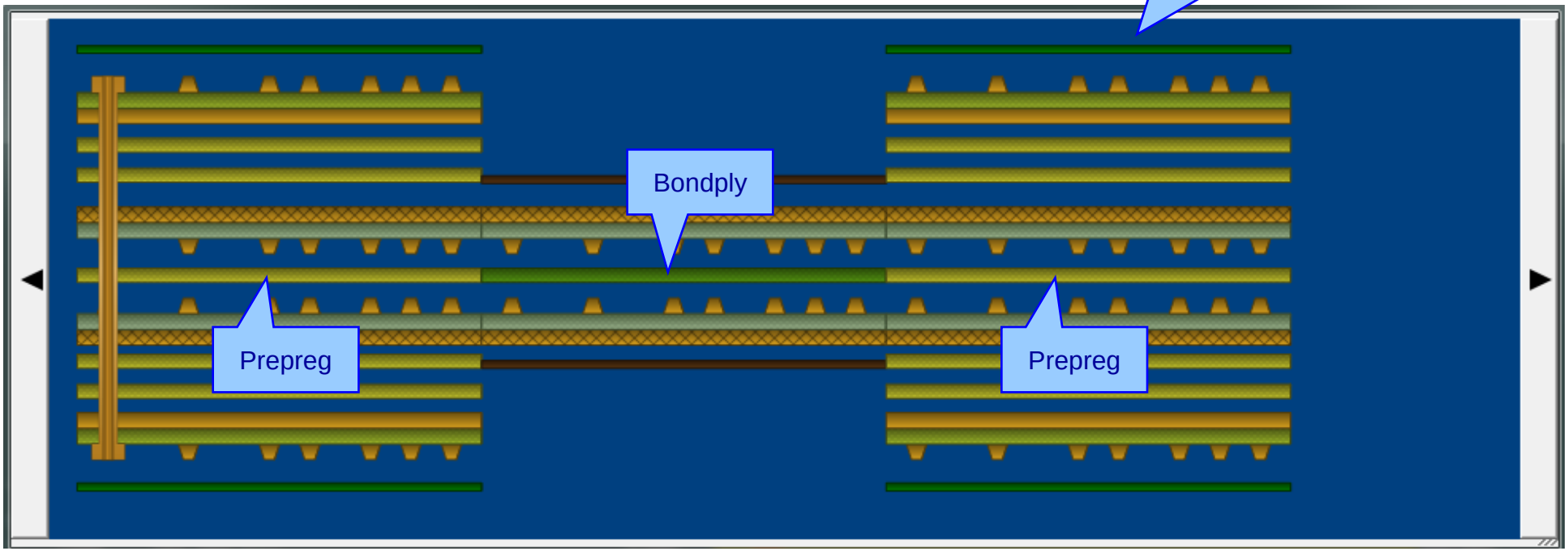
Example: 8 layer rigid - 4 layer flex – 8 layer rigid

Once constructed the Prepreg – Bondply – Prepreg materials are actually on the same horizontal dielectric layer – known as a ‘bikini build’



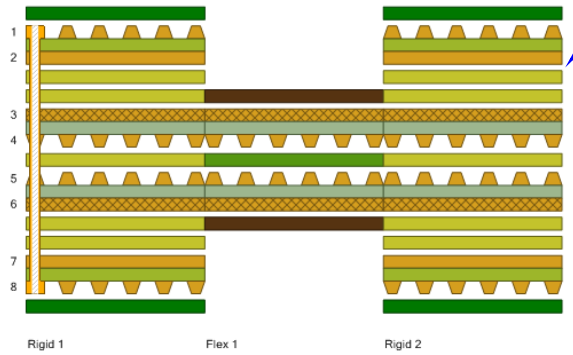
Speedstack Flex – Improved support for ‘bikini builds’

Speedstack now provides tools to allow the user to align materials in the same horizontal dielectric layer. The Prepreg and Bondply materials now align as they do in the actual rigid-flex construction



Speedstack Flex – Improved support for ‘bikini builds’

C:\Users\Richard Attrill\Desktop\PINC 24082016\3A5487D40_MB v12.stk Units: Microns

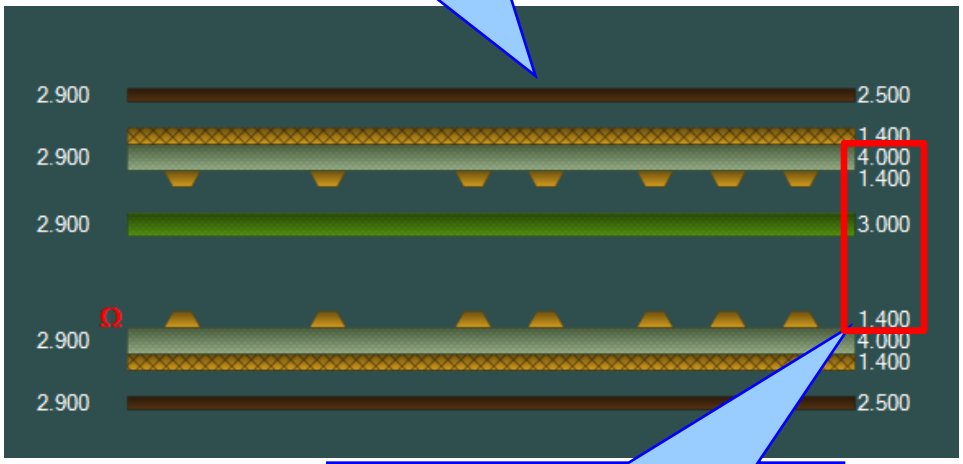


The technical report also supports different materials on the same dielectric layer, improving the clarity of documentation between the stack up designer and fabricator

