

FloWare Modules

FlowCAD meets customer needs

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FlowCAD Differentiators

- **FlowCAD not only offers**
 - Trainings
 - Support
 - Services
 - Software KnowHow
 - Translations from ThirdParty tools
 - Implementations of customer specific needs
- **FlowCAD also offers**
 - Additional plugins (FloWare) for Allegro in order to make customers even more productive.



FloWare Features

- **General purpose utilities**
 - Functions not in standard tool yet
 - Not written for one specific customer.
 - Everybody should benefit.
- **Easy installation**
 - Also casual users must be able to install FloWare
 - No variables
 - Menus will be created automatically.
 - Integrates perfectly into existing customizations
- **Documentation**
 - Full documentation is provided for every module



Motivation for FloWare

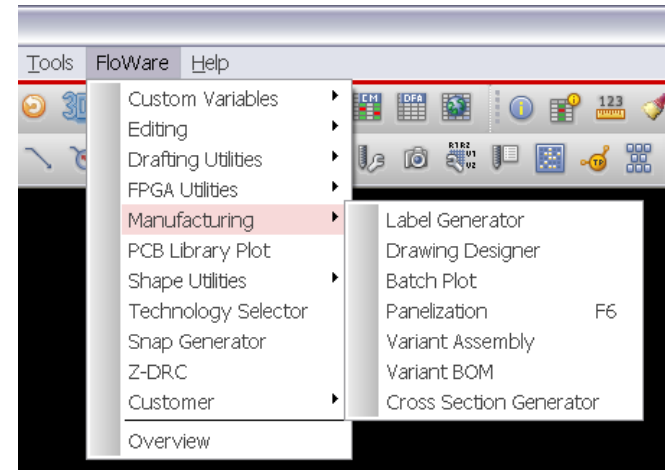
- **Input from Customers**
 - „We need a feature that
 - „Can you write something which enables us“
 - „Why does PCB Editor not“
- **Input from FlowCAD colleagues**
 - „We should offer something, which....“



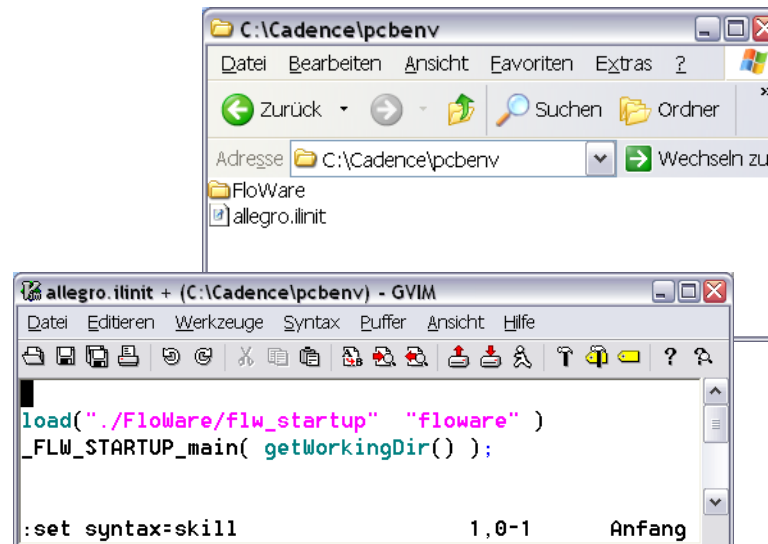
FloWare Installation Process

Steps

- Drag&Drop FloWare folder into your *pcbenv* directory
- Add two (!!) lines to your *allegro.ilinit* file
- You are done.



- Do not worry about menus!
- Note: SITE installation also possible (including networks)

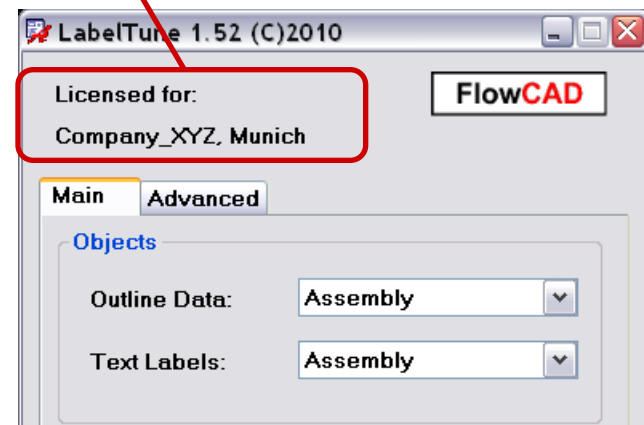


What about Licensing?

- Proprietary simple licensing mechanism
 - Company name and location always displayed
 - Unlimited access per location
- Each module is licensed
- Temp keys can be provided for evaluation purposes.

```

floware.lic + (C:\Cadence\home_163\pcbenv\FloWare) - GVIM
Datei Editieren Werkzeuge Syntax Buffer Ansicht Hilfe
# Feature: LABELGEN Version: 1.00 Expiring Date: JAN 01 23:59:29 2035
LABELGEN = 67 170 117 67 156 152 161 61 45 121 76 111 66 76 153 132 164 65 201 65
163 77 152 161 155 124 151 123 161 70 113 45 114 152 63 67 45 171 151
106 174 112 110 175 65 107 176 66 70 166 123 77 146 116 161 45 162 45
163 52 331 286 246 343 32 11 0 141 156 128 123 1 126 0 181 174 25 100
# Feature: LABELTUNE Version: 1.00 Expiring Date: JAN 01 23:59:29 2035
LABELTUNE = 152 132 63 65 175 45 106 174 174 76 45 121 152 76 123 66 163 67 132 1
77 153 167 112 45 45 65 176 72 163 116 45 121 164 65 70 123 65 160 16
61 70 170 124 161 164 161 162 161 174 163 77 110 160 146 113 45 172 6
152 63 297 315 259 362 32 11 0 141 156 128 123 1 126 0 181 174 25 100
# Feature: PCBLIBPLOT Version: 1.00 Expiring Date: JAN 01 23:59:29 2035
PCBLIBPLOT = 72 121 45 201 45 174 70 110 117 45 121 161 45 146 67 65 45 124 76 15
65 65 45 107 72 76 171 201 164 161 153 111 170 123 45 175 116 131 63
152 61 67 66 163 167 124 77 167 171 113 155 116 66 77 70 125 106 106
1 0 17 316 272 252 374 45 24 13 154 0 141 136 14 139 13 194 187 38 1
# Feature: REPLACEUIA Version: 1.00 Expiring Date: JAN 01 23:59:29 2035
REPLACEUIA = 164 117 106 45 116 106 45 176 106 125 166 161 124 201 66 77 45 153 6
152 160 127 63 67 116 45 152 77 106 65 70 61 155 45 163 65 112 45 15
133 161 201 67 151 170 112 110 72 163 163 67 146 155 76 45 65 161 15
~@F 69,1 62%
  
```




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Contact information (1/3)

- The primary contact for pricing information, demo keys and technical support is your local channel partner
- For Central Europe contact FlowCAD
 - Pricing information, demo keys:
 - Mail: sales@flowcad.de Phone: +49 (0)89 4563 7771
 - Mail: sales@flowcad.ch Phone: +41 (0)56 485 91 91
 - Mail: info@flowcad.pl Phone: +48 (0)58 732 74 77
 - Technical issues:
 - Mail: support@flowcad.de Phone: +49 (0)89 4563 7777
 - Mail: support@flowcad.ch Phone: +41 (0)56 485 91 91
 - Mail: support@flowcad.pl Phone: +48 (0)58 732 74 77
- Request [Demo Key](#)



Contact information (2/3)

- For United Kingdom contact Parallel Systems
 - Pricing information, demo keys:
 - Mail: sales@parallel-systems.co.uk Phone: +44 (0)1483 591 310
 - Mail: info@parallel-systems.co.uk Phone: +44 (0)1483 591 310
 - Technical issues:
 - Mail: support@parallel-systems.co.uk Phone: +44 (0)1483 591 31
- For Denmark and Iceland contact Nordcad Systems A/S 
 - Pricing and info: info@nordcad.dk Phone: +45 96 31 56 90
 - Support: support@nordcad.dk Phone: +45 96 31 56 99
- For France contact Artedas France
 - Pricing and info: info@artedas.fr Phone: +33(0) 170916720
 - Support: techsup@artedas.fr



Contact information (3/3)

- For Benelux contact CB Distribution BV
 - Pricing and info: info@cb-distribution.nl Phone: +31 74 256 1424
 - Support: support@cb-distribution.nl Phone: +31 74 256 1424
- For Spain and Portugal contact CB Distribution Southern Europe SL
 - Pricing and info: info@cb-distribution.es Phone: +34 91 0024576
 - Support: support@cb-distribution.es Phone: +34 91 0024576
- For North America contact EMA
 - Pricing and info: info@ema-eda.com Phone: +1 800 813 7494
 - Support: techsupport@ema-eda.com Phone: +1 585 334 6001



FloWare Modules PCB Editor

- Batch Plot
- Label Tune
- Cross Copy
- FPGA Utilities
- Snap Generator
- Label Generator
- Custom Variables
- Variant BOM
- Variant Assembly
- Drawing Designer
- ZDRC
- PCB Library Plot
- Cross Section Generator
- Shape Utilities
- Drafting Utilities
- Panelization
- Post Processing
- Coil Designer
- Barcode Generator
- Shield Routing
- Advanced Mirror
- Polar Grid Utilities

Videos available on 

<http://www.youtube.com/flowcad>



Floware modules PCB Editor (free of charge)

- [Highlight Dummy Pins](#)
- [Synchronize Testprep](#)
- [Mask Generator](#)
- [Assign Net to Via](#)
- [Padstack Finder](#)
- [Class Color](#)
- [Quick Symbol Edit](#)



Module: Batch Plot

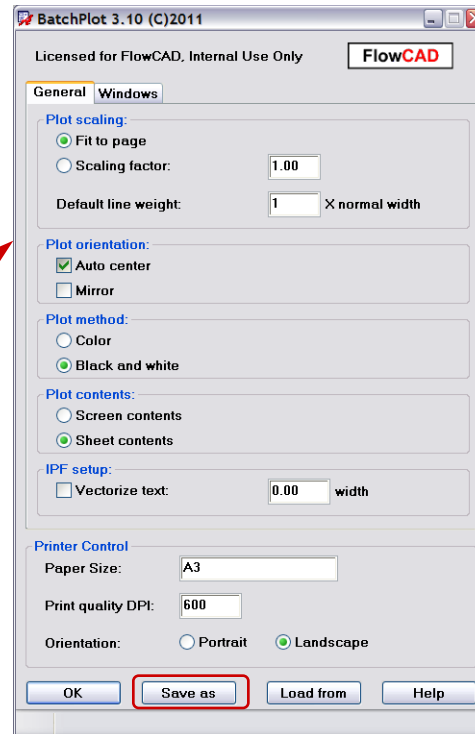
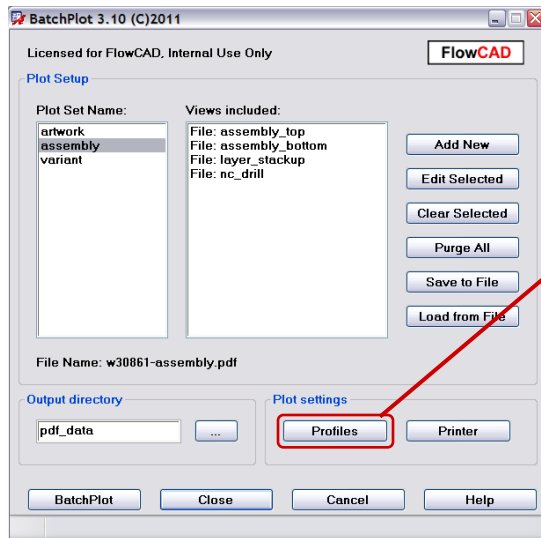
- **Creates PDF documentation**
 - Fully automated
 - Multipage or single page files
 - Visibility control based on views (color views as well as artwork views), similar to visibility panel
 - Order of view items can be changed by user
 - Plotsets allow grouping views into separate PDF files.
 - Load and save configuration to disk.
 - Integrates with **Adobe Distiller**, **FreePDF XP** and other Ghostscript based PDF writers.



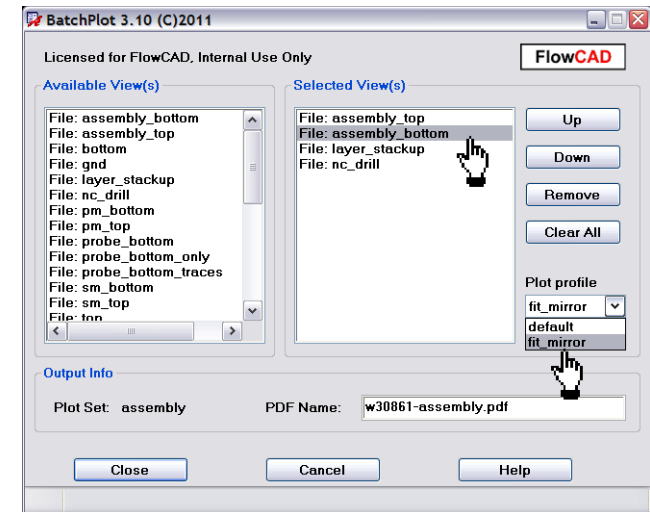
Module: Batch Plot

- Plot profiles can be defined and linked to individual views (e.g. mirroring a bottom view during plotting for better readability)
- Batch Plot** automatically reads profiles from search path

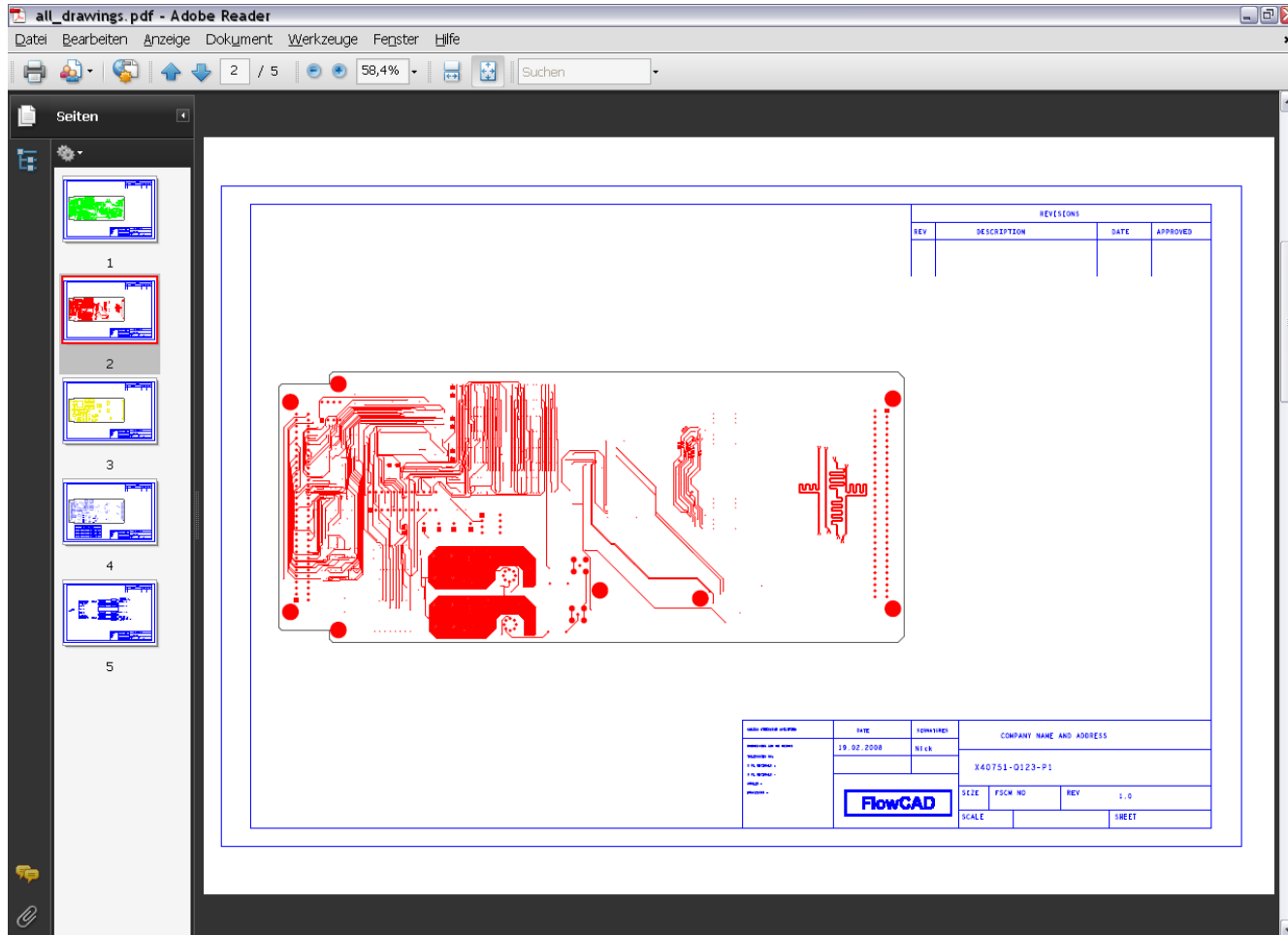
Definition of profiles



Linking profiles



Module: Batch Plot



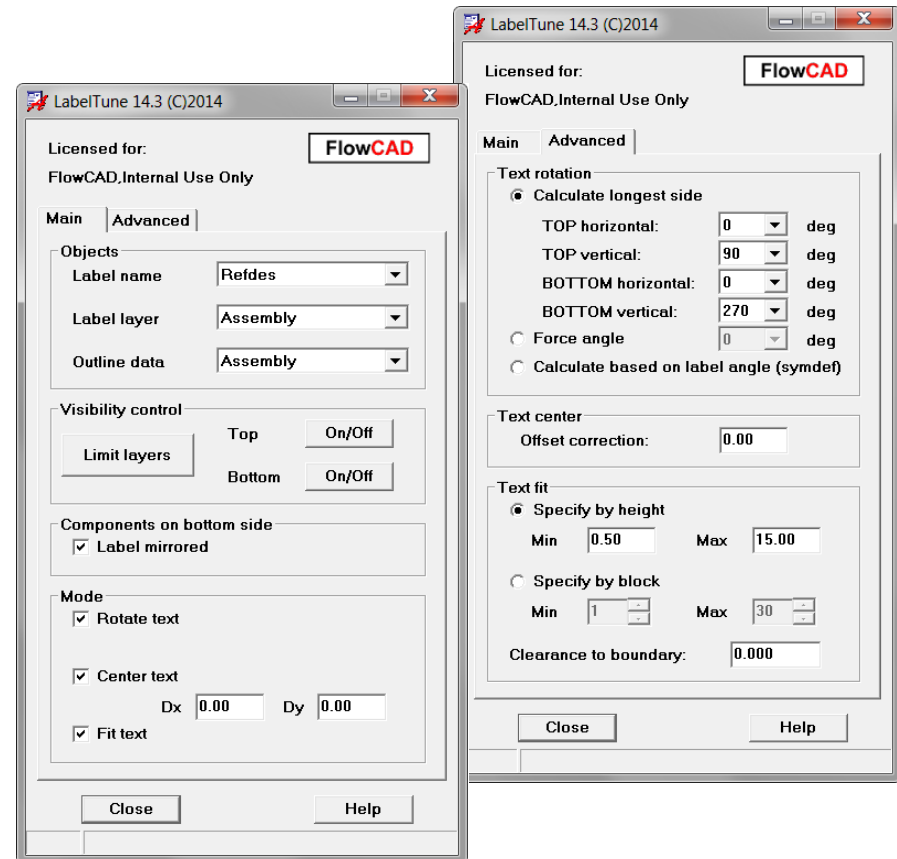
Final document opened with Acrobat Reader