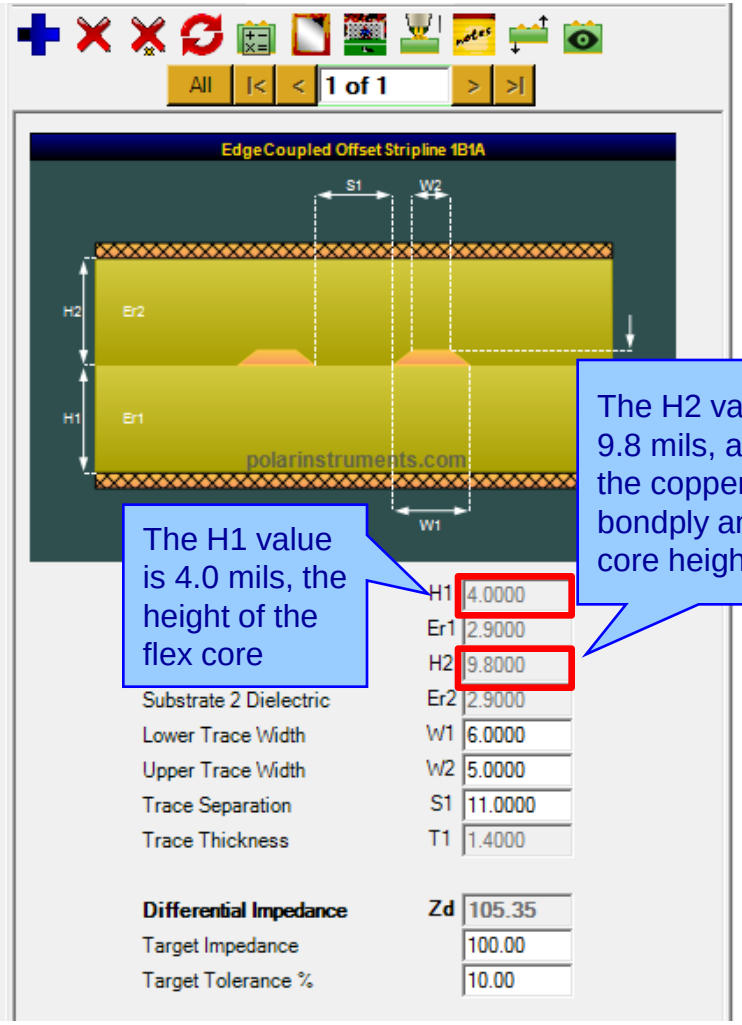
StackName: Rigid 1	Version:	Revision:	Modification:	Date of Revision:	Editor		
Date:	Associated Documents:					Page 1/X	
Author:							
Department:							
Site:							

Speedstack Flex – Improved support for 'bikini builds'

Speedstack Flex now supports improved accuracy for substrate height calculations when designing bikini builds. These height calculations are used when calculating impedance



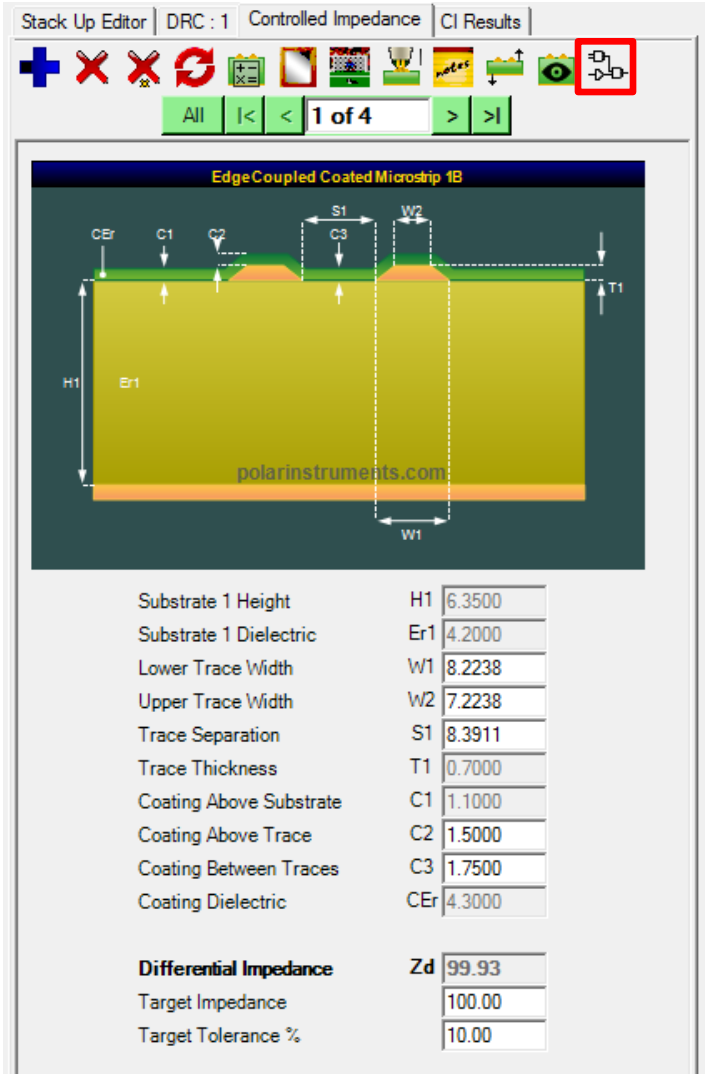
The substrate height (H2) is a sum of these materials (1.4+3.0+1.4+4.0) = 9.8 mils.