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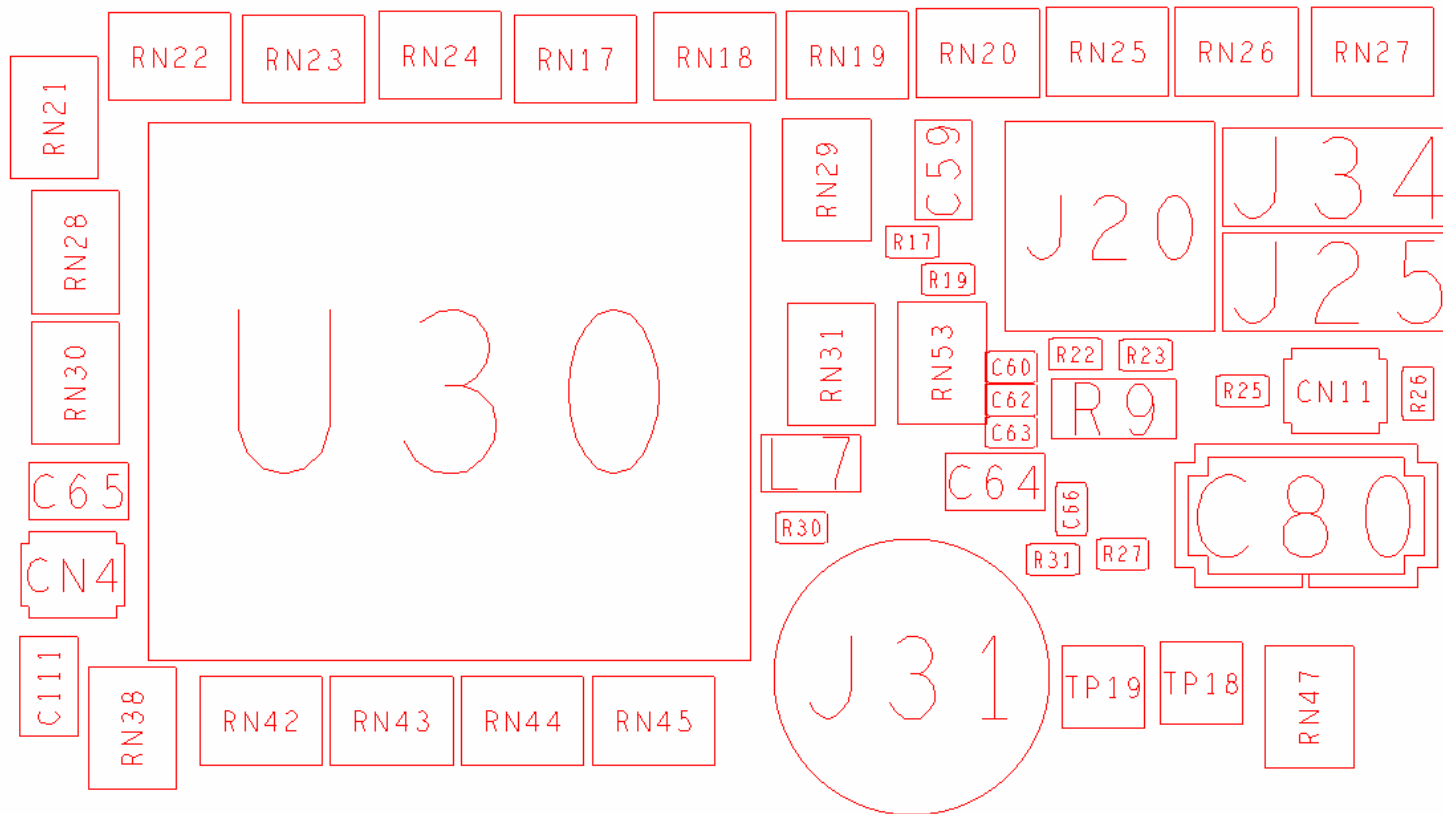
Module: Label Tune

- Adjusting component labels automatically
 - Better readability
 - Saves a lot of time when creating assembly drawings
- Features
 - Label can be chosen (e.g. Refdes, Value, Part Number..)
 - Automatic rotate, center, fit
 - Automatic mirroring
 - Visibility control
 - Various options...
 - Max block size, max height
 - Boundary clearance



Module: Label Tune

Typical situation in PCB Editor



Animation

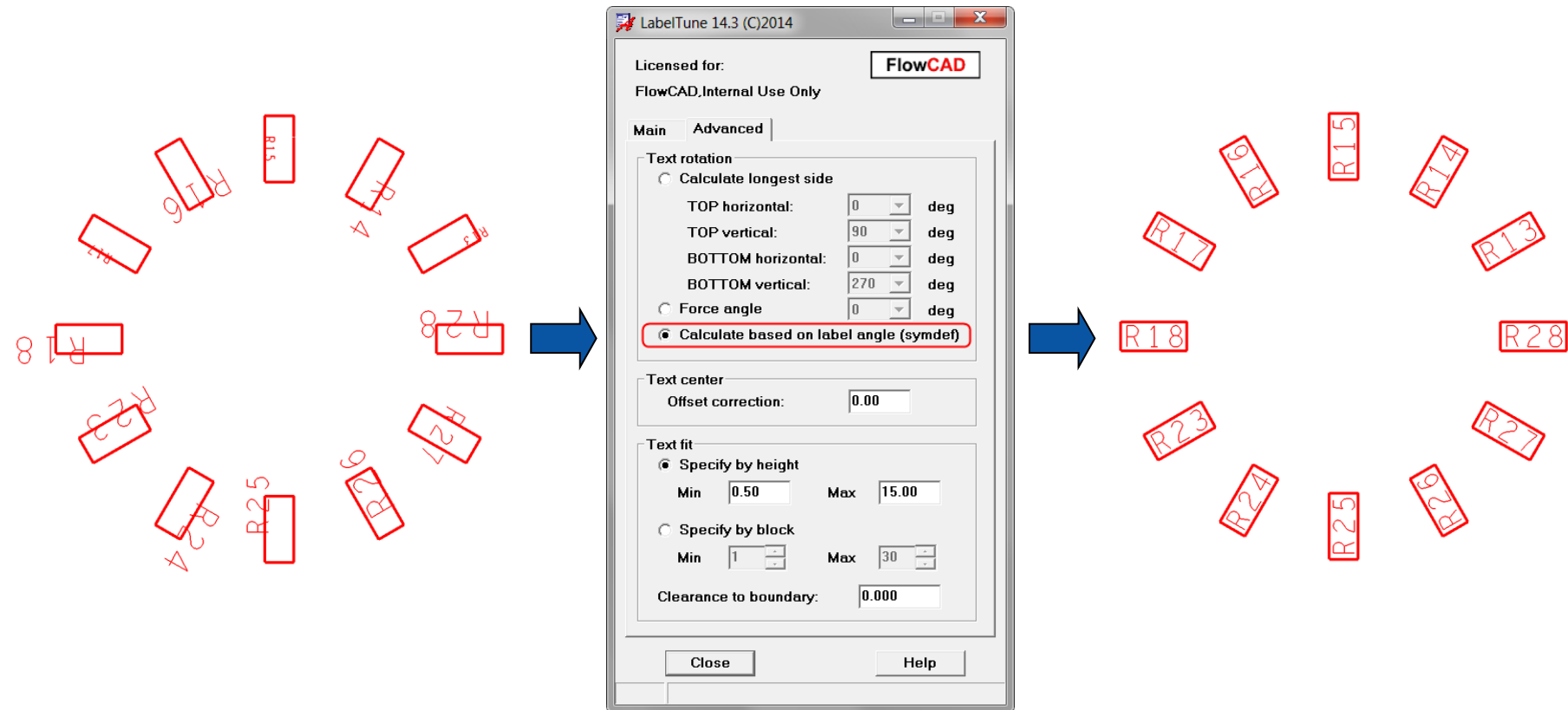
Result after running Label Tune



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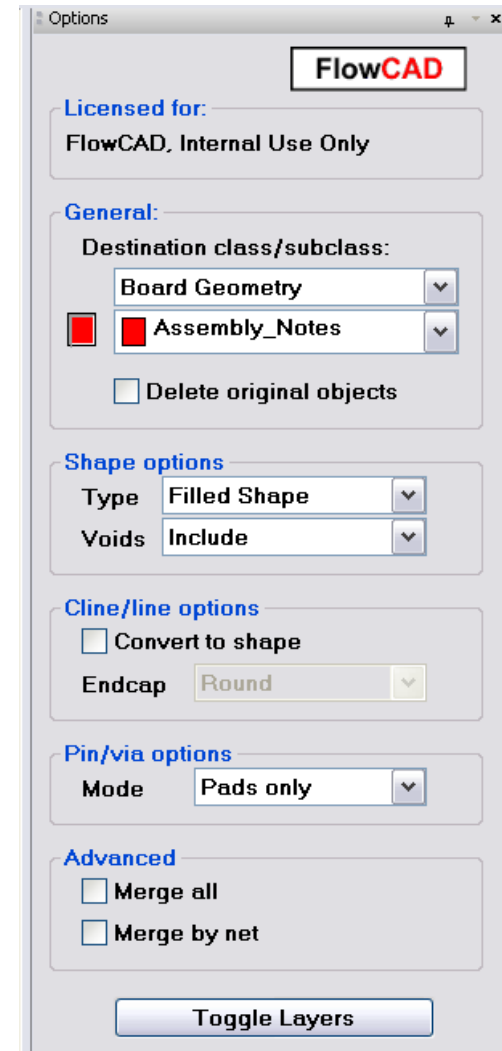
Module: Label Tune

Another example



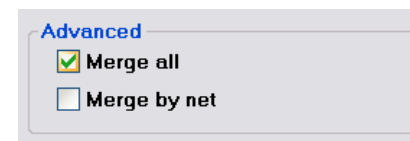
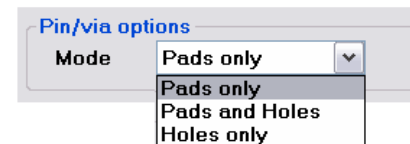
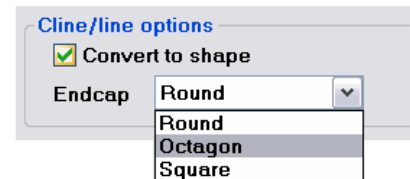
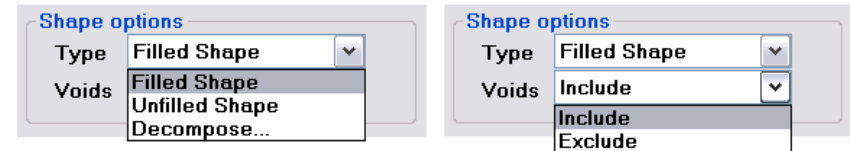
Module: Cross Copy

- **Problem:**
 - Customer needs to move objects from one class/subclass to another
 - Command *Edit-Copy* does not support a destination layer
 - Customer gets error messages, e.g. *E - Changing shape to a different class is not supported*
 - Customer has to find workarounds (e.g. export subdrawing, text edit clipboard file, import subdrawing)
- **Solution:**
 - *Cross Copy* closes the gap
 - Can move or copy objects to any destination layer for various purposes.
 - In contrast to *Create Detail*, objects are not destroyed (e.g. text will stay text!).



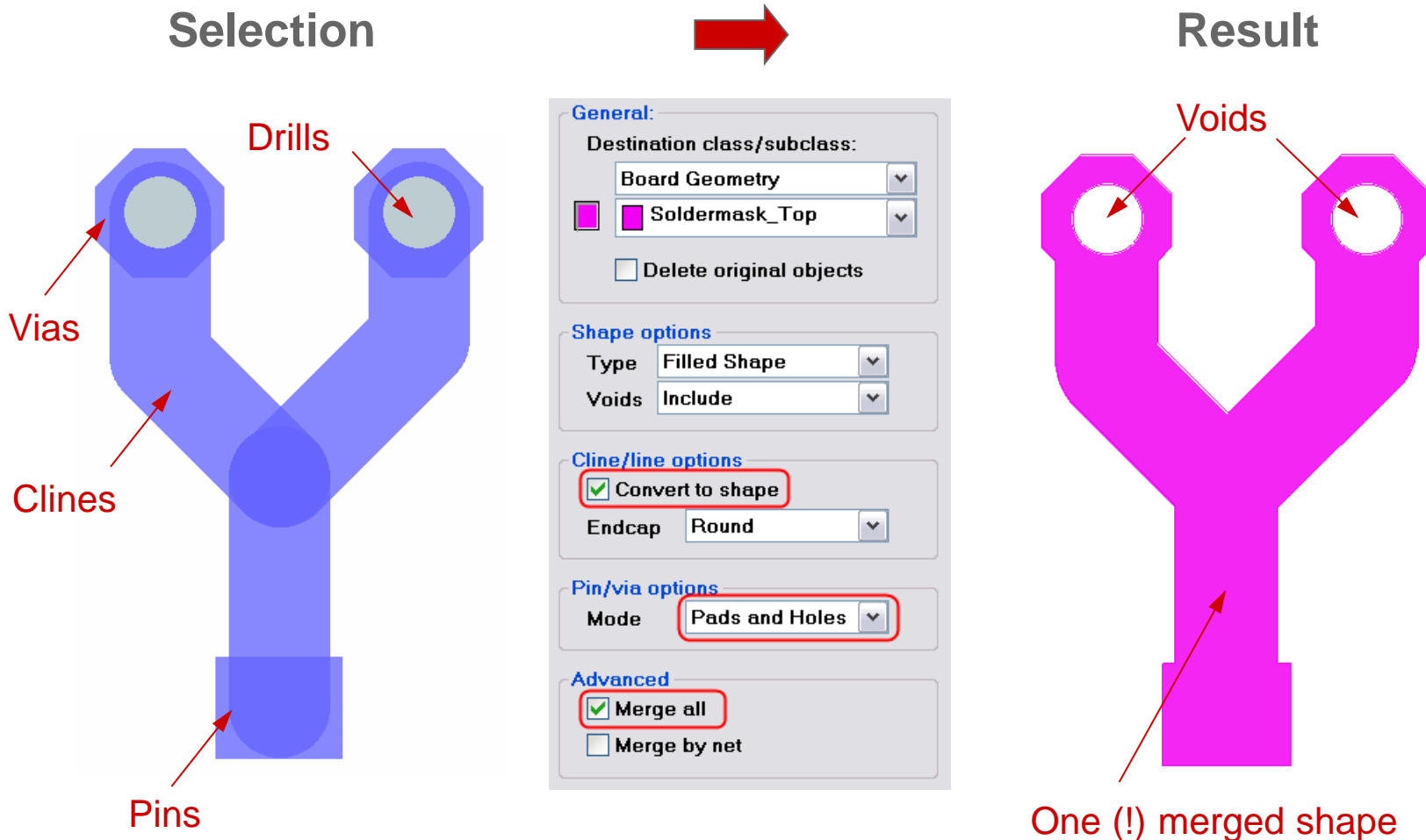
Module: Cross Copy

- Advanced features
 - Shape processing
 - Include/exclude voids
 - Fill or decompose with/out voids
 - Unfill shape
 - Clines/lines processing
 - Can be converted to shape
 - Various endcap types
 - Padstack processing (pins and vias)
 - Drawn as shape on destination layer
 - All visible layers are merged
 - Resulting pad shape can be voided by drill hole information
 - Merging support
 - Selected data (find filter settings) is merged



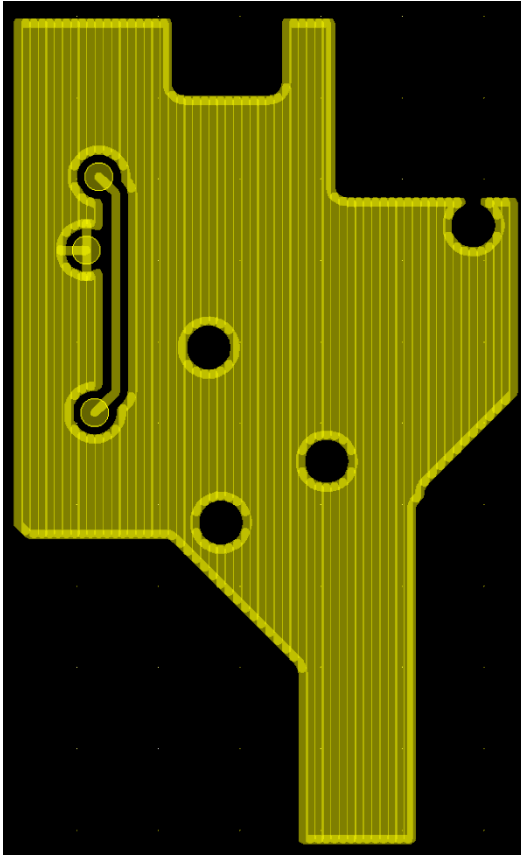
Module: Cross Copy

Example: Merging data to soldermask shape



Module: Cross Copy

Example: Converting pseudo shapes (stroked lines) to „real“ shapes



General:

Destination class/subclass:
Etch

Top

Delete original objects

Shape options

Type Filled Shape

Voids Include

Cline/line options

Convert to shape

Endcap Round

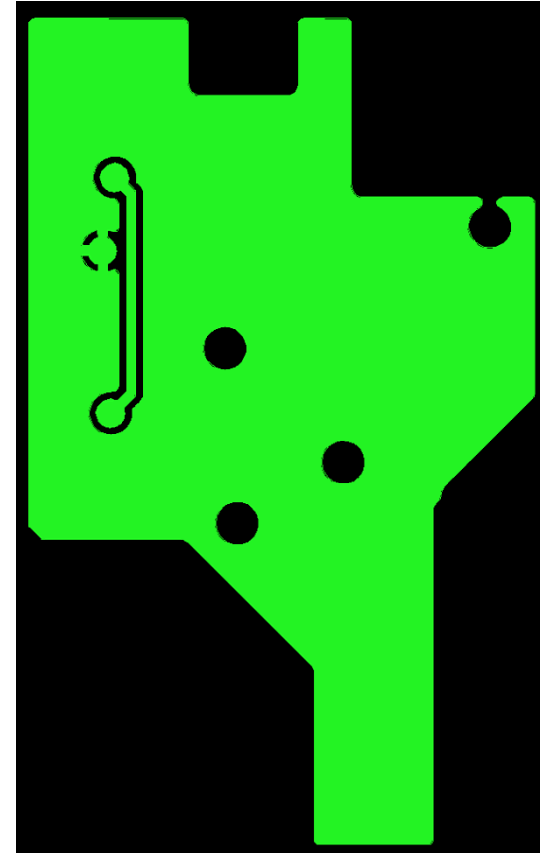
Pin/via options

Mode Pads only

Advanced

Merge all

Merge by net

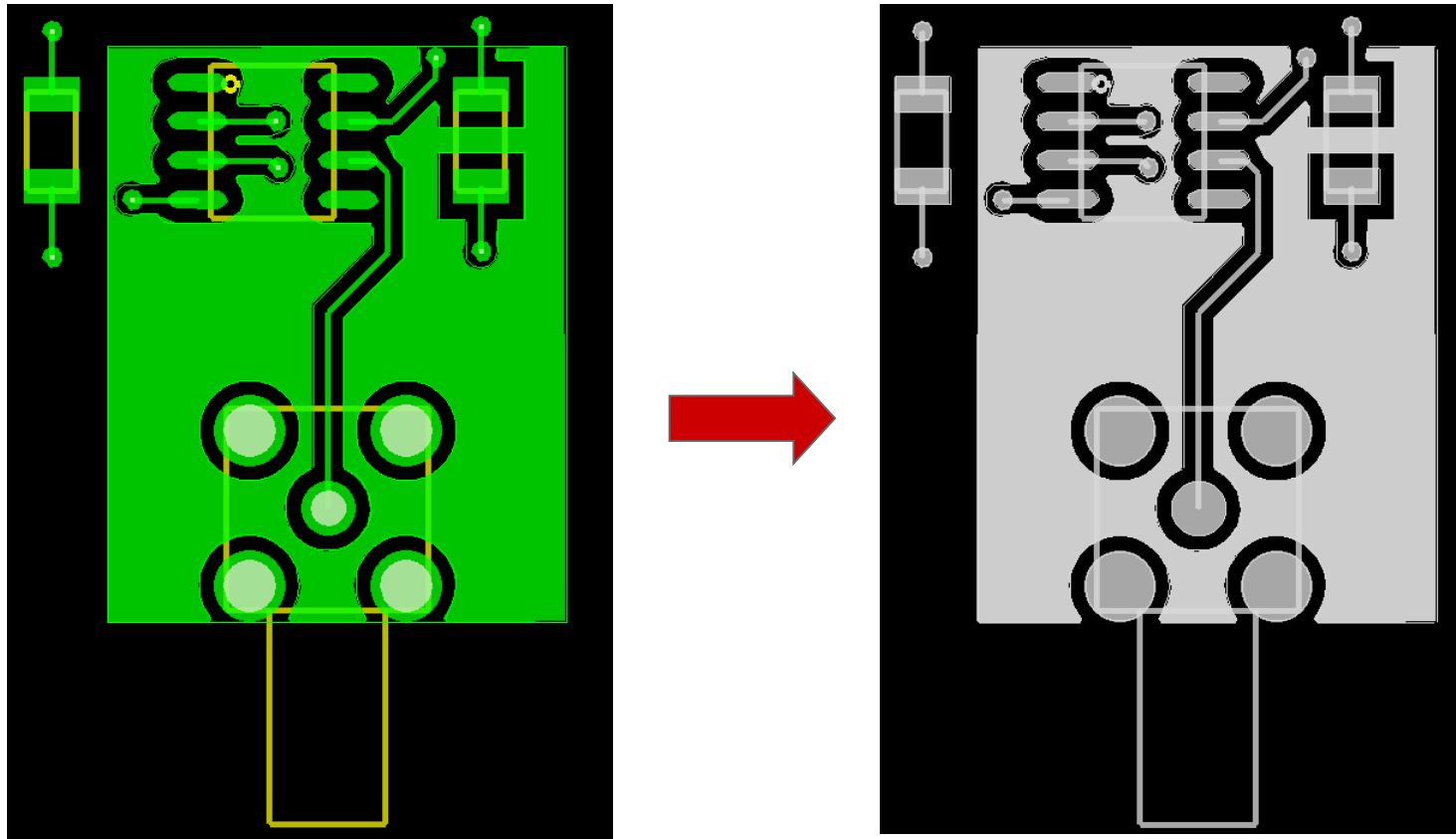


Note: Typical situation after importing third party gerber data into Allegro - copper needs to be reanimated!!!