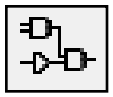


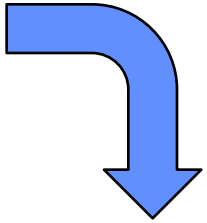
The H1 value is 4.0 mils, the height of the flex core

The H2 value is 9.8 mils, a sum of the copper(s), bondply and flex core heights

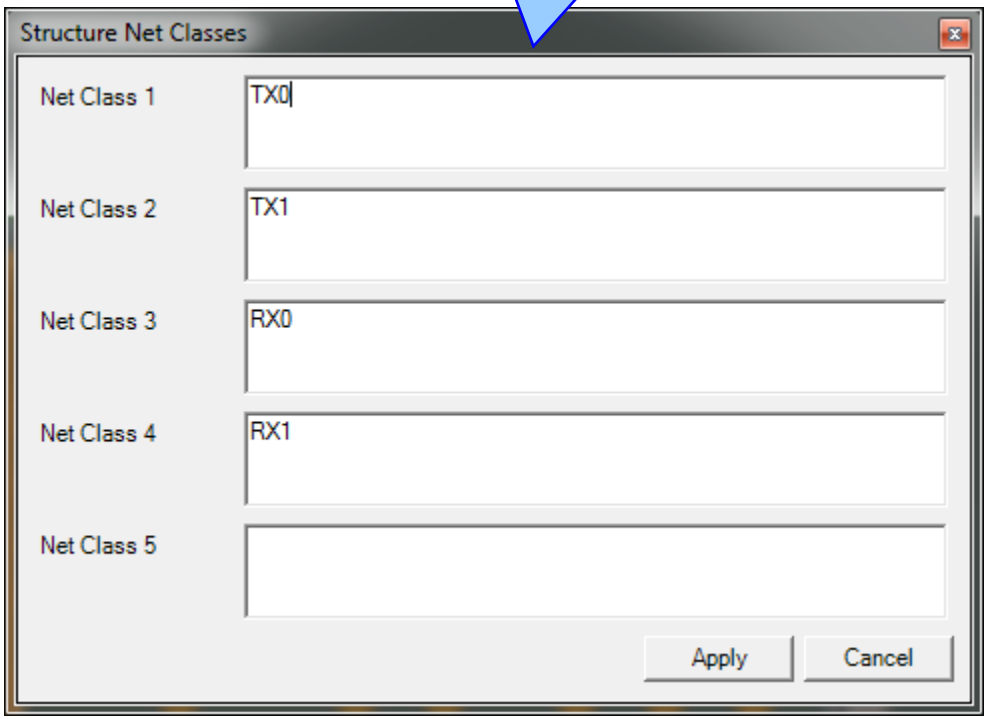
Structure Net Classes







It is now possible to store up to five Net Class names with each structure. These net class names provide a link to the matching impedance nets inside the ECAD PCB layout system.



Structure Net Classes

Selectable Net Class columns are available on the technical report

Impedance ID	Structure Image	Impedance Signal Layer	Ref. Plane 1 in Layer	Ref. Plane 2 in Layer	Lower Trace Width (W1)	Upper Trace Width (W2)	Trace Separation (S1)	Target Impedance	Tol (+/- %)	Calculated Impedance	NetClass1	NetClass2	NetClass3	NetClass4	NetClass5
1		1	3	0	8.224	7.224	8.391	100.000	10.000	99.93	TX0	TX1	RX0	RX1	

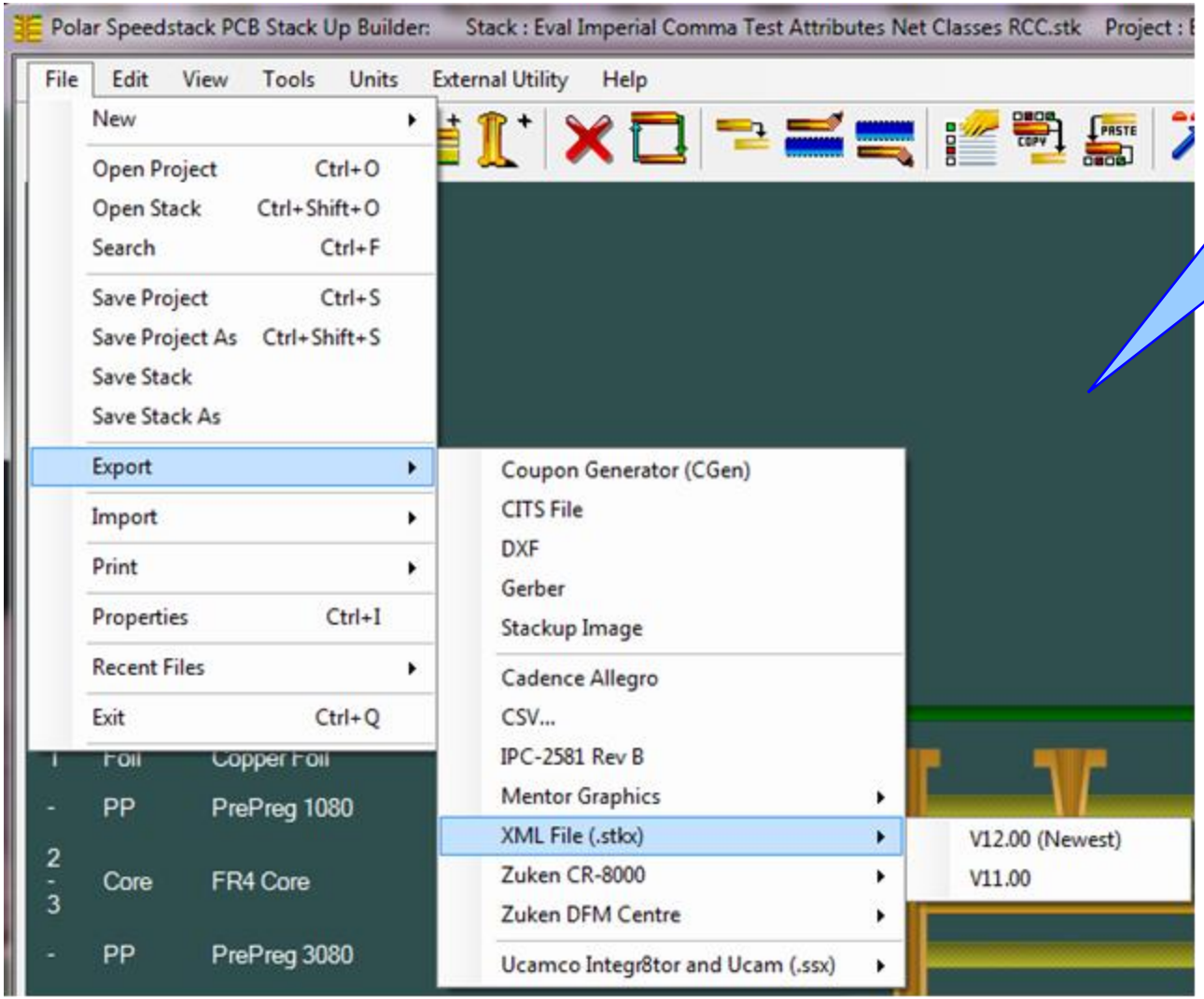
```
<NetClasses>

    <NetClass1>TX0</NetClass1>
    <NetClass2>TX1</NetClass2>
    <NetClass3>RX0</NetClass3>
    <NetClass4>RX1</NetClass4>
    <NetClass5 />

</NetClasses>
```