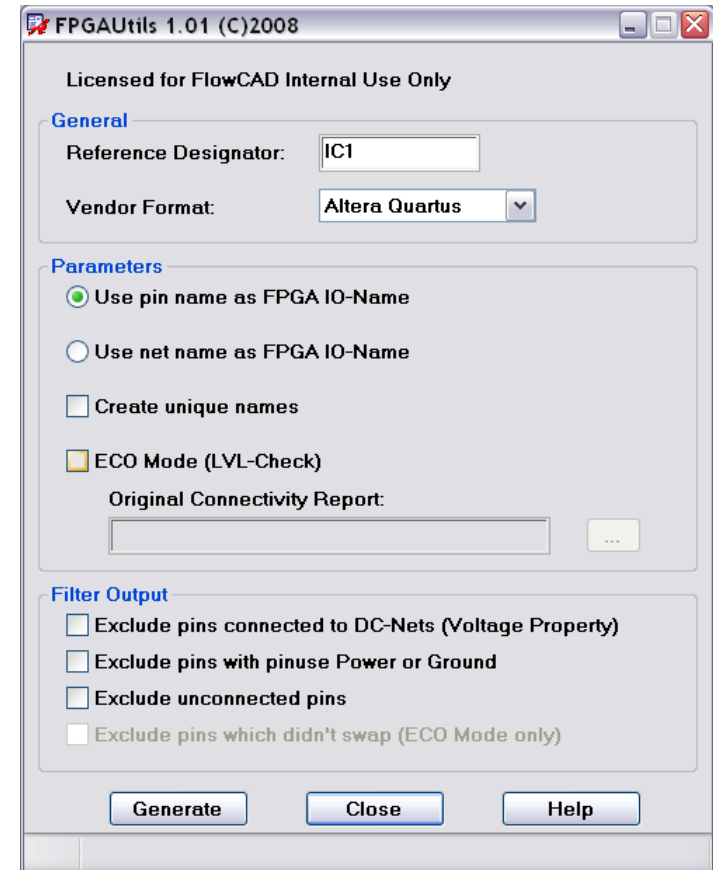
Module: Cross Copy

Example: Backup data on *Board Geometry/Assembly_Notes* for documentation purposes



Module: FPGA Utilities

- Check and report any pin swapping which has been done in a PCB layout.
- Export pin constraints to csv and vendor specific formats
 - Altera, Xilinx, Actel, Lattice
- Works in both flows
 - Allegro Design Entry HDL
 - OrCAD Capture
- Various options



Module: FPGA Utilities

The screenshot displays three windows from the FlowCAD software interface:

- Pin Swap Report: Text Format**: A window showing a "Differences Report" for a pin swap. It includes design details and a table of pin assignments.
- pin_constraints.csv**: A window displaying a list of pin names and their corresponding I/O names.
- pin_constraints.pcf**: A window showing pin constraints for both Xilinx and Altera devices, including location assignments for various pins.

Differences Report

```
#-----
# Pin Swap Report
#
# Design:   D:/design/working.brd|
# compared with
# File:    D:/design/initial_assignments.txt
#
# Date:    May 23 10:35:35 2008
#
# Ref      PinName  Slot  OldPin  NewPin  OldType  NewType  OldNet  NewNet
#-----
```

Ref	PinName	Slot	OldPin	NewPin	OldType	NewType	OldNet	NewNet
IC1	D4	G1	4	3	BI	BI	STROBE_3	ACK_4
IC1	C3	G1	3	4	BI	BI	ACK_4	STROBE_3
IC1	J9	G1	9	8	BI	BI		
IC1	H8	G1	8	9	BI	BI		
IC1	V20	G1	20	19	GROUND	GROUND		
IC1	U19	G1	19	20	GROUND	GROUND		

```
#-----
```

pin_constraints.csv

```
File Close Help
PinNr;IOName
1;CLK
2;RESET
3;ACK
4;STROBE
5;DATA[0]
6;DATA[1]
7;DATA[2]
8;DATA[3]
9;TDI
10;TDO
11;AD[0]
12;AD[1]
13;AD[2]
14;AD[3]
```

pin_constraints.pcf

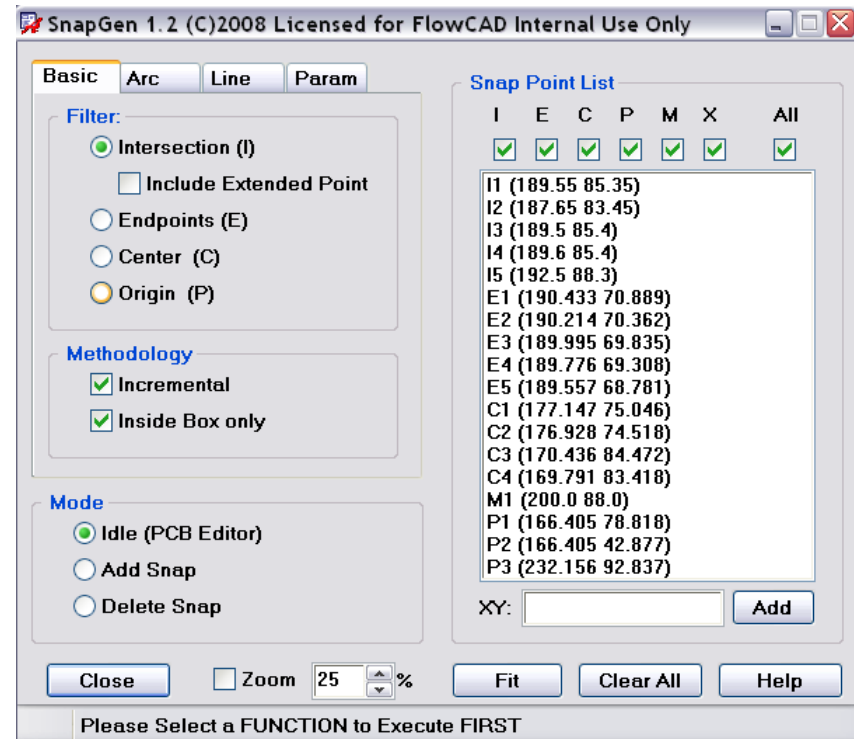
```
File Close Help
#-----
# Pin Constraints for Altera Quartus
#
# Design:   D:/design/test1.brd
#
# Date:    May 23 13:28:01 2008
#
#-----
set_location_assignment PIN_1 -to CLK
set_location_assignment PIN_2 -to RESET
set_location_assignment PIN_3 -to ACK
set_location_assignment PIN_4 -to STROBE
set_location_assignment PIN_5 -to DATA[0]
set_location_assignment PIN_6 -to DATA[1]
set_location_assignment PIN_7 -to DATA[2]
set_location_assignment PIN_8 -to DATA[3]
set_location_assignment PIN_9 -to TDI
set_location_assignment PIN_10 -to TDO
set_location_assignment PIN_11 -to AD[0]
set_location_assignment PIN_12 -to AD[1]
set_location_assignment PIN_13 -to AD[2]
set_location_assignment PIN_14 -to AD[3]
```

pin_constraints.pcf

```
File Close Help
#-----
# Pin Constraints for Xilinx
#
# Design:   D:/design/test1.brd
#
# Date:    May 23 13:29:26 2008
#
#-----
NET "CLK" LOC = "1" ;
NET "RESET" LOC = "2" ;
NET "ACK" LOC = "3" ;
NET "STROBE" LOC = "4" ;
NET "DATA[0]" LOC = "5" ;
NET "DATA[1]" LOC = "6" ;
NET "DATA[2]" LOC = "7" ;
NET "DATA[3]" LOC = "8" ;
NET "TDI" LOC = "9" ;
NET "TDO" LOC = "10" ;
NET "AD[0]" LOC = "11" ;
NET "AD[1]" LOC = "12" ;
NET "AD[2]" LOC = "13" ;
NET "AD[3]" LOC = "14" ;
```

Module: Snap Generator

- Creates snap points for standard PCB Editor commands.
- Graphical entity in PCB Editor
- Snap point types
 - Intersection, extended intersection
 - Endpoints, center points, origins
 - Subdivision points (e.g. divide circle by 5)
- Stored in database
- Many options

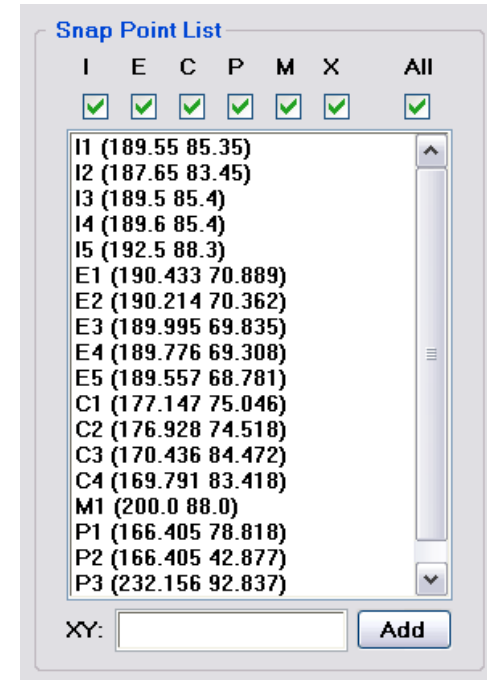
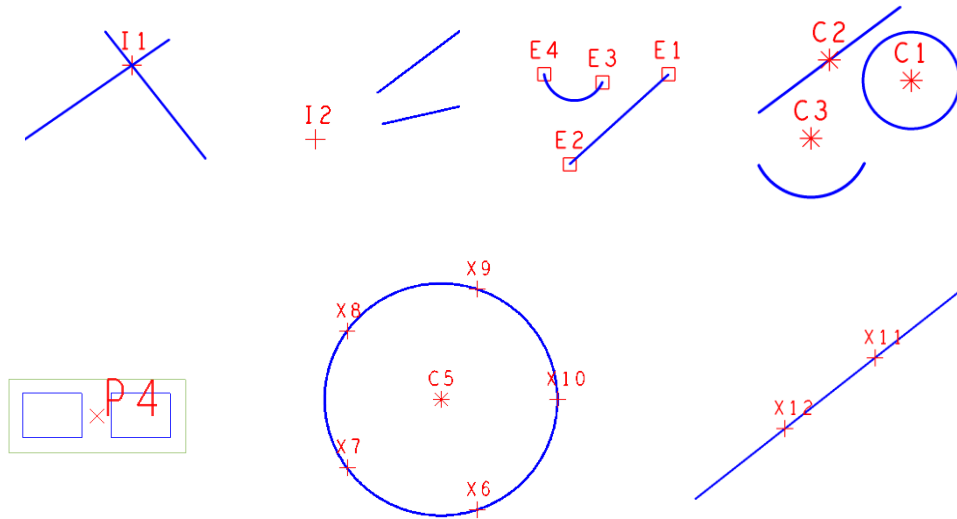


Runs also when working on symbol drawings

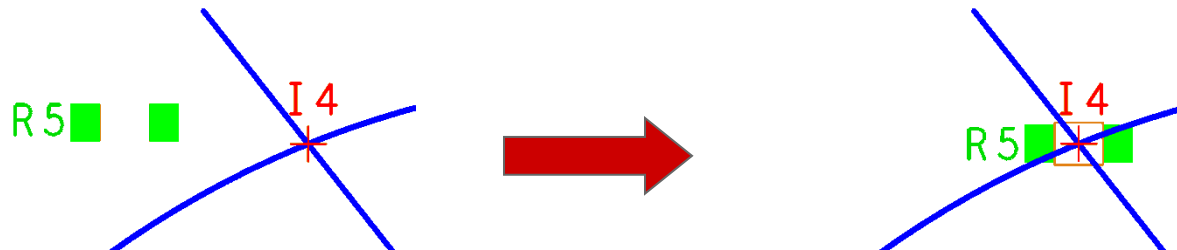


Module: Snap Generator

Snap point types

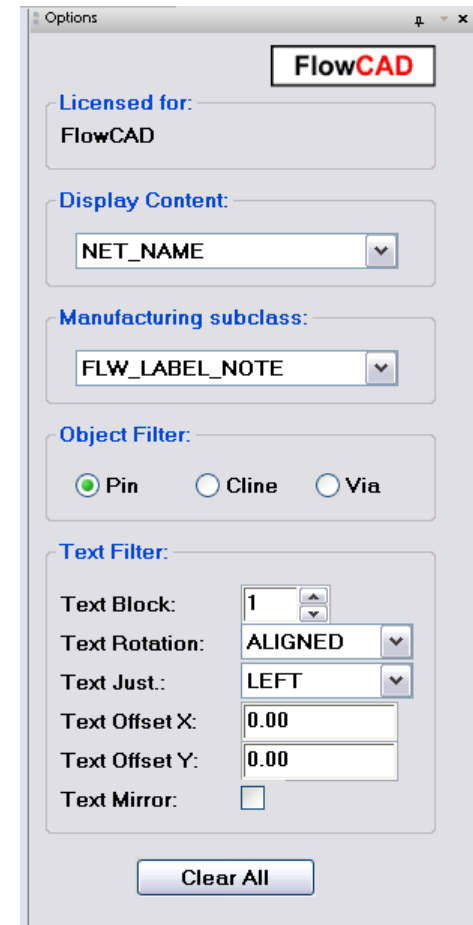


Placing component R5 to intersection I4 using *Edit - Move*



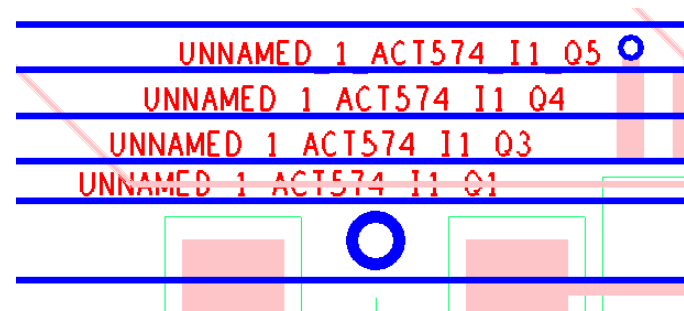
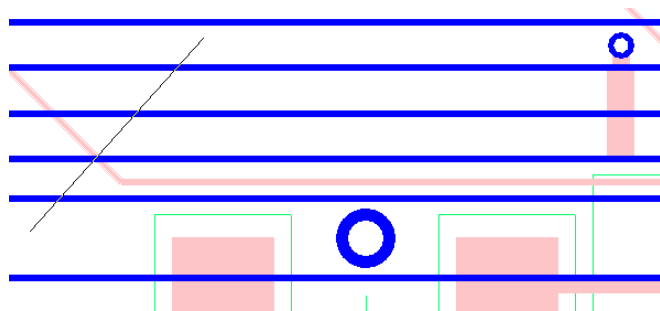
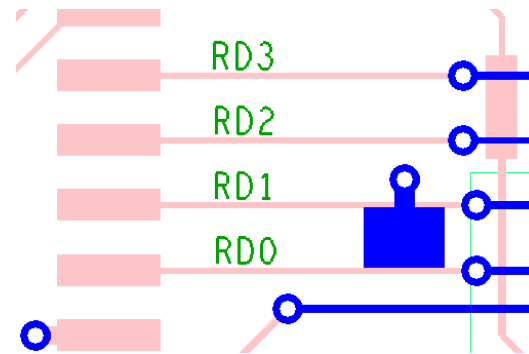
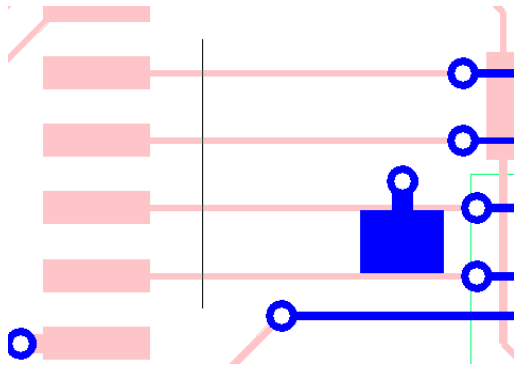
Module: Label Generator

- Creates signal name and pin labels for documentation purposes
- Selectable label content (e.g. signal name + pin number)
- Individual label origin (e.g. pin, or via origin, but also cursor intersecting cline)
- Aligned text rotation mode (text angle value follow cursor gesture)
- Supports three different object types (pin, via, cline)
- User defined text size, justification and rotation