Speedstack now provides updated import / export XML file formats (STKX and SSX) to support Net Classes.
These file formats are commonly used to pass detailed stack up information to and from CAD / CAM systems

Extensive range of XML-based import / export options (STKX / SSX)



Speedstack is able to export and import stack up data from an ever increasing range of CAD / CAM systems.

The 2017 edition will now support STKX v11.00 and v12.00, SSX v1.00 and v2.00

Extensive range of XML-based import / export options (STKX / SSX)

A number of major enhancements have been made introduced to the latest file format:

- Support for the new material attributes and structure net classes
- Support for material colours
- Improved support for structure coating profile (C1, C2, C3, CEr)
- More comprehensive structure parameter information including these extra parameters - <StructureNumber>, <H1>, <Er1>, <H2>, <Er2>, <H3>, <Er3>, <H4>, <Er4>, <C1>, <C2>, <C3>, <CEr>, <NetClass1>, <NetClass2>, <NetClass3>, <NetClass4>, <NetClass5>
- Simplified versioning information

Technical report enhancements

Impedance ID	Structure Image	Impedance Signal Layer	Ref. Plane 1 in Layer	Ref. Plane 2 in Layer	Lower Trace Width (W1)	Upper Trace Width (W2)	Trace Separation (S1)	Target Impedance	Tol (+/- %)	Calculated Impedance	Trace Pitch (S1+ W1)	Coating Above Substrate (C1)	Coating Above Trace (C2)	Coating Between Traces (C3)	Coating Delectric (CEr)
1		1	3	0	8.224	7.224	8.391	100.000	10.000	99.930	16.615	1.100	1.500	1.750	4.300
2		1	3	0	4.500	3.500	0.000	75.000	10.000	75.270	0.000	1.100	1.000	0.000	4.300

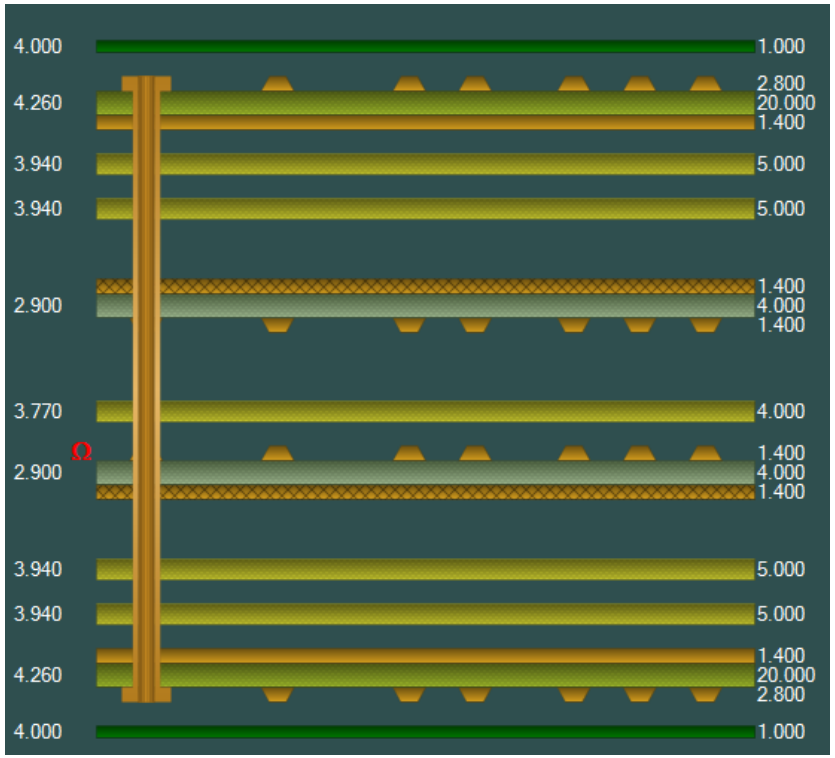
New selectable columns have been introduced to the impedance structure table:

- Trace Pitch
- More detailed coating profile information, separate columns for each coating parameter

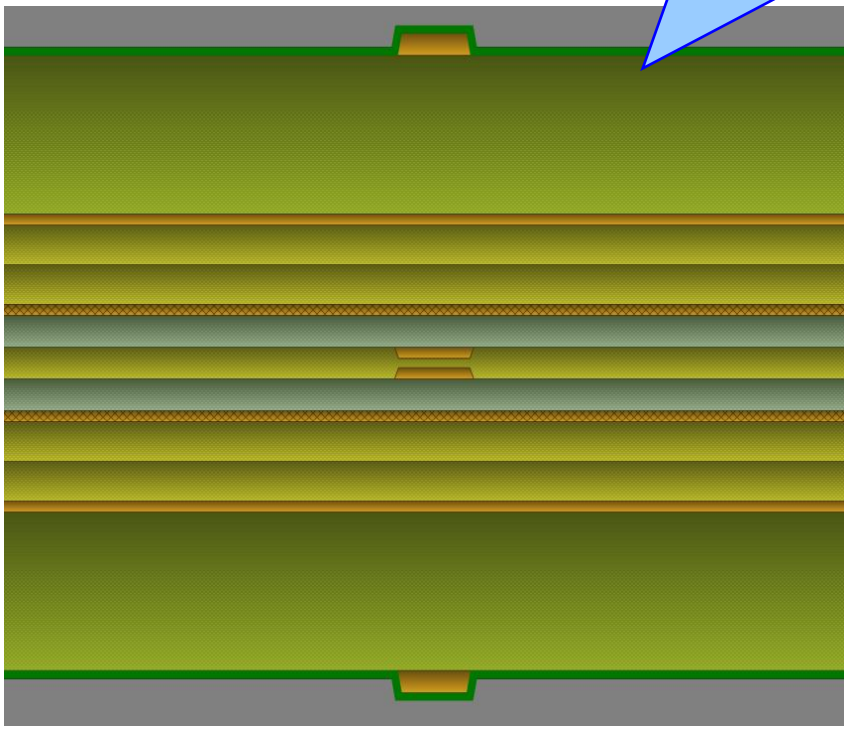
Layer	Stack up	Supplier	Supplier Description	Description	Type	Processed Thickness
	STSL					
		Polar Samples	SM/001	Liquid PhotoImageable Mask	SolderMask	1.100
1		Polar Samples	FO/001	Copper Foil	Copper	0.700
		Polar Samples	PP/001	PrePreg 1080	Dielectric	1.950
2						1.400
		Polar Samples	CO/005	FR4 Core	FR4	3.000
3						1.400

The Processed Thickness column now includes the Solder Mask thickness

BETA Experimental Feature : Proportional View



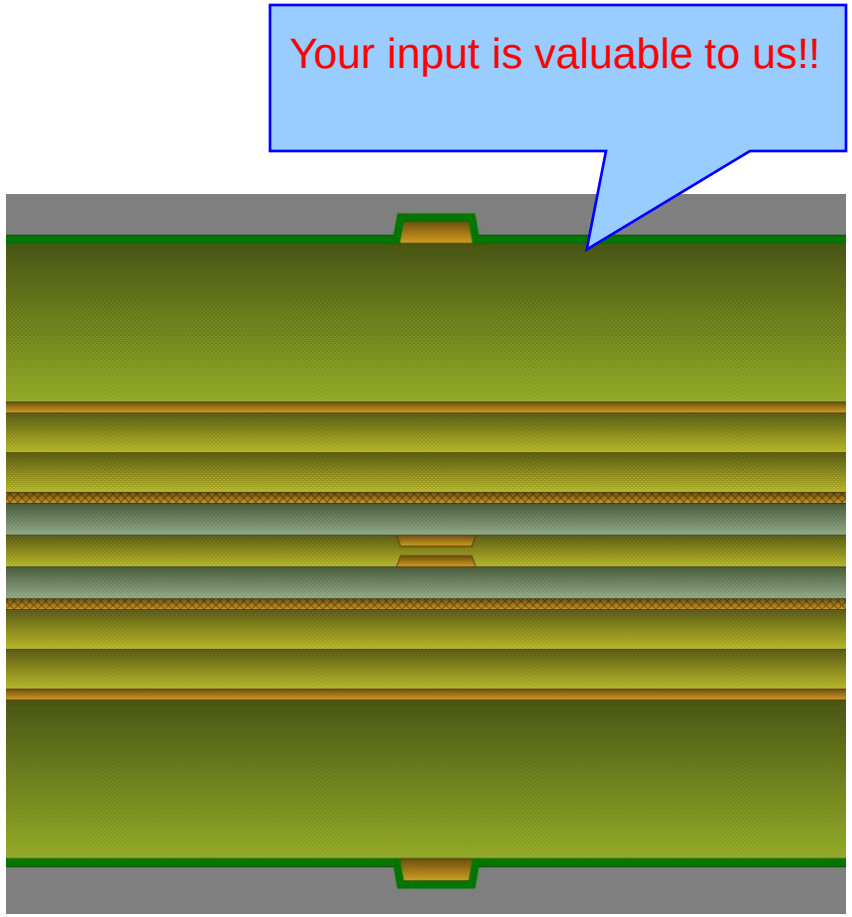
We asked our Speedstack customers
Do you feel there is value to having a proportional view of the stack up?



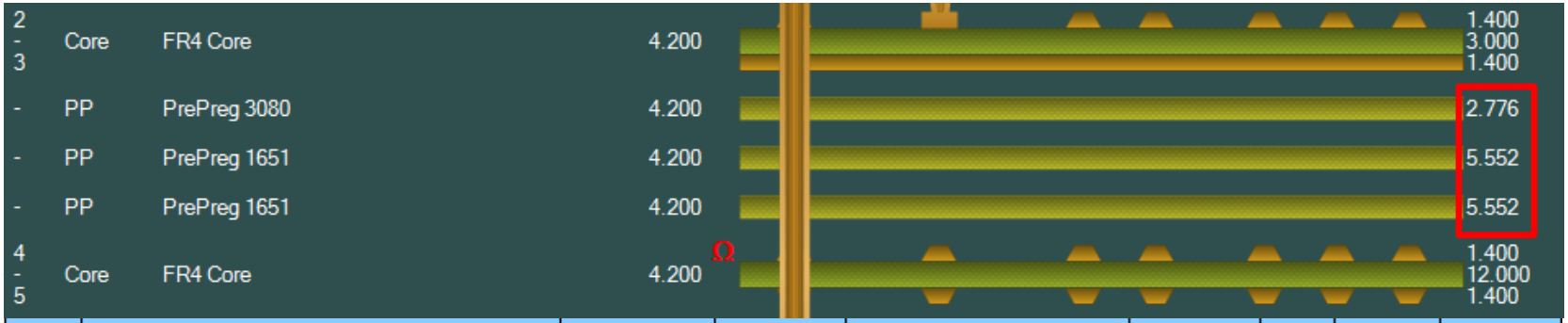
Some users have expressed interest in displaying the stack up where the material thicknesses are proportional to each other. This can be informative as a visual aid, especially when considering the dielectric thicknesses between electrical layers