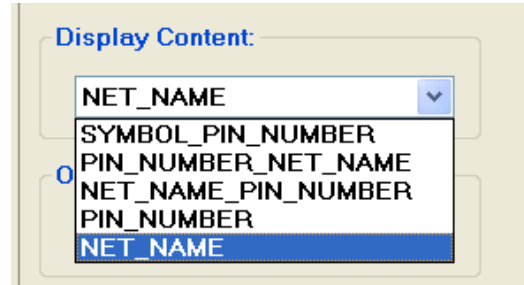
Module: Label Generator

Procedure



Module: Label Generator

Label Content



NET_NAME

RD3
RD2
RD1

PIN_NUMBER_NET_NAME

[U6.84]RD3
[U6.83]RD2
[U6.82]RD1

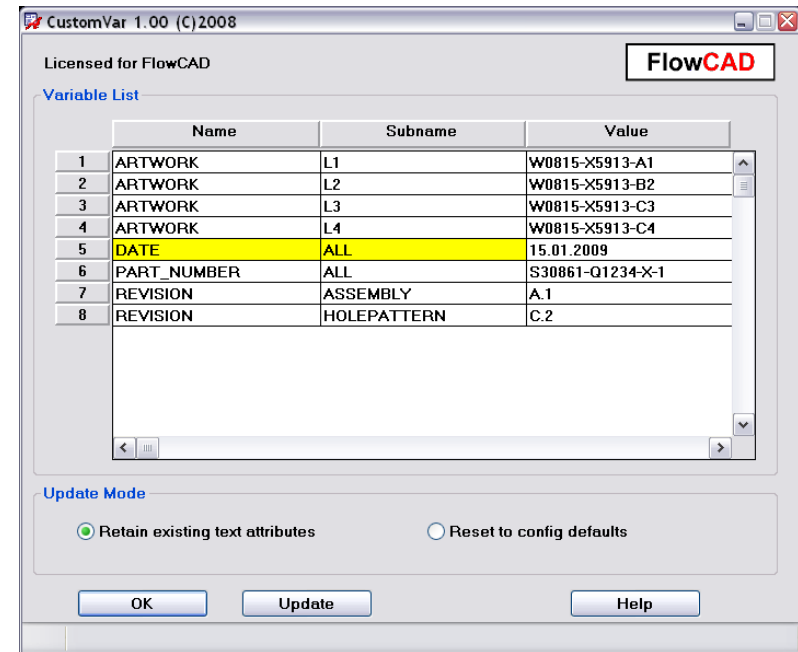
PIN_NUMBER

U6.84
U6.83
U6.82



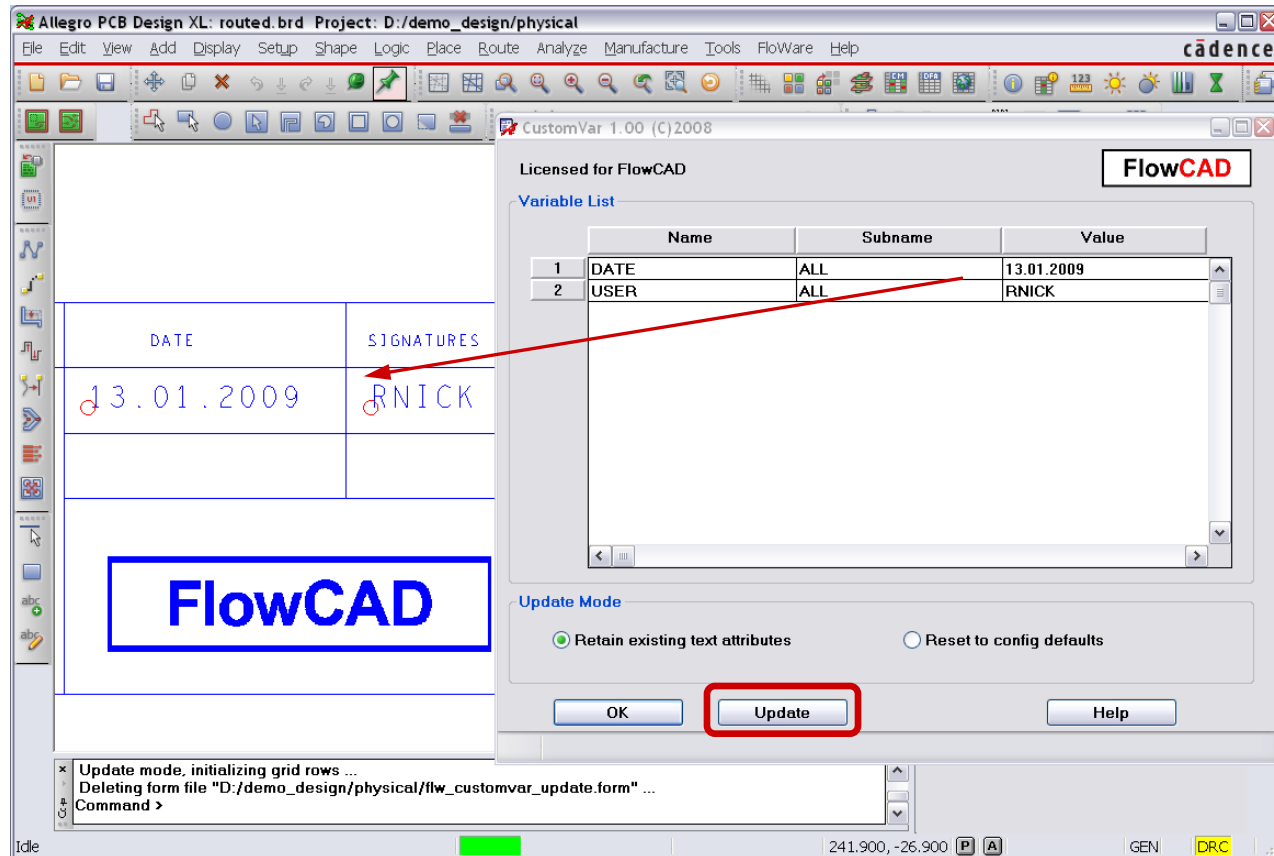
Module: Custom Variables

- User defined variables in PCB Editor, useful for title blocks, etch texts etc.
- Similar to Design Entry HDL
- Automatic update of variables across all subclasses
- Placeholders can reference to more than one variable
- Placeholder attributes (xy, block, rotation etc.) stored in database
- Variable values can be sourced from external control file or even cpm-file
- Supports also field functions such as AUTO_DATE, AUTO_USER and others



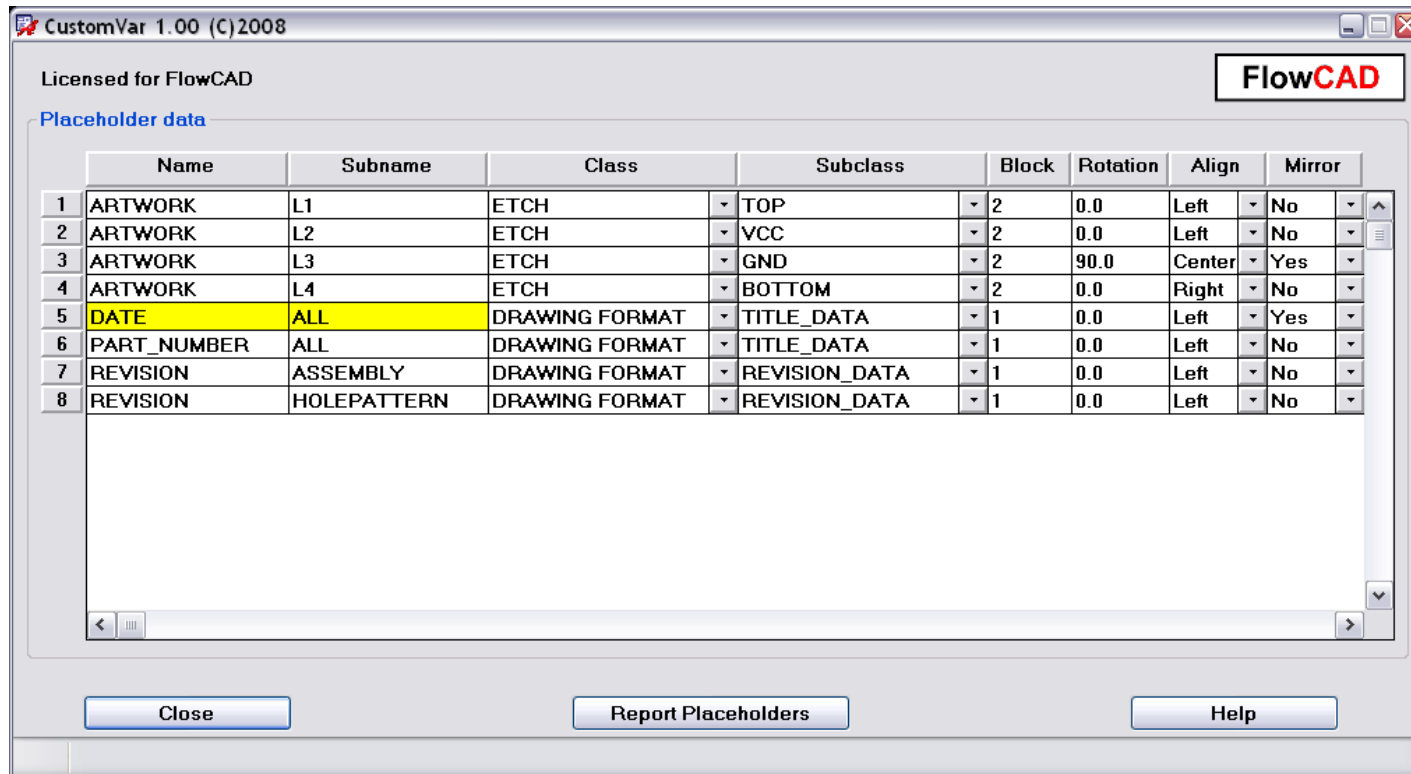
Module: Custom Variables

Update Example



Module: Custom Variables

Placeholder text parameters



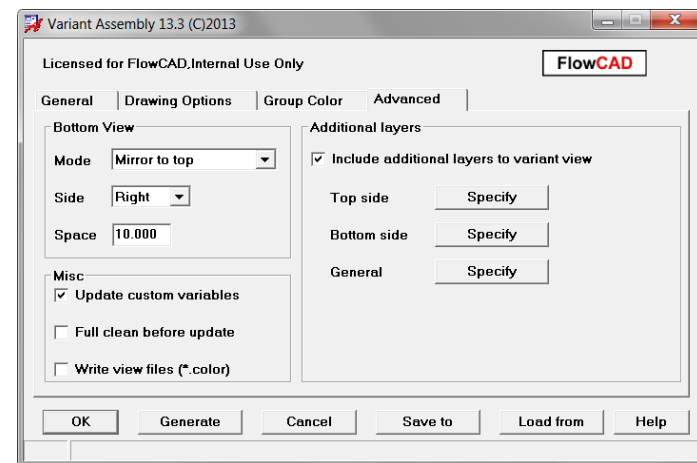
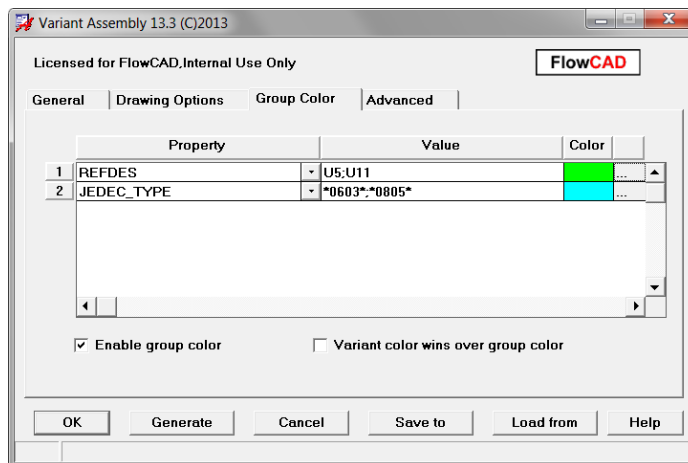
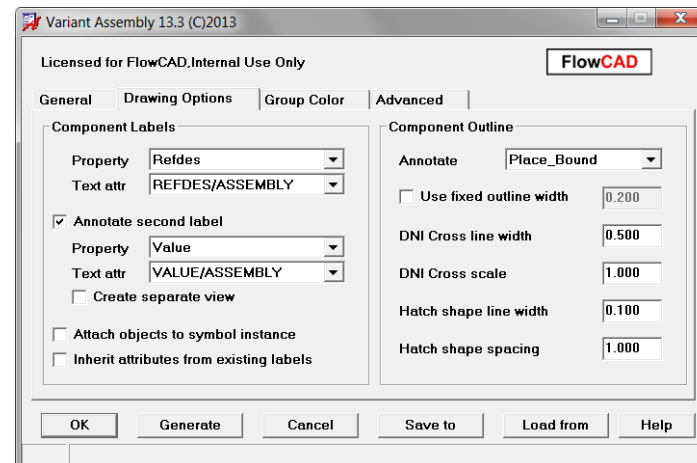
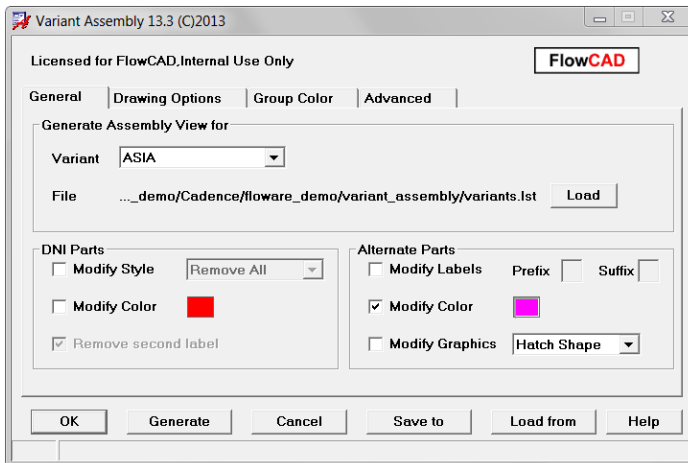
Module: Variant Assembly

- Gives customers even more flexibility when creating variant assembly views.
- Features
 - Automatic generation of all assembly variant views in one step
 - Customizable label content e.g. Refdes, Value, Part_Number with the ability to annotate two labels per component
 - Customizable component outline e.g. Assembly, Place_Bound, Silkscreen...
 - Customizable style for DNI components e.g. remove all or draw a thick cross through the label...
 - Customizable style for Alternate components by using label prefix/suffix, changing colors or hatching component outline
 - Supports rule based coloring of objects (e.g. all SMT in green)
 - Automatic mirroring of bottom view for better readability
 - Settings stored in database



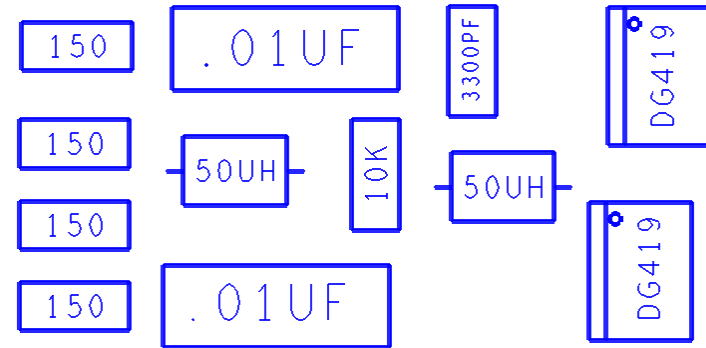
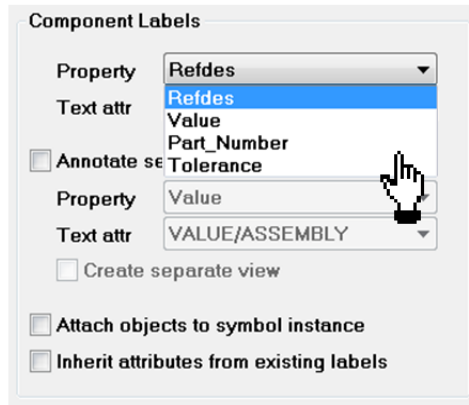
Module: Variant Assembly

User interface



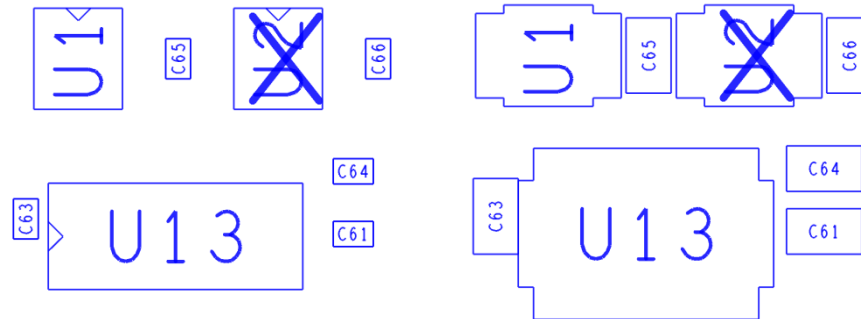
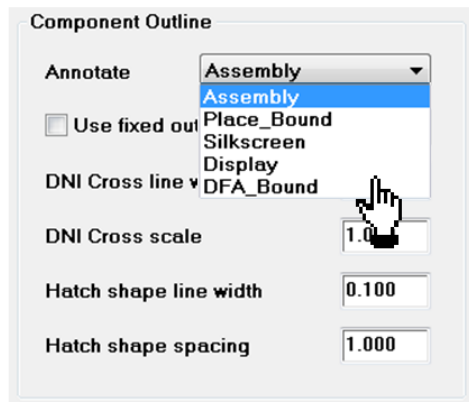
Module: Variant Assembly

Customizable label content to be displayed (default is Refdes)



e.g. VALUE property

Customizable component outline to be displayed (default is Assembly)



Assembly outline

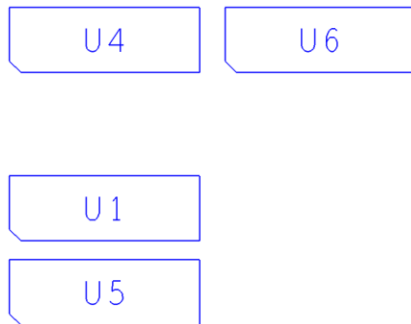
Placebound outline



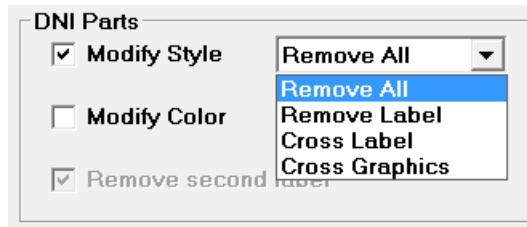
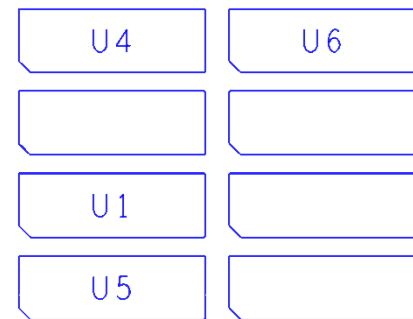
Module: Variant Assembly