BETA Experimental Feature : Proportional View

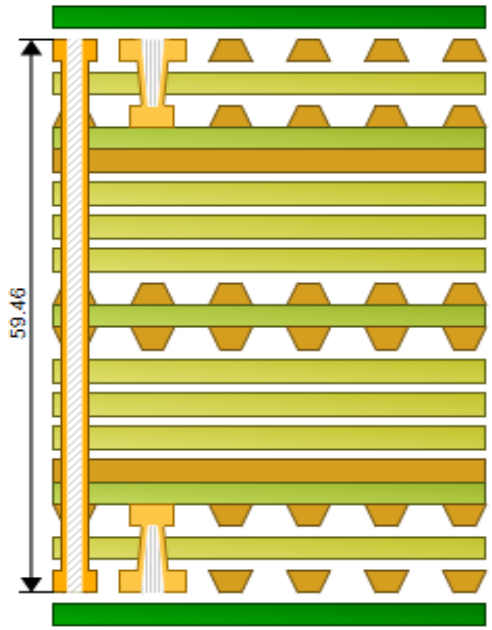
Update: We have received positive feedback from existing Speedstack customers in Europe and the US:



Printing : Sum isolation distances



Layer	Stack up	Supplier	Supplier Description	Description	Type	εr	Isolation Distance	Isolation Distance (Summed)
		Polar Samples	SM/001	Liquid PhotoImageable Mask	SolderMask	4.000		
1		Polar Samples	FO/001	Copper Foil	Copper			
		Polar Samples	PP/001	PrePreg 1080	Dielectric	4.200	1.950	1.950
2								
3		Polar Samples	CO/005	FR4 Core	FR4	4.200	3.000	3.000
		Polar Samples	PP/002	PrePreg 3080	Dielectric	4.200	2.776	13.880
		Polar Samples	PP/004	PrePreg 1651	Dielectric	4.200	5.552	-
		Polar Samples	PP/004	PrePreg 1651	Dielectric	4.200		-
4								
5		Polar San			FR4		12.000	12.000
		Polar San				200	5.552	13.880
		Polar San				4.200	5.552	-
		Polar San			ctric	4.200	2.776	-
6								
		Polar San			FR4	4.200	3.000	3.000
7								
		Polar San			ctric	4.200	1.950	1.950
8		Polar San			pper			
		Polar San			Mask	4.000		

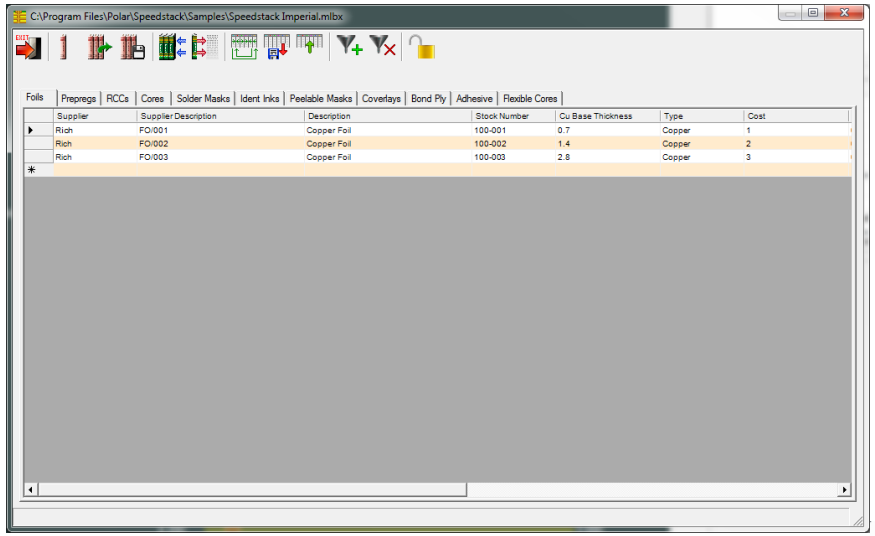


Sum isolation distances

The three prepreg isolation distances between L3 and L4 can be presented as a single value of 13.88, now incorporated in the printed report

13.88 = 2.776 + 5.552 + 5.552

Enhanced library management using Excel™



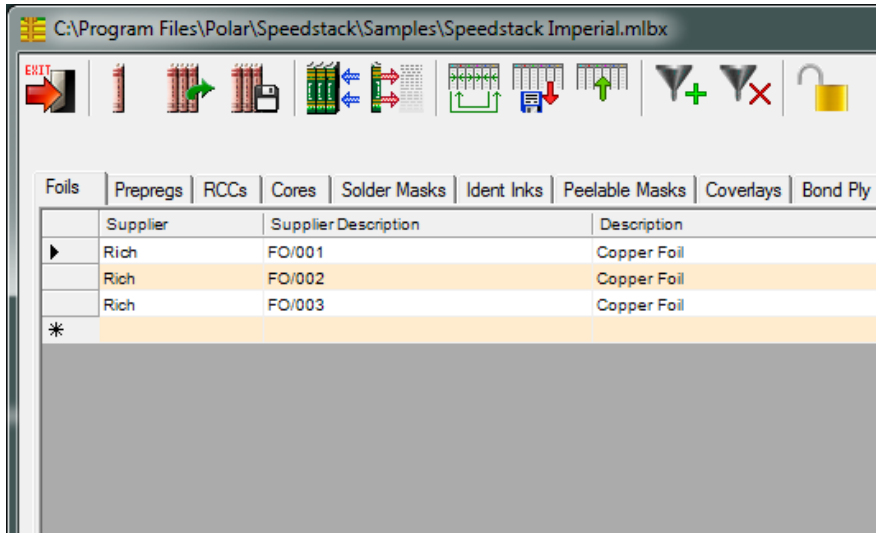
We asked our Speedstack customers how to improve the experience of setting up and maintaining libraries:

Foils_Rich.csv

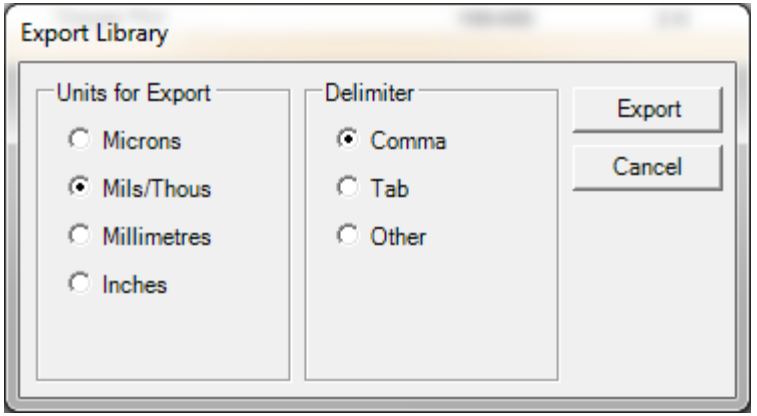
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	*Foil													
2	*Type	Supplier	Supplier D	Descriptio	Stock Nun	Cu Thickn	Cost	Lead Time	Notes 1	Notes 2	Notes 3	Notes 4	Notes 5	Size
3	Copper	Rich	FO/001	Copper Fc	100-001	0.7	1	0						*
4	Copper	Rich	FO/002	Copper Fc	100-002	1.4	2	0						*
5	Copper	Rich	FO/003	Copper Fc	100-003	2.8	3	0						*
6														
7														

These subtle but user friendly changes transform the task of initialising and maintaining Speedstack libraries

Example takes 3 foils from standard library and rename as “Rich”

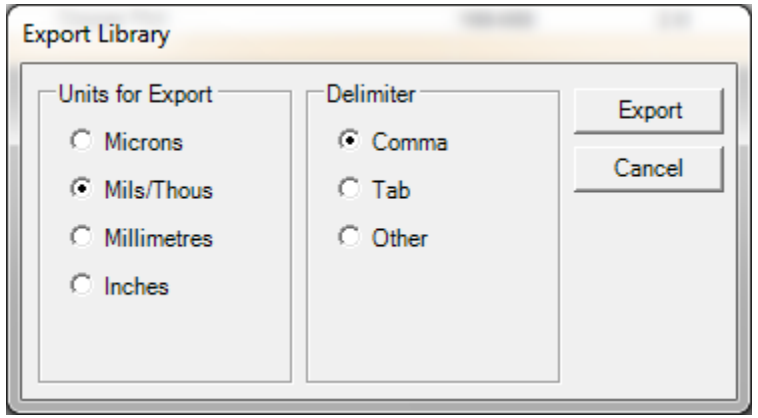


New Export library function lets you export to a file, for example “Foils_Rich.csv