Available styles for DNI parts

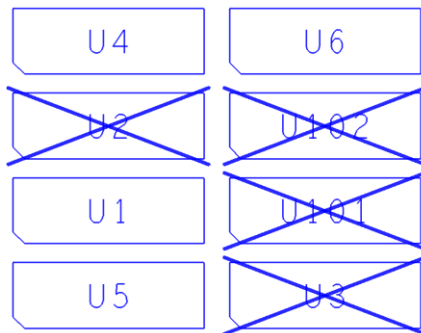
Style „Remove All“



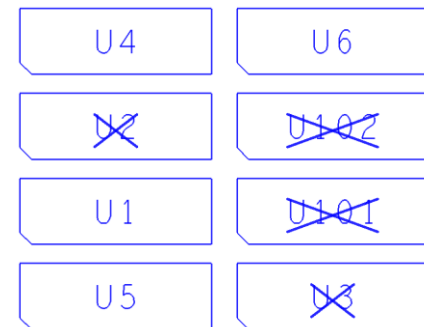
Style „Remove Label“



Style „Cross Graphics“

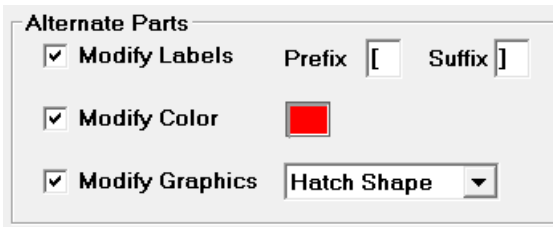


Style „Cross Label“

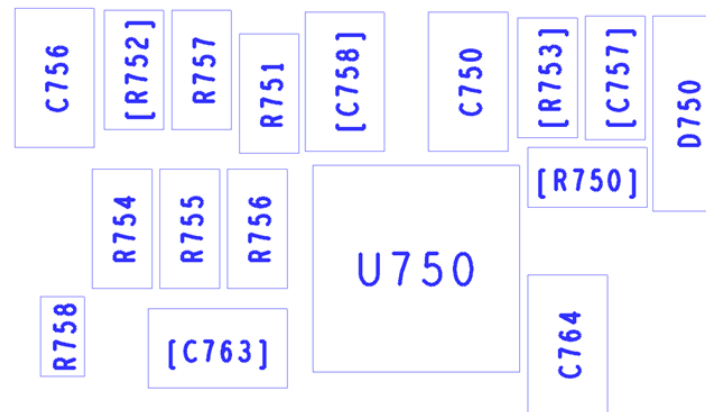


Module: Variant Assembly

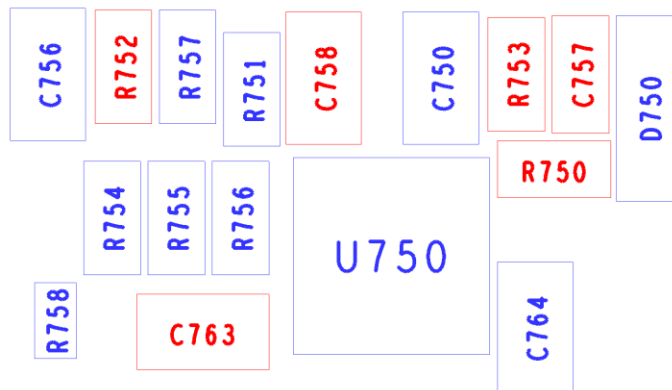
Available styles for Alternate parts



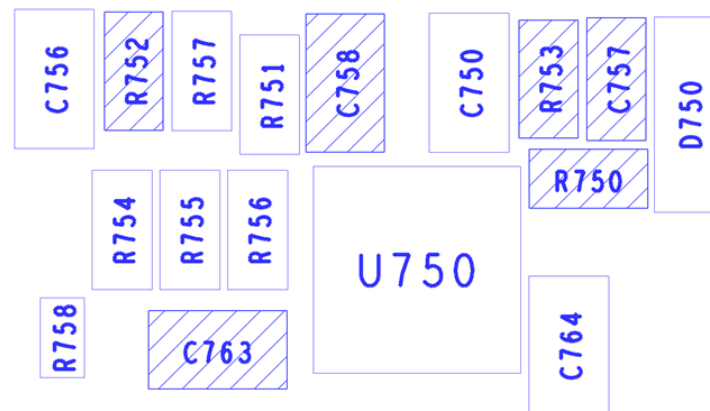
Style „Modify Labels“



Style „Modify Colors“

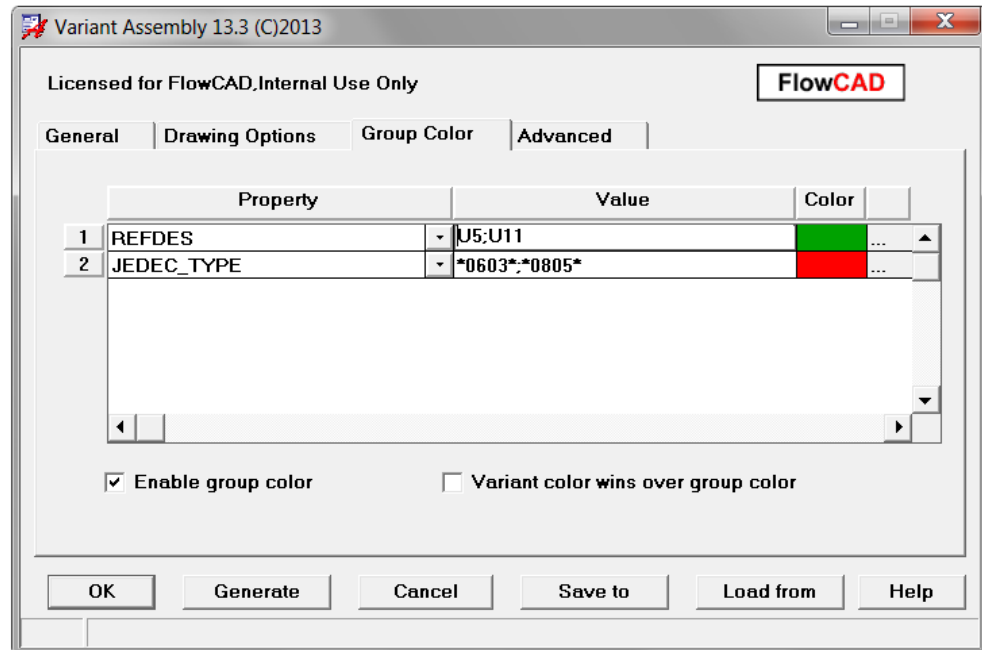
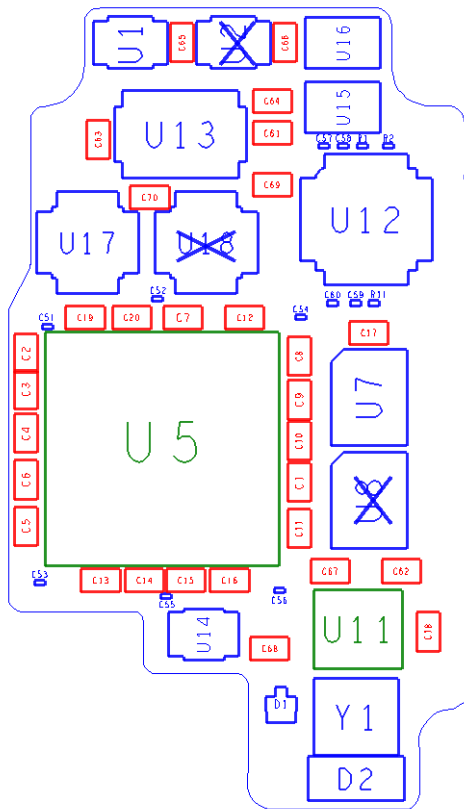


Style „Modify Graphics“



Module: Variant Assembly

Rule based coloring of components

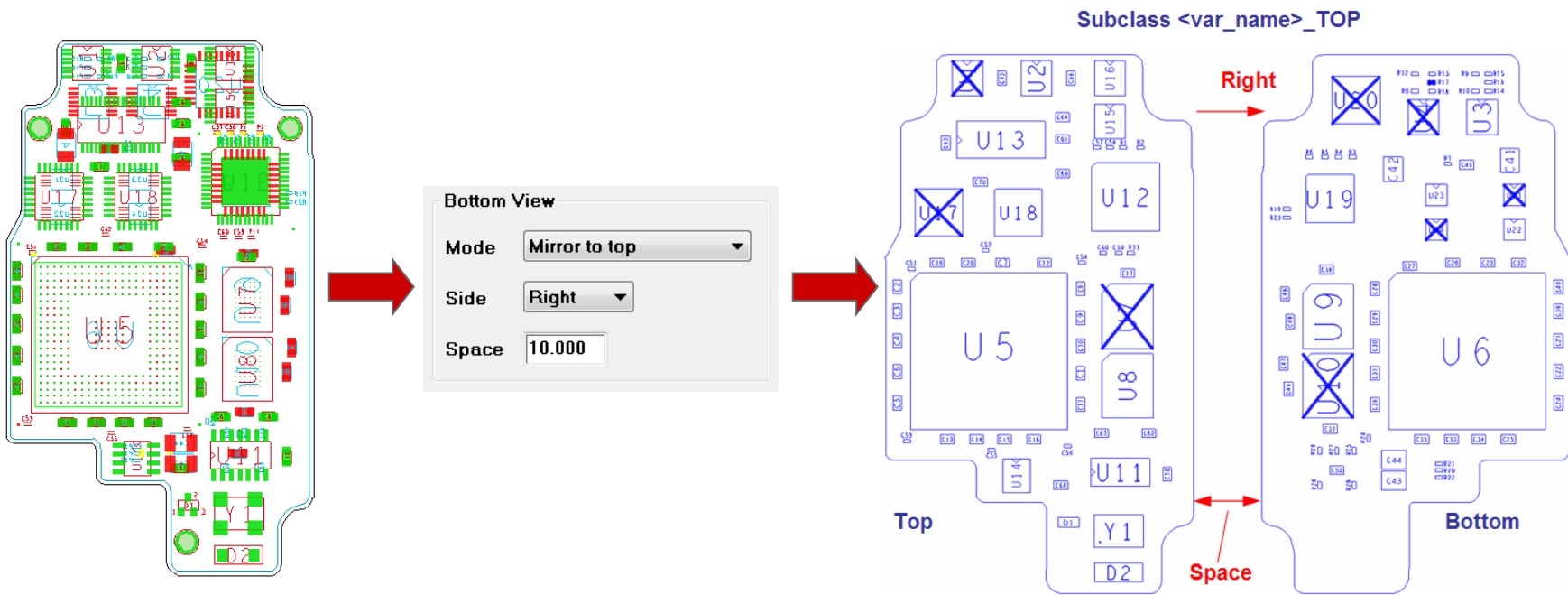


- Color rules can be linked to individual properties
- Several match pattern per rule
- Wildcard support



Module: Variant Assembly

Automatic mirroring of bottom view
e.g. side by side to top view



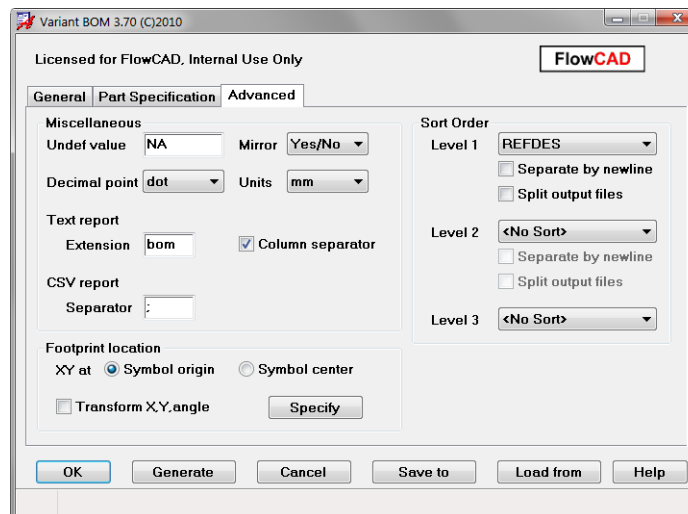
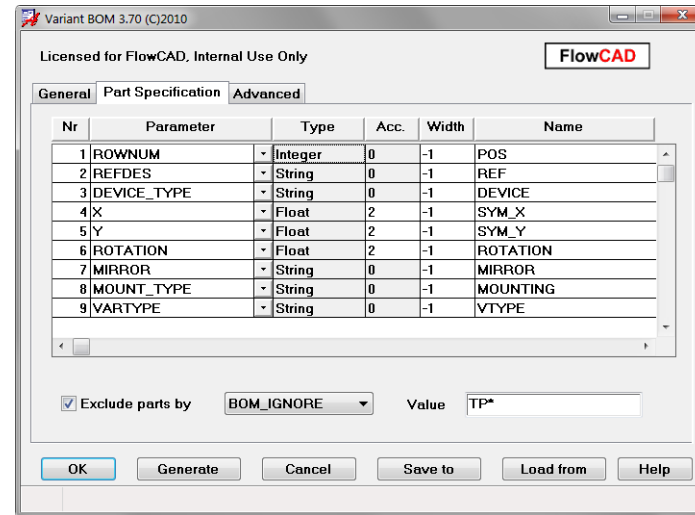
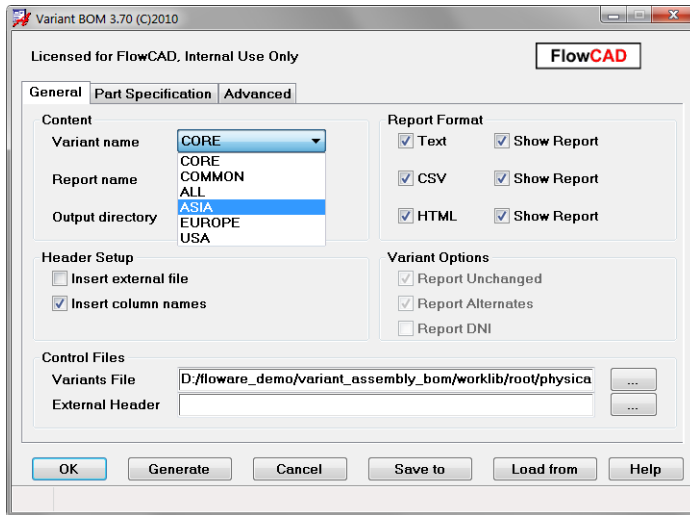
Module: Variant BOM

- **Creates various reports (BOM) from layout database taking variant information into account**
 - Generates reports (e.g. Pick & Place) data for a variant
 - Can be used for reports on core design also
- **Configurable content**
 - Any database attribute
 - Ability to distinguish between common and variant parts
 - Exclude BOM non-relevant parts (e.g. dummy testpoints)
 - Header information, order of columns, column width
 - Hierarchical sorting up to three levels
 - Option to split output files
 - Settings stored in database, export and import capabilities
- **Output format**
 - HTML, ASCII, CSV



Module: Variant BOM

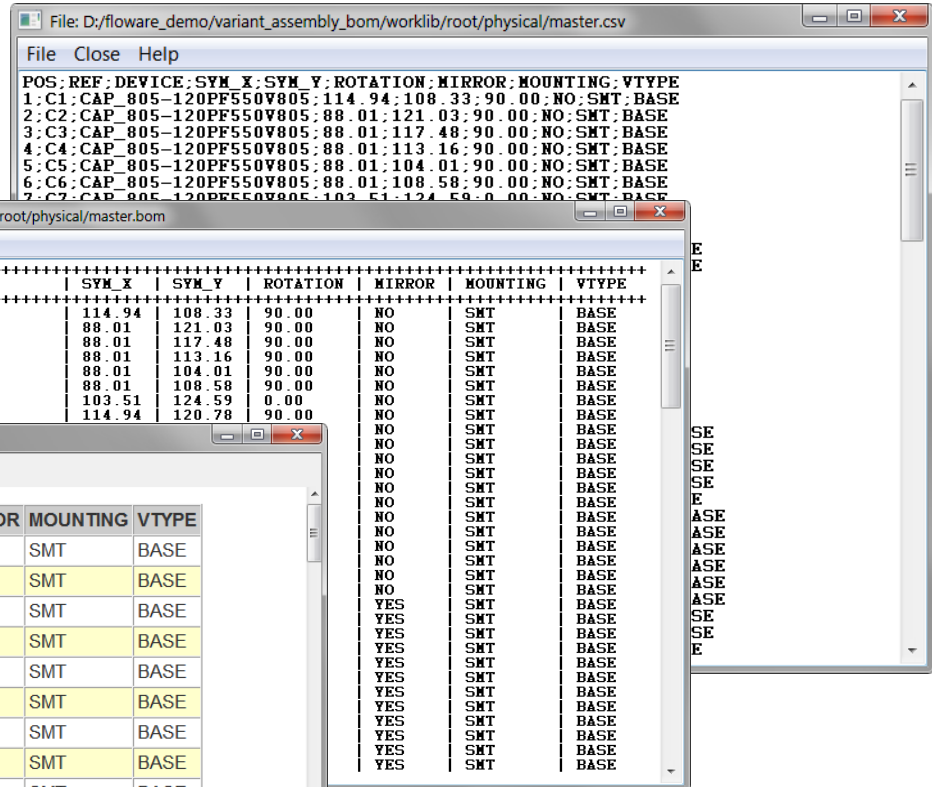
User Interface



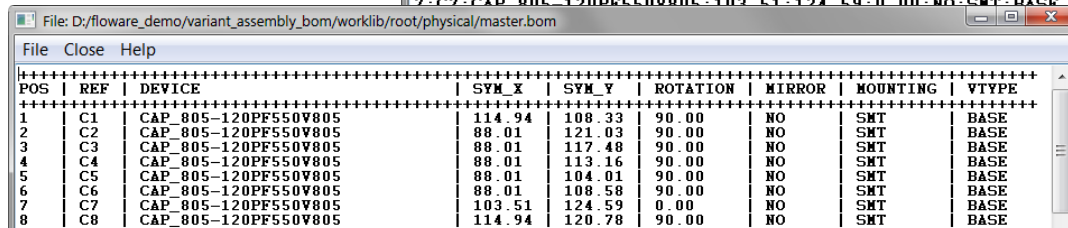
Module: Variant BOM

Report Formats

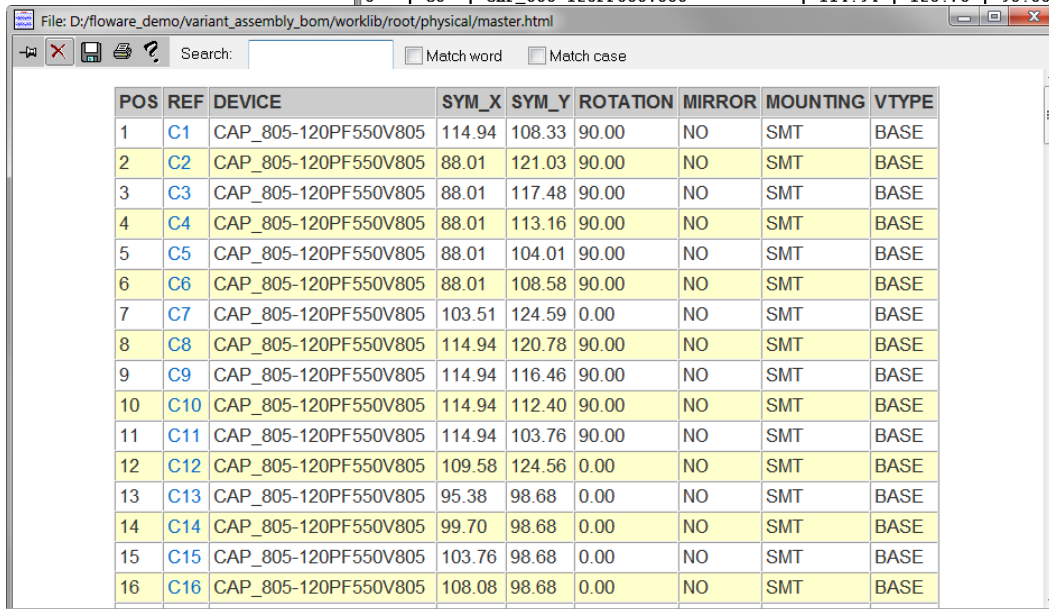
CSV



Text



HTML



Module: Variant BOM

• Hierarchical sorting

- Up to three levels
- Options to add newline for level 1 and level 2
- Options to split output files for level 1 and level 2

Sort Order

Level 1 **VARTYPE** ▾

Separate by newline

Split output files

Level 2 **MIRROR** ▾

Separate by newline

Split output files

Level 3 **REFDES** ▾

VARI_4.bom (D:\vari_demo\mfg) - GVIM

Datei Editieren Werkzeuge Syntax Puffer Ansicht Hilfe

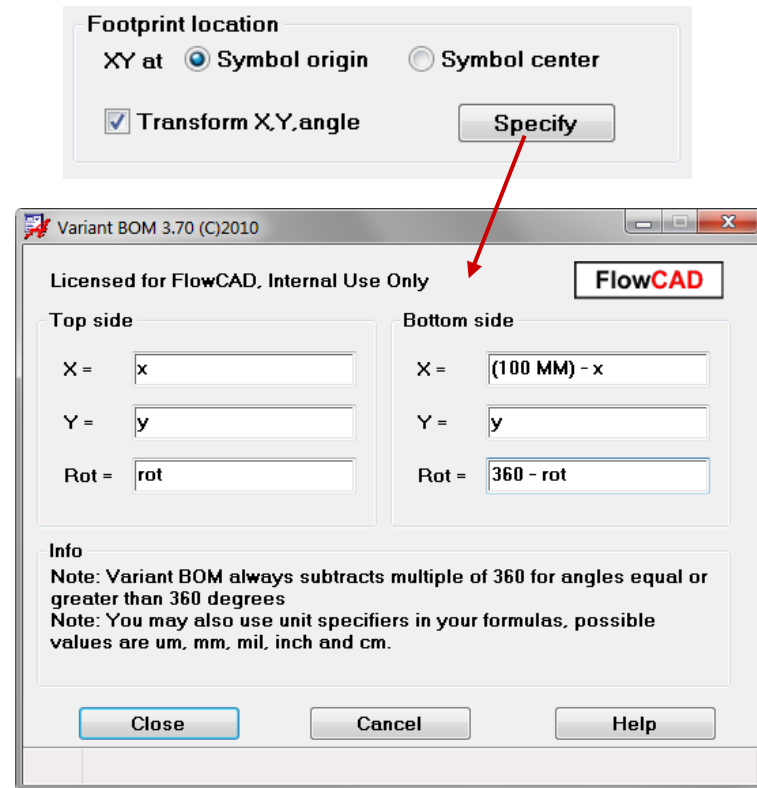
POS	REFDES	DEVICE	UTYPE	MIRROR	X	Y	ROT
1	C1	CAPACITOR_EL-10UF,20%,16,4MM	BASE	NO	-127.000	317.500	0.000
2	C2	CAPACITOR_EL-10UF,20%,16,4MM	BASE	NO	-119.380	317.500	0.000
3	C3	CAPACITOR_EL-10UF,20%,16,4MM	BASE	NO	-111.760	317.500	0.000
4	UR3	MBZ5232B_SOT23-BASE	BASE	NO	-101.600	317.500	0.000
5	UR1	MBZ5232B_SOT23-BASE	BASE	YES	-101.600	325.120	0.000
6	UR2	MBZ5232B_SOT23-BASE	BASE	YES	-101.600	309.880	0.000
7	UR4	MBZ5232B_SOT23-BASE	BASE	YES	-101.600	335.280	0.000
8	R1	RESISTOR-22,1/2W,5%	CHANGE	NO	-109.220	307.340	0.000
9	R4	RESISTOR-56,1/2W,5%	CHANGE	NO	-109.220	299.720	0.000
10	R6	RESISTOR-110,1/2W,5%	CHANGE	NO	-101.600	302.260	0.000
11	R2	RESISTOR-33,1/2W,5%	CHANGE	YES	-109.220	335.280	0.000
12	R3	RESISTOR-47,1/2W,5%	CHANGE	YES	-109.220	325.120	0.000
13	R5	RESISTOR-68,1/2W,5%	CHANGE	YES	-111.760	330.200	0.000
14	Q1	MBT2222A_SOT223H-BASE	DNI	NO	-121.920	302.895	0.000
15	J1	JACK_4_TYPE1-4PIN	DNI	YES	-122.492	336.804	0.000