Assume this is a library from a supplier like Isola, Ventec, NanYa or Panasonic

Then export to a .csv, for use with Excel



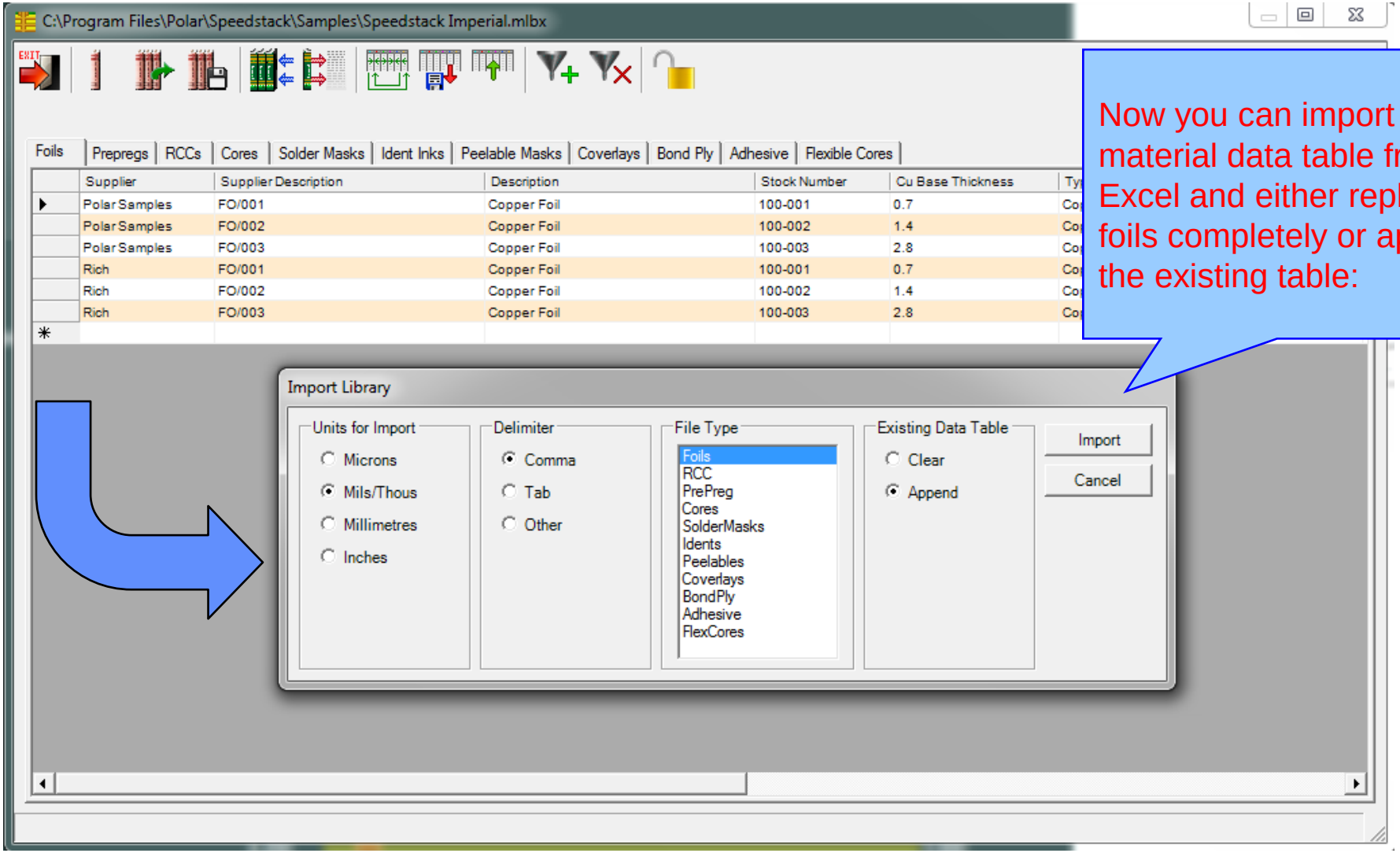
The resulting csv looks like this in Excel:

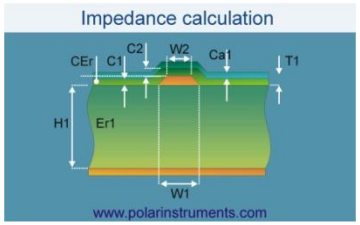
Foils_Rich.csv

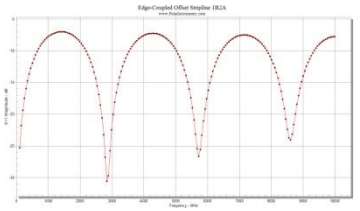
	A	B	C	D	E	F
1	*Foil					
2	*Type	Supplier	Supplier D	Descriptic	Stock Nun	Cu Thickn
3	Copper	Rich	FO/001	Copper Fc	100-001	0.7
4	Copper	Rich	FO/002	Copper Fc	100-002	1.4
5	Copper	Rich	FO/003	Copper Fc	100-003	2.8
6						
7						

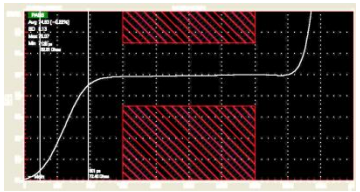
Assume this is a library from a supplier like Isola, Ventec, NanYa or Panasonic

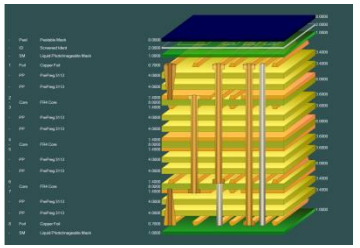
After editing the materials in Excel reload into Speedstack

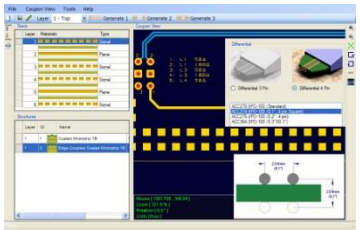




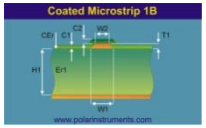


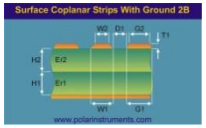


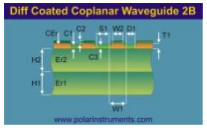


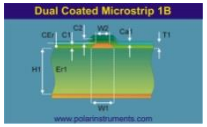


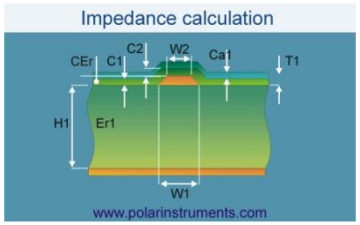
Thank you

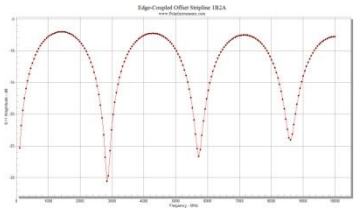


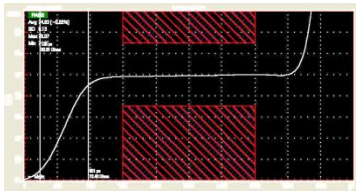


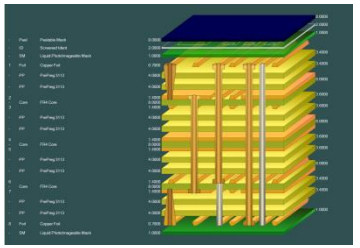


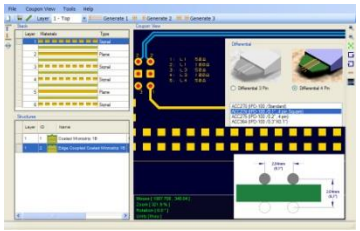












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