21,0-1 Alles

Module: Variant BOM

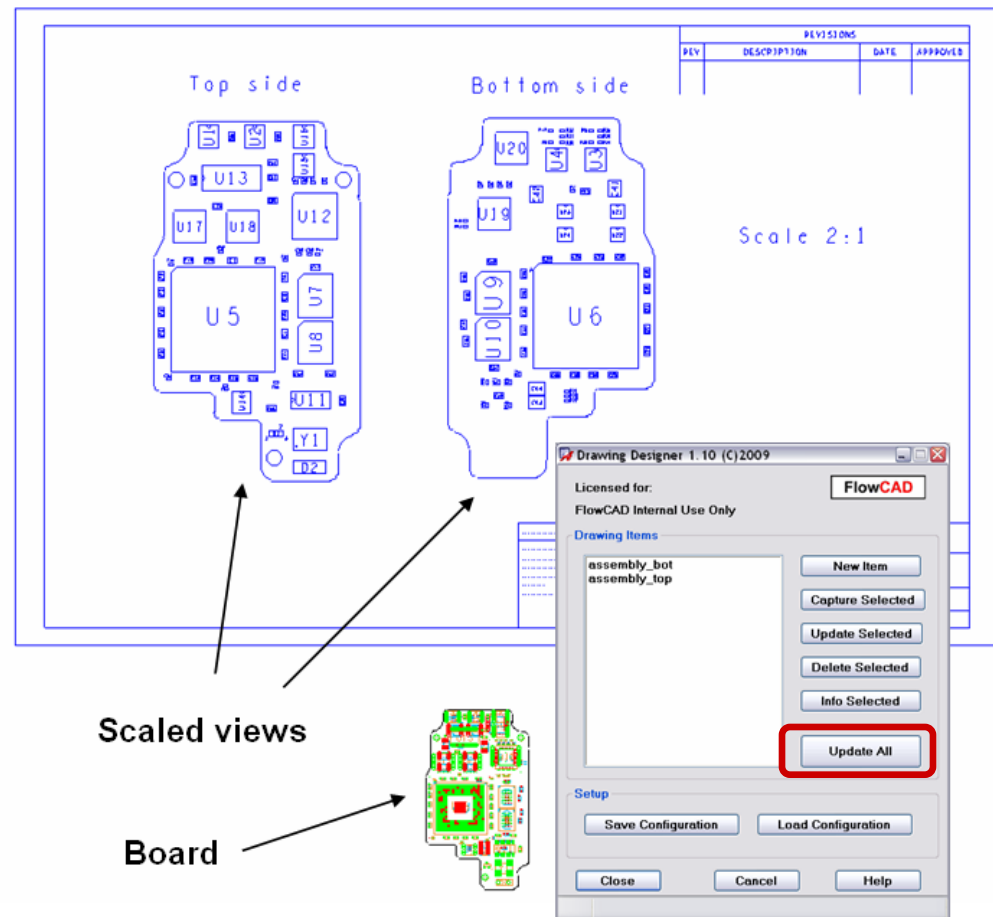
• Transformation rules

- Sometimes users need to transform x, y and rotation due to Pick & Place requirements from manufactory
- E.g. always subtract 360 from angles given by PCB Editor for components on BOTTOM side
- Formulas can be specified for TOP and BOTTOM separately
- Unit specifiers such as MM, MILS etc. are supported.



Module: Drawing Designer

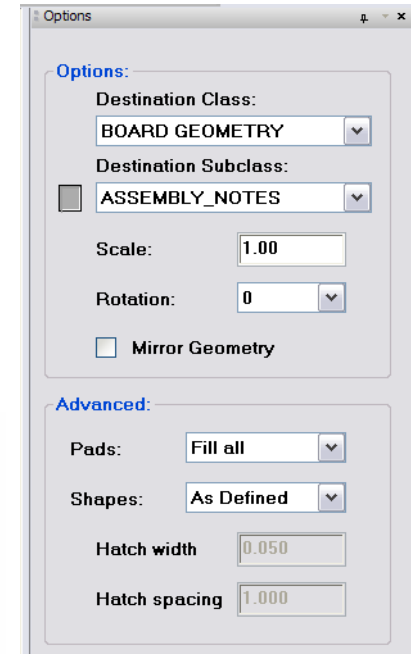
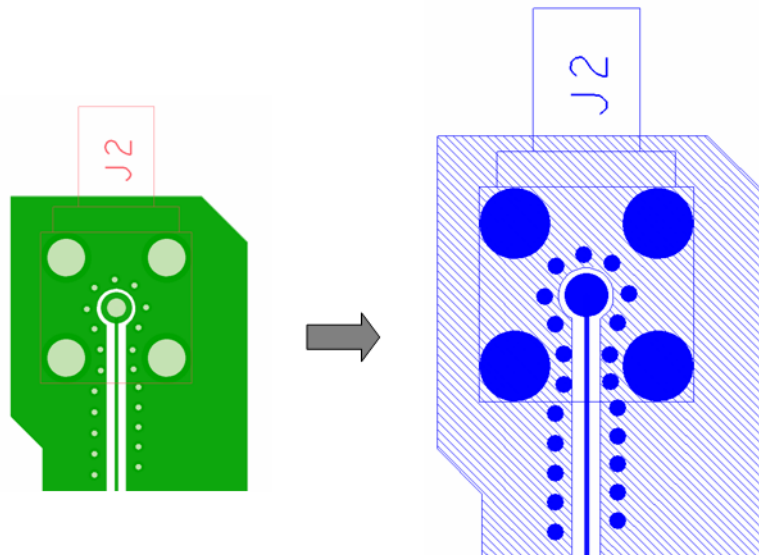
- Useful when creating manufacturing drawings
- Records the creation of scaled views (including mirroring and rotation)
- Automatic updates
- Configuration stored in database
- Configuration export and import



Module: Drawing Designer

- Ministatus panel offers various options when creating new drawing items
 - Destination layer where data is written to
 - Scale, rotation, mirror of the item
 - Pad style: filled, unfilled
 - Shape: As defined, unfill all, hatched

Example:

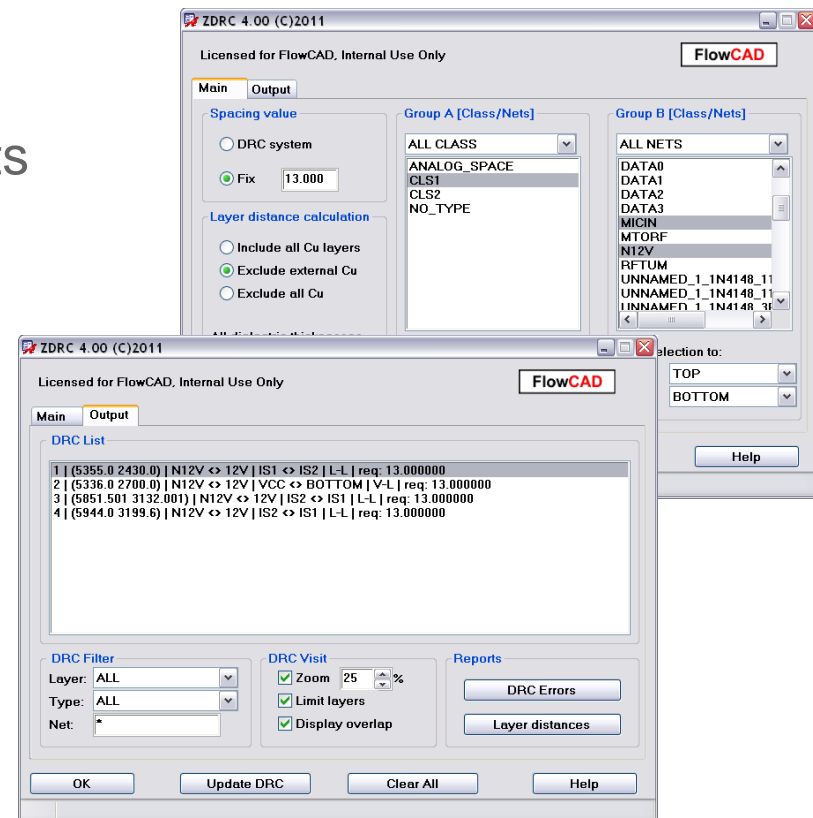
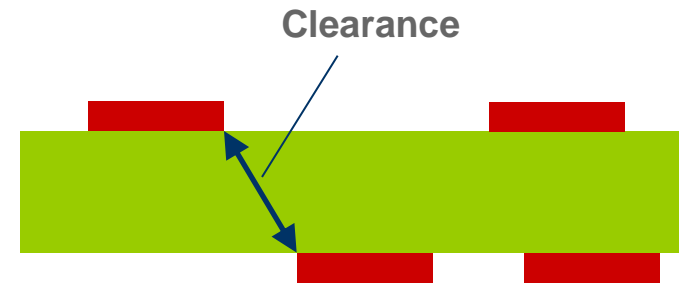


Note: Hatch option only applies to solid filled shapes



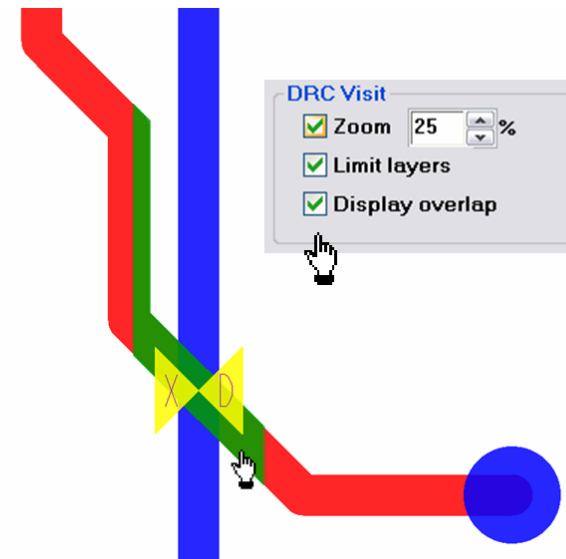
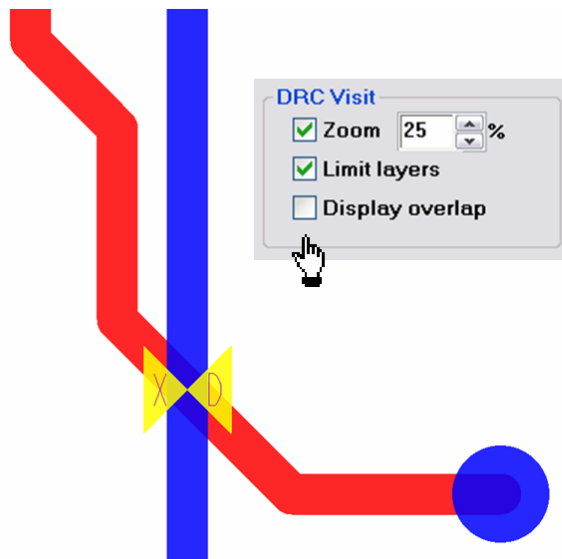
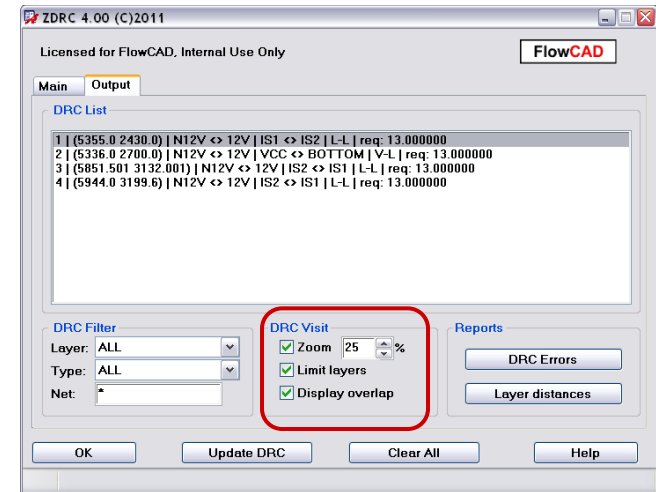
Module: ZDRC

- Checks clearances along the Z-axis
- Useful for applications which have to meet safety and explosion requirements
- Ability to limit the check to objects of interest (e.g. net classes or individual nets)
- Ability to perform checks based on database constraints or on individual values
- Graphical DRC: Markers & Overlapping
- Cross-probing and filter capabilities



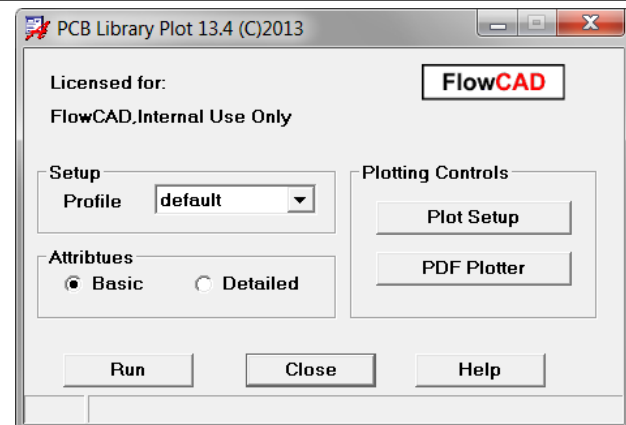
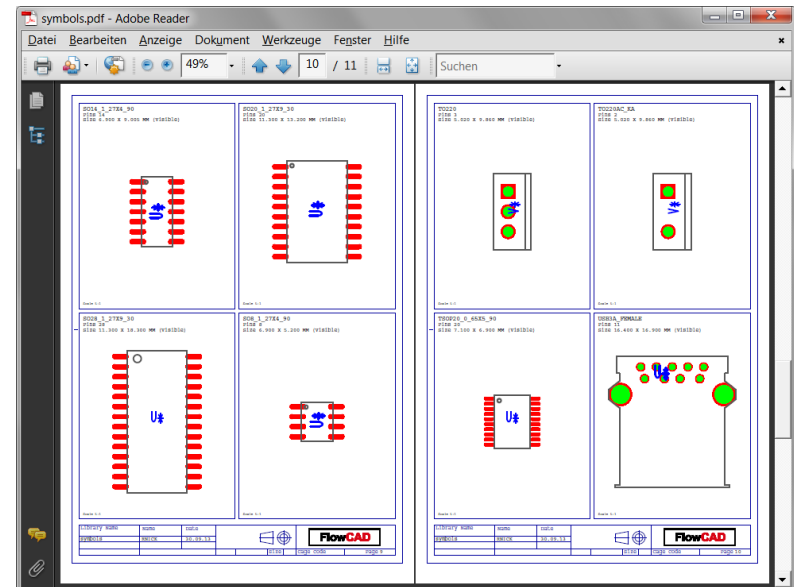
Module: ZDRC

- The negative margins (amount of overlapping) can be displayed once a DRC has been selected in the Output tab



Module: PCB Library Plot

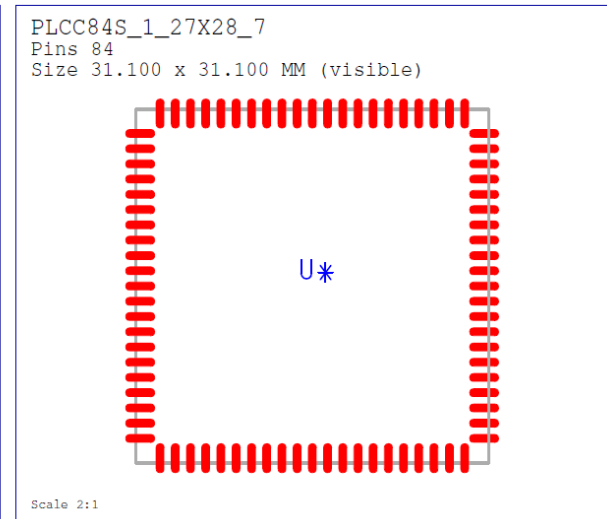
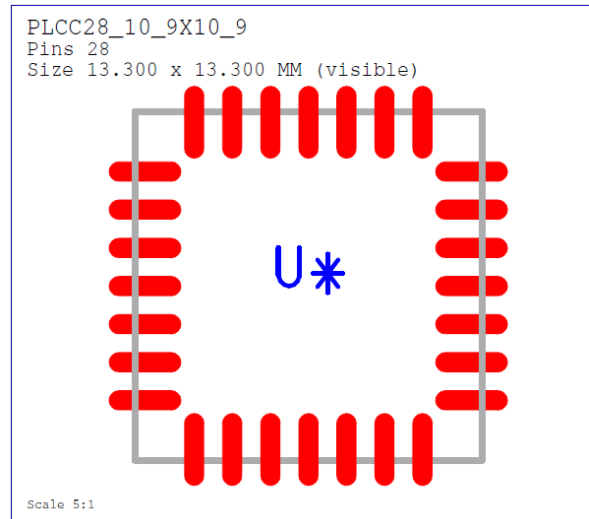
- Documentation of PCB footprints within a selected library
 - Includes graphical representation of footprint graphics
 - Graphics will be scaled into dedicated areas for better readability
 - Additional attributes (size, pitch, padstacks used etc..) are automatically extracted and written to the document
 - Frame templates are provided
 - Customizable contents and drawing styles including drill holes
 - One single PDF document for all footprints



Module: PCB Library Plot

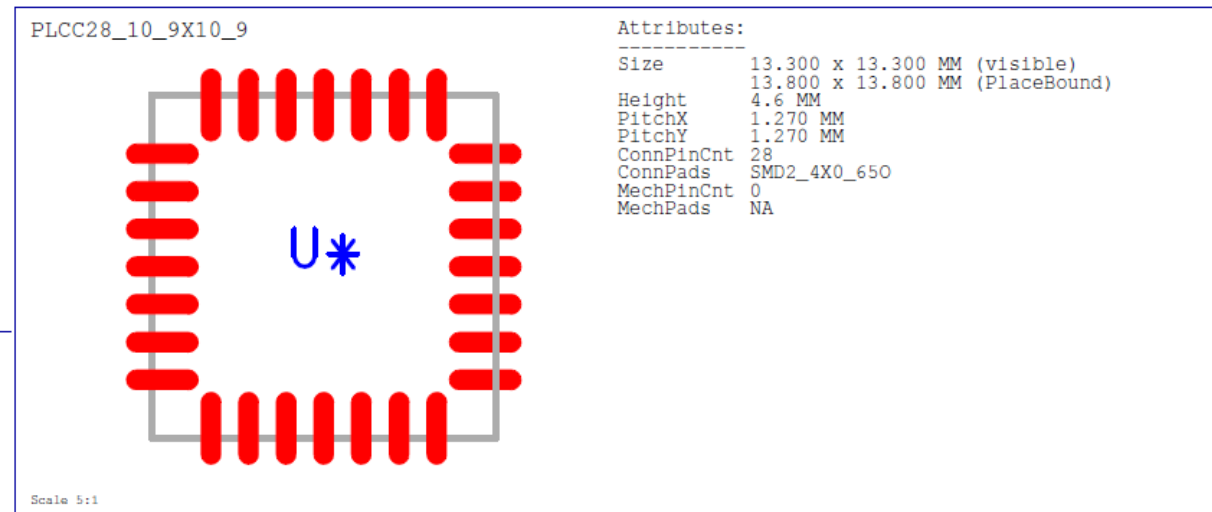
Default Mode

- Basic information
- More footprints per page



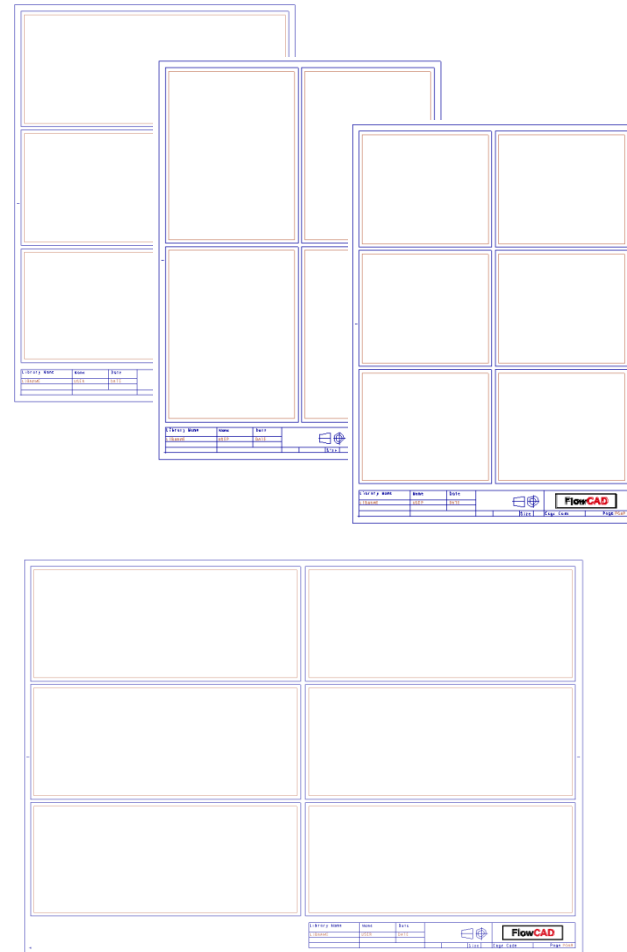
Detailed Mode

- Additional information
- Less footprints per page



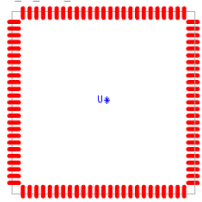
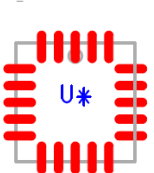
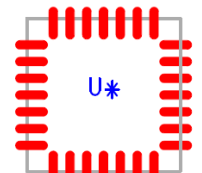
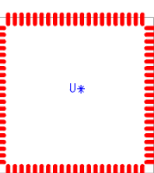
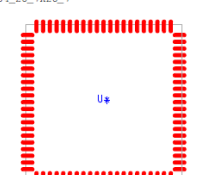
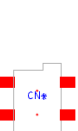
Module: PCB Library Plot

- Templates
 - Define the areas to be used for plotting which correlates to the number of footprints per page
 - Metadata support for titleblocks (page number, date, user, library name)
 - Default templates provided
 - Customer can define his own templates




Module: PCB Library Plot

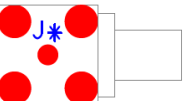


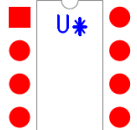
Examples

 <p>Attributes: Size 36.200 x 36.200 MM (visible) Height 36.800 x 36.800 MM (PlaceBound) PitchX 0.170 MM PitchY 1.270 MM ConnPntCnt 102 ConnPads SMD2_4X0_650 MechPntCnt 0 MechPads NA</p>	 <p>Attributes: Size 10.800 x 10.800 MM (visible) Height 12.000 x 12.000 MM (PlaceBound) PitchX 4.6 MM PitchY 2 ConnPntCnt 10 ConnPads SMD2_4X0_650 MechPntCnt 0 MechPads NA</p>
 <p>Attributes: Size 13.300 x 13.300 MM (visible) Height 13.800 x 13.800 MM (PlaceBound) PitchX 4.6 MM PitchY 1.270 MM ConnPntCnt 28 ConnPads SMD2_4X0_650 MechPntCnt 0 MechPads NA</p>	 <p>Attributes: Size 31.100 x 31.100 MM (visible) Height 31.600 x 31.600 MM (PlaceBound) PitchX 1.270 MM PitchY 1.270 MM ConnPntCnt 84 ConnPads SMD2_4X0_650 MechPntCnt 0 MechPads NA</p>
 <p>Attributes: Size 31.100 x 31.100 MM (visible) Height 31.600 x 31.600 MM (PlaceBound) PitchX 1.270 MM PitchY 1.270 MM ConnPntCnt 84 ConnPads SMD2_4X0_650 MechPntCnt 0 MechPads NA</p>	 <p>Attributes: Size 14.200 x 15.000 MM (visible) Height 14.600 x 14.600 MM (PlaceBound) PitchX 11 MM PitchY 11.400 MM ConnPntCnt 2 ConnPads SMD2_8X2_OR MechPntCnt 2 MechPads HNN1_6 HNN1_8</p>


Library Name	Name	Date
symbols	FNICK	05.08.10


Size Page Code Page 20

6 footprints on A3
 Detailed attributes

 <p>Attributes: Size 13.970 x 7.620 MM (visible)</p>	 <p>Attributes: Size 19.050 x 93.980 MM (visible)</p>
 <p>Attributes: Size 9.195 x 30.480 MM (visible)</p>	 <p>Attributes: Size 9.195 x 10.160 MM (visible)</p>

Library Name	Name	Date
symbols_ahort	FNICK	05.08.10

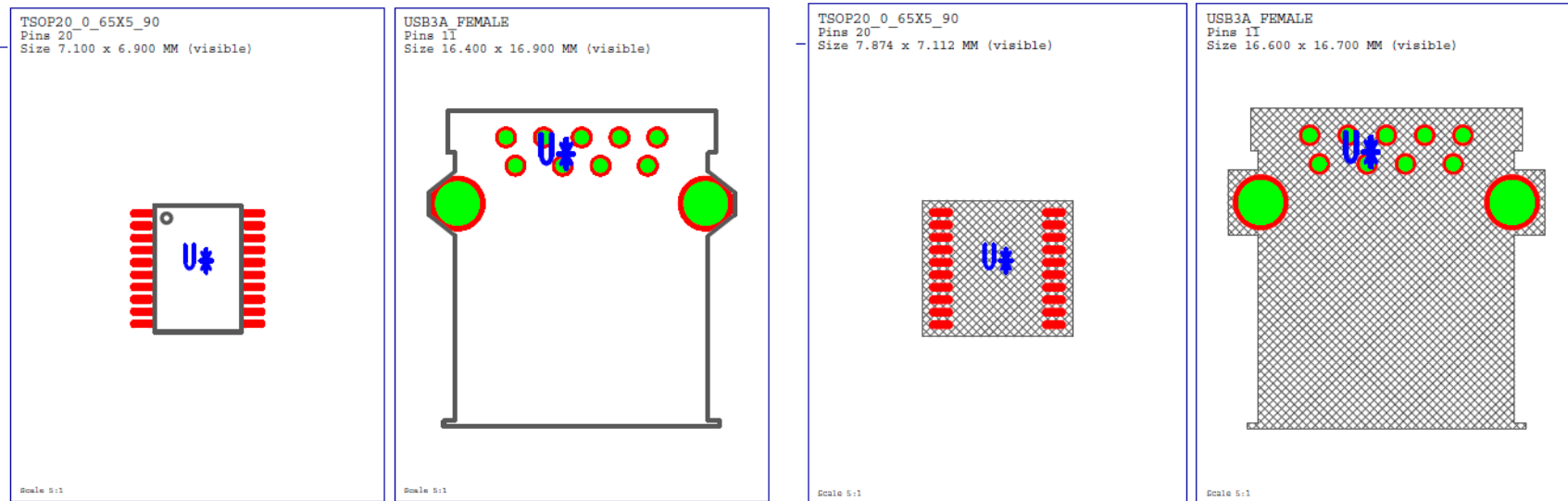

Size Page Code Page 1

4 footprints on A4
 Vasic Attributes



Module: PCB Library Plot

Customizable content including drill holes and various drawing styles



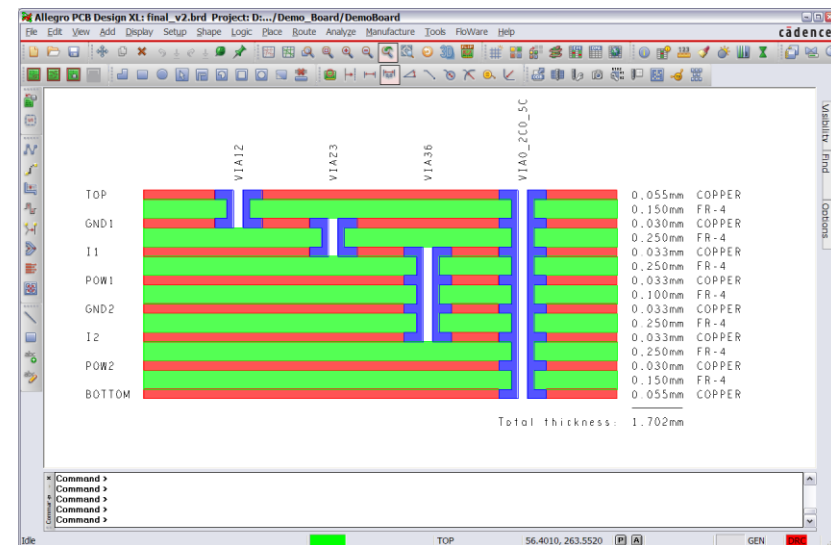
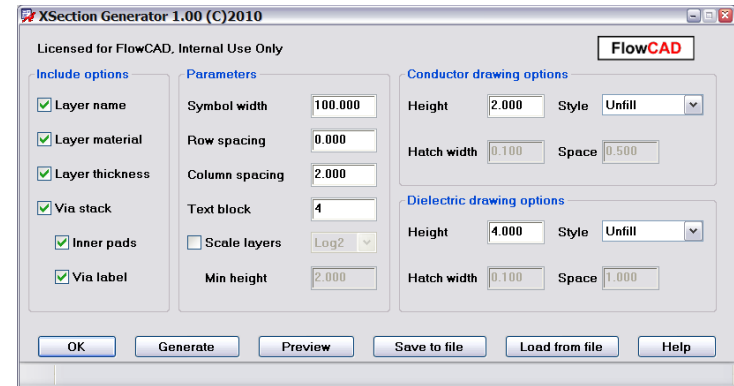
Assembly TOP including etch and drill holes

Placebound as hatch shape including etch and drill holes



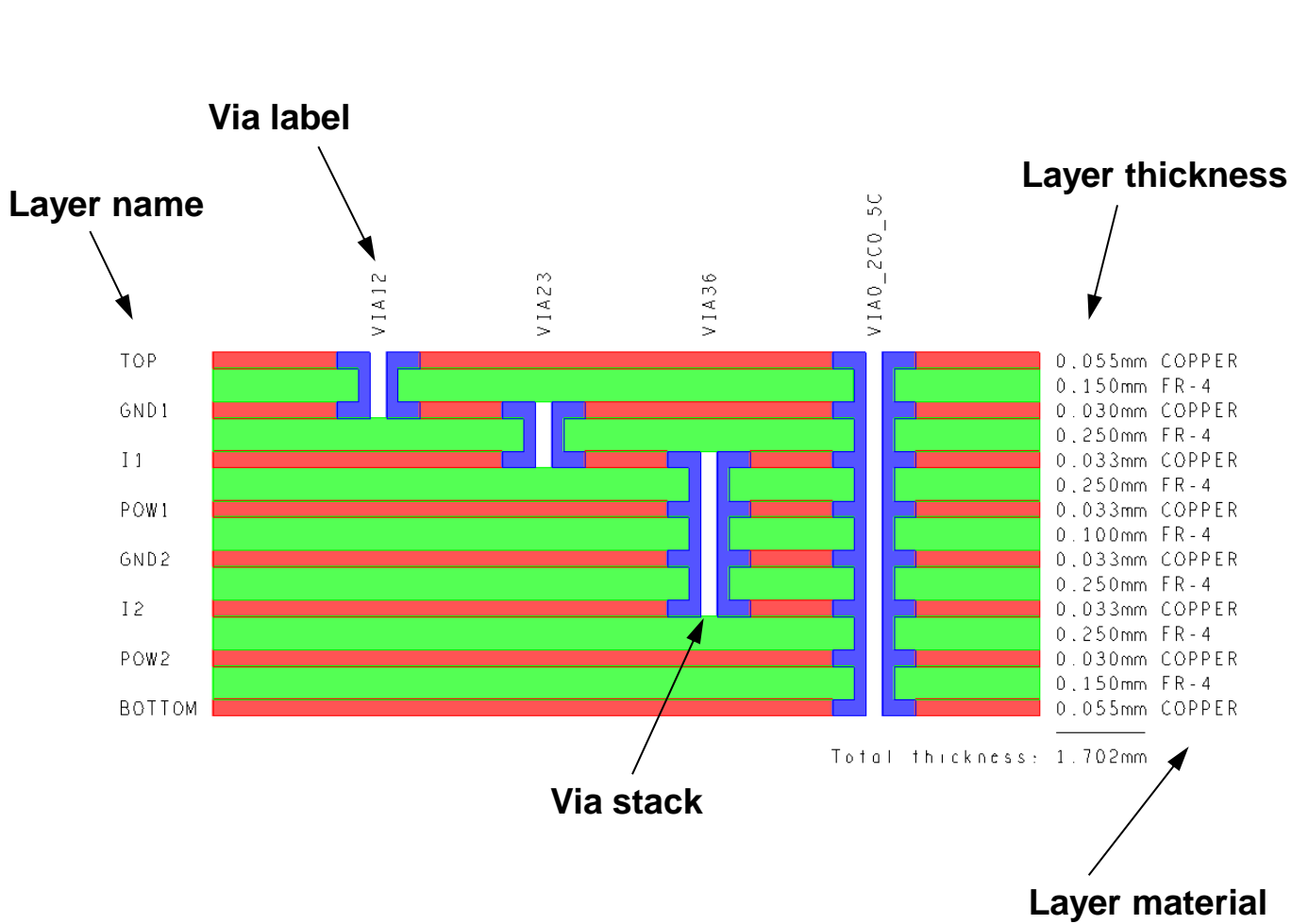
Module: Cross Section Generator

- Creates a documentation view of the cross section in the layout database
- Customizable content
 - Layer Name
 - Layer thickness (including total thickness)
 - Layer material
 - Via stack + via labels
- Various graphics options
 - Symbol size, extra row/column spacing
 - Fill styles for conductors and dielectrics
 - Scaling of layer thicknesses for better readability
- Configuration stored in database (important for update purposes)



Module: Cross Section Generator

Customizable content



Include options

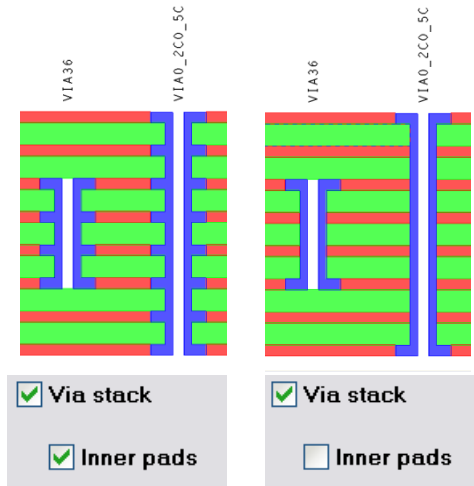
- Layer name
- Layer material
- Layer thickness
- Via stack
- Inner pads
- Via label



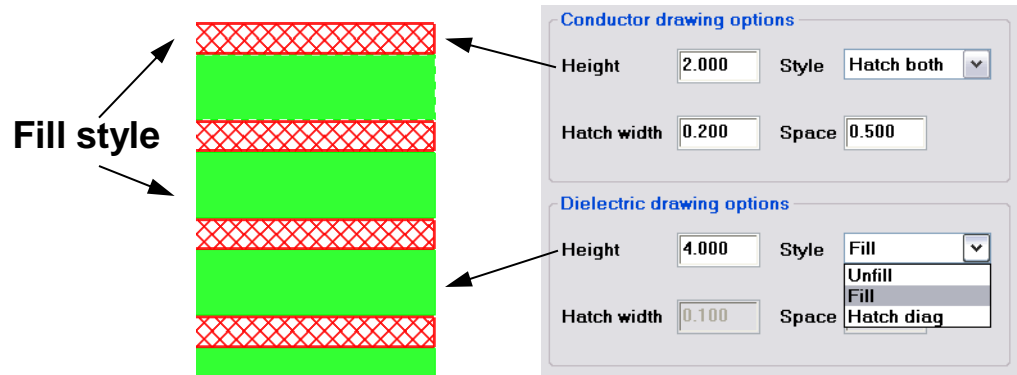
Module: Cross Section Generator

Graphics

Via stack



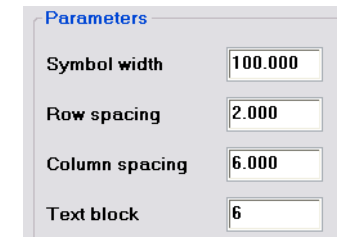
Conductor and dielectric drawing options



Row and column spacing



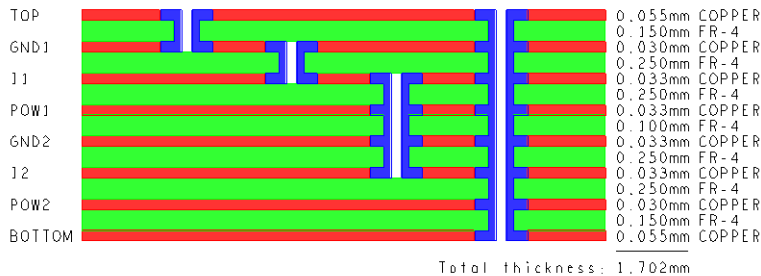
Column spacing



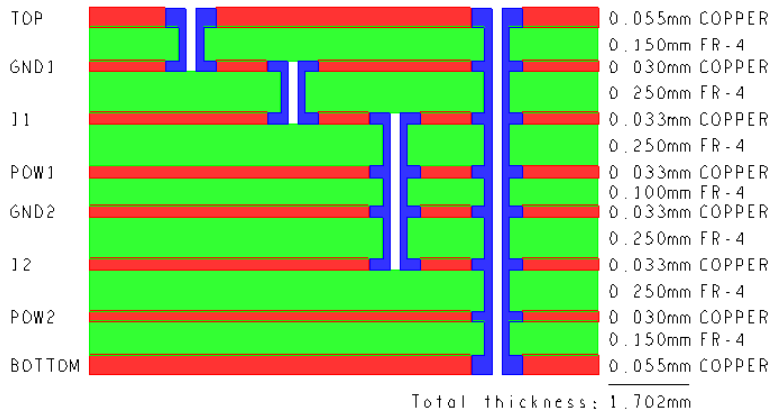
Module: Cross Section Generator

Thickness scaling options

No scaling



„Log2“ scaling



Parameters

Symbol width: 100.000

Row spacing: 0.000

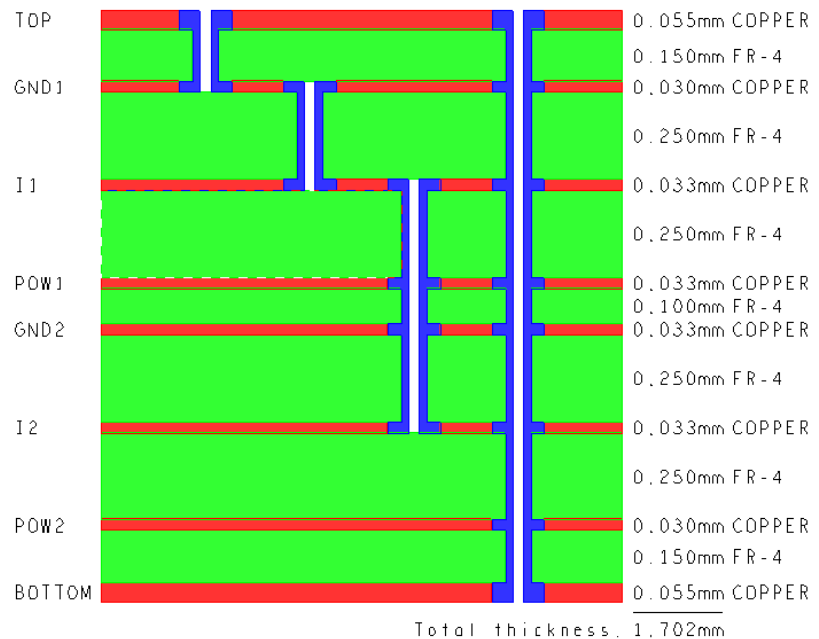
Column spacing: 2.000

Text block: 7

Scale layers: Log2

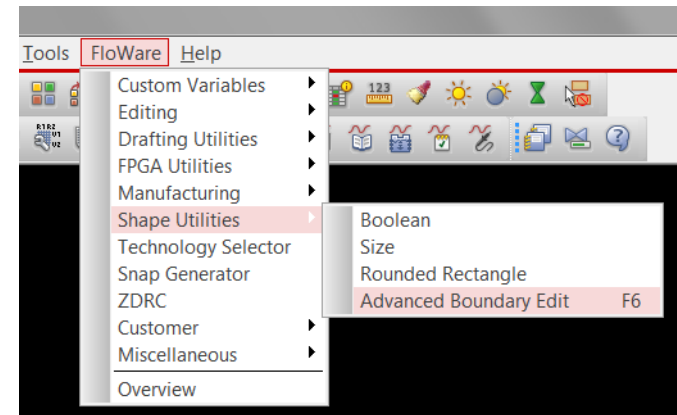
Min height: Linear, Log2, Log5, Log10

Linear scaling



Module: Shape Utilities

- Includes useful functions when editing shapes
 - Boolean operations
 - Size operations (Expand, Contract, Size)
 - Rectangular shapes with rounded corners
 - Advanced boundary edit functions
 - Stretch
 - Cut
 - Round off vertices
 - Change round off radius
 - Modify individual arc parameters

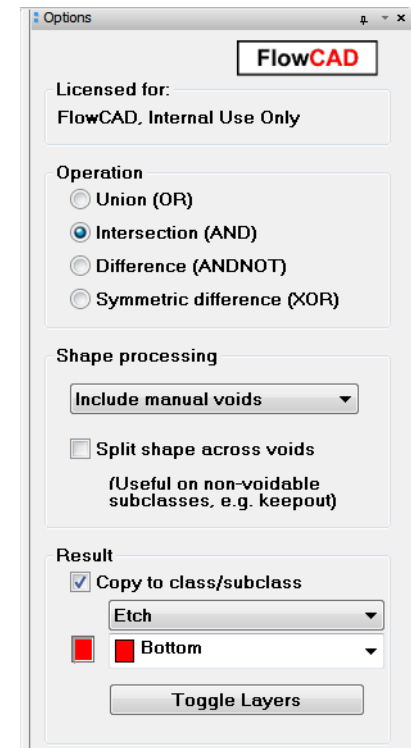


Shape Utilities – Boolean operations

• Features

- OR, AND, ANDNOT, XOR
- Supports shape–shape operations as well as shape–line and shape–text operations
- Shape attributes (shape type, fill style, net name etc.) are retained and applied to the resulting shape
- Ability to split shapes across voids
- Useful for general editing and basic RF-applications

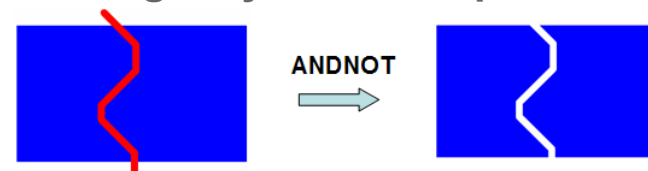
Basic operations



Etching negative texts into copper....

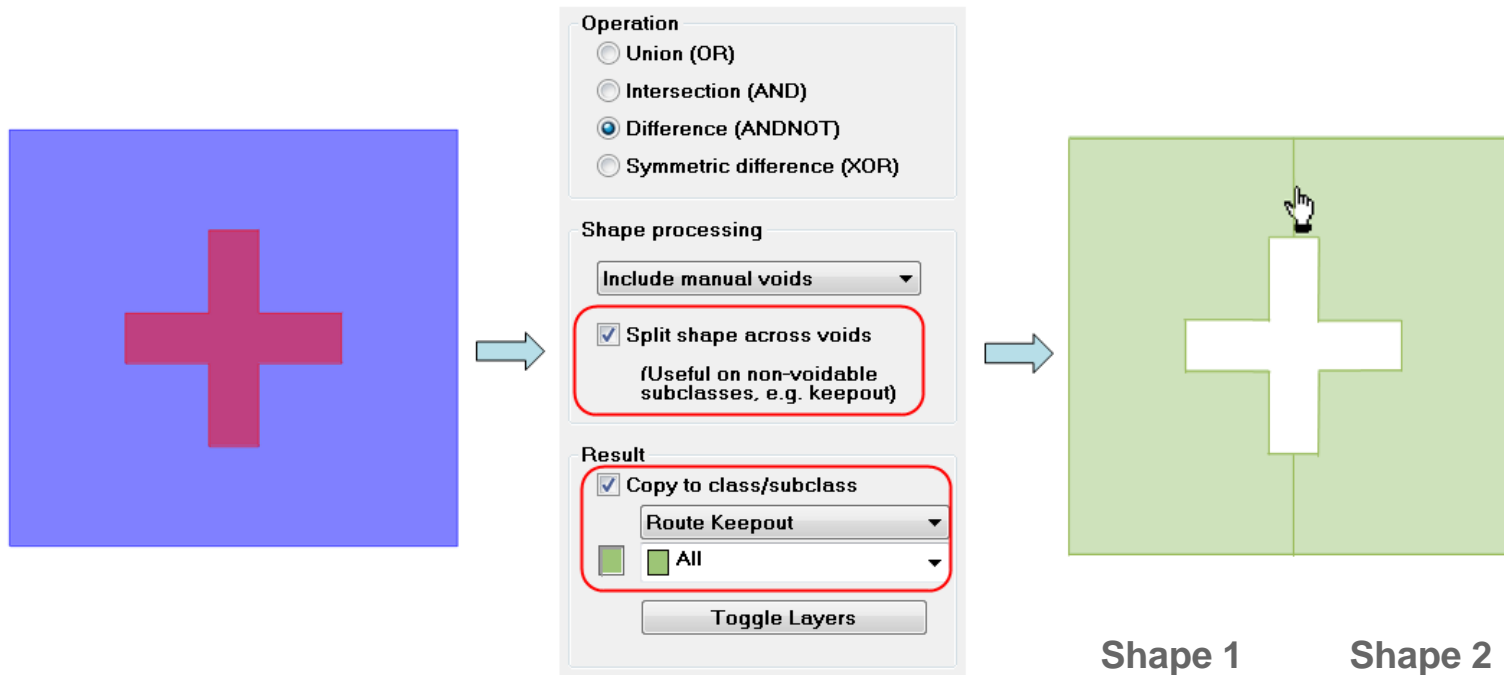


Cutting a dynamic shape....



Shape Utilities – Boolean operations

- Let's you also split shapes across voids
- Useful when working on non-voidable layers such as KEEPOUT, NO_PROBE etc.

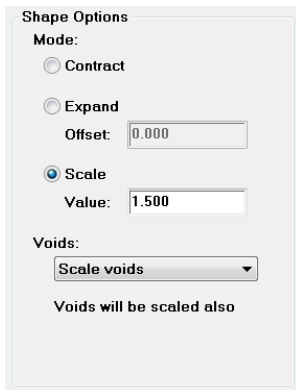
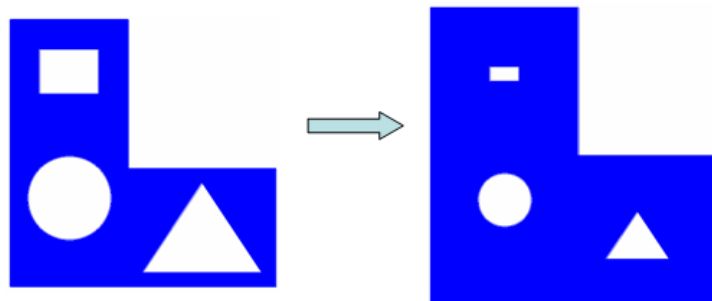


Shape Utilities – Size operations

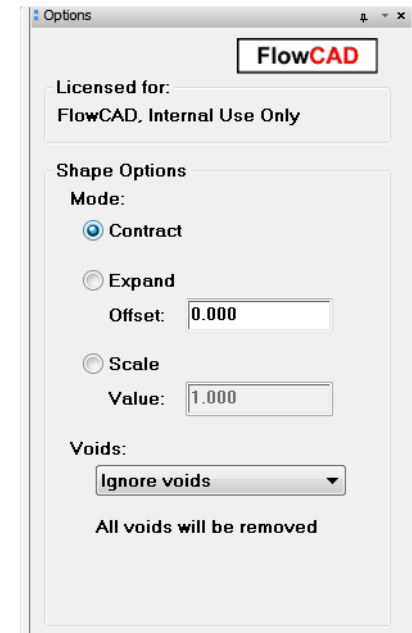
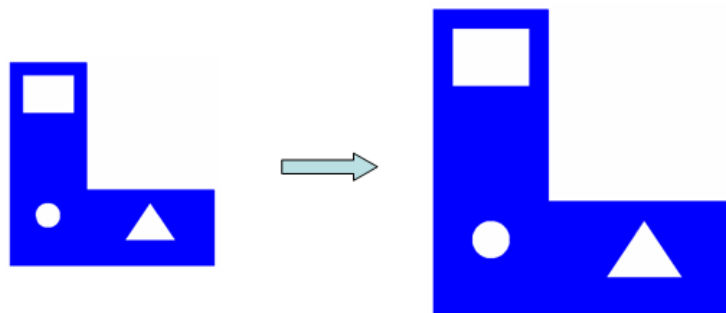
- Expand/Contract similar to *Edit – ZCopy* but directly acts on selected shape. No copies remain. Additional options for void handling



Expanding a shape



Scaling a shape



Shape Utilities – Rounded rectangular shapes

- Useful when defining pad shapes
- Size can be specified exactly
- Reference point can be chosen by using negative values for width and height

Basic operation

Parameters

Shape width:

Shape height:

Corner radius:

Center to pick



Options

FlowCAD

Licensed for:
FlowCAD, Internal Use Only

Destination layer
Etch

Bottom

Parameters

Shape width:

Shape height:

Corner radius:

Center to pick

Specify shape origin

Shape width:

Shape height:

Shape width:

Shape height:

Shape width:

Shape height:

Shape width:

Shape height:

Shape width:

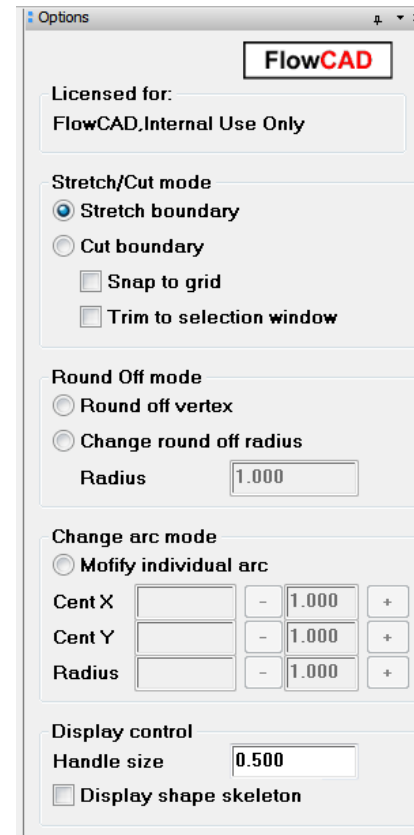
Shape height:

Center to pick



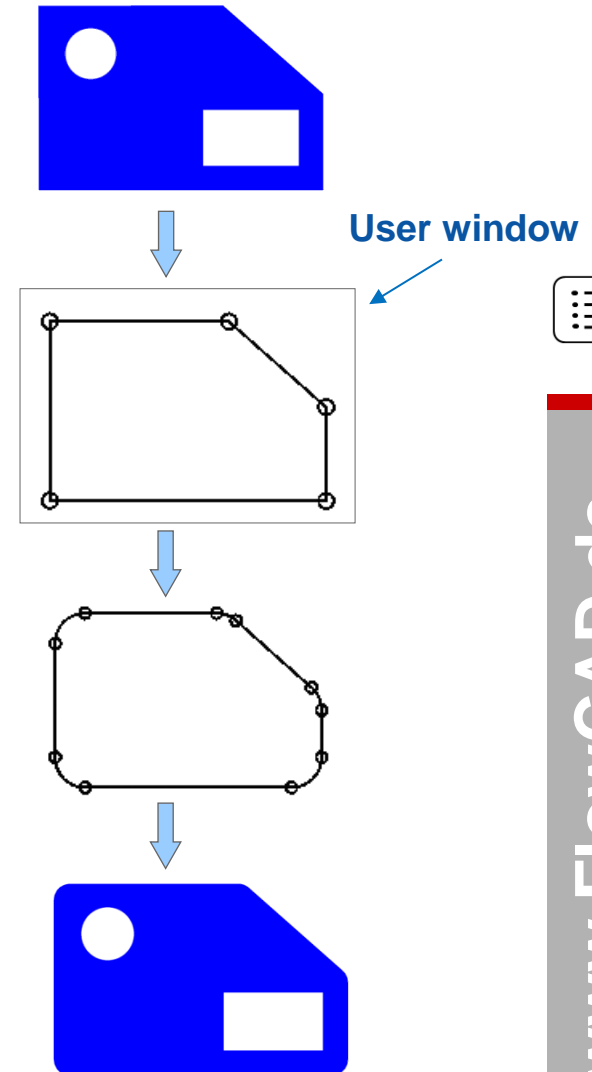
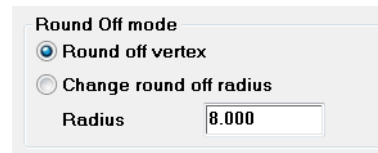
Shape Utilities – Advanced Boundary Edit

- Supports several modes
 - Stretching of shapes
 - Cutting of shapes
 - Rounding off vertices
 - Changing existing round off radius
 - Modifying individual arc segments of a shape
- All modes within one command
 - Including Oops support
- Additional features
 - Can also edit voids (Find Filter)
 - Supports single pick as well as window selection (several vertices)
 - Snap to grid, Trim to selection window
 - Display control (e.g. handle size)



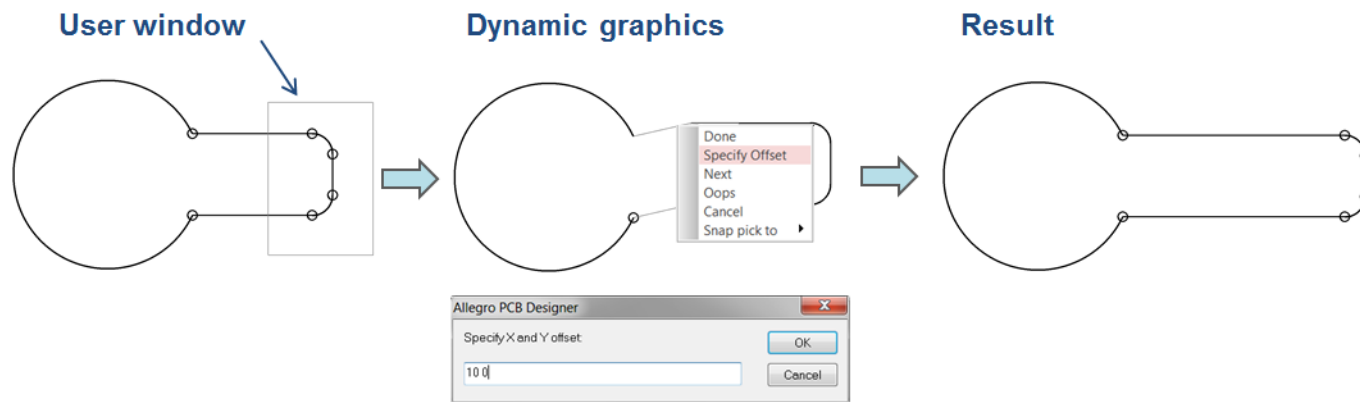
Shape Utilities – Advanced Boundary Edit

- Use model
 1. Select the shape or void to be modified
 2. Select an action, e.g. *Round off vertex*
 3. Pick a vertex or drag a window to select the vertices
 4. Switch to other modes if necessary and continue
 5. RMB - Done

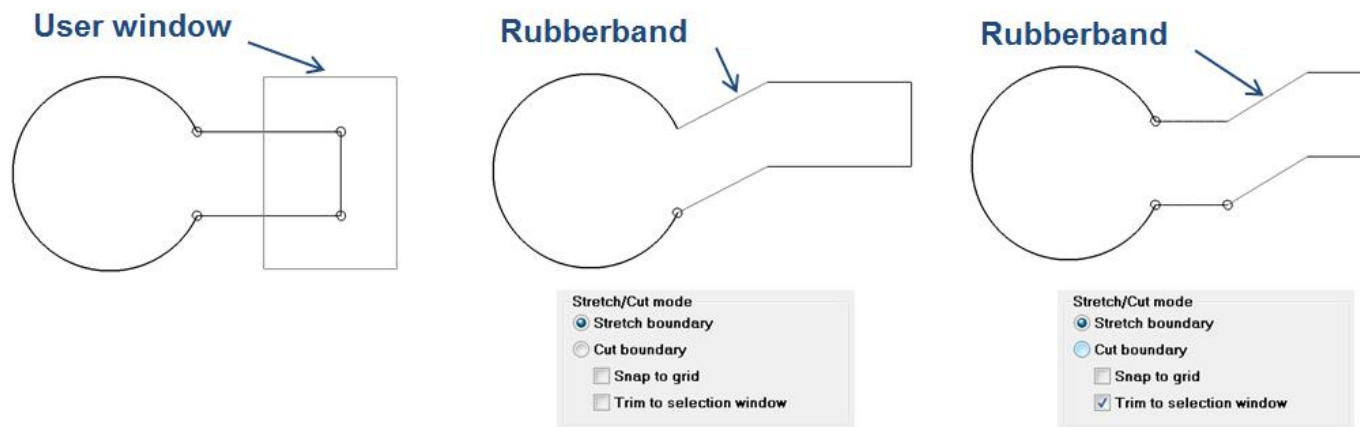


Shape Utilities – Advanced Boundary Edit

- Stretching of shapes
 - Specify offset if accurate stretch distance is needed

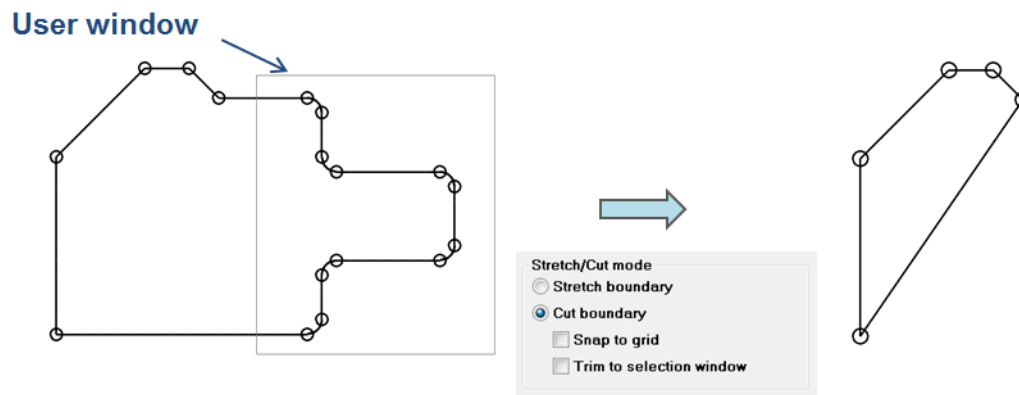


- *Trim to selection window* let's you control stretch point origin

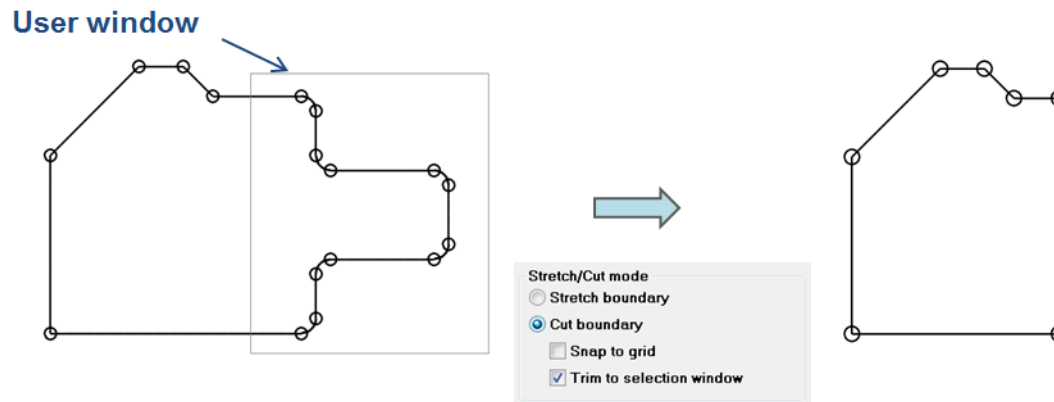


Shape Utilities – Advanced Boundary Edit

- Cutting of shapes
 - Adjacent segments of selected vertices will be deleted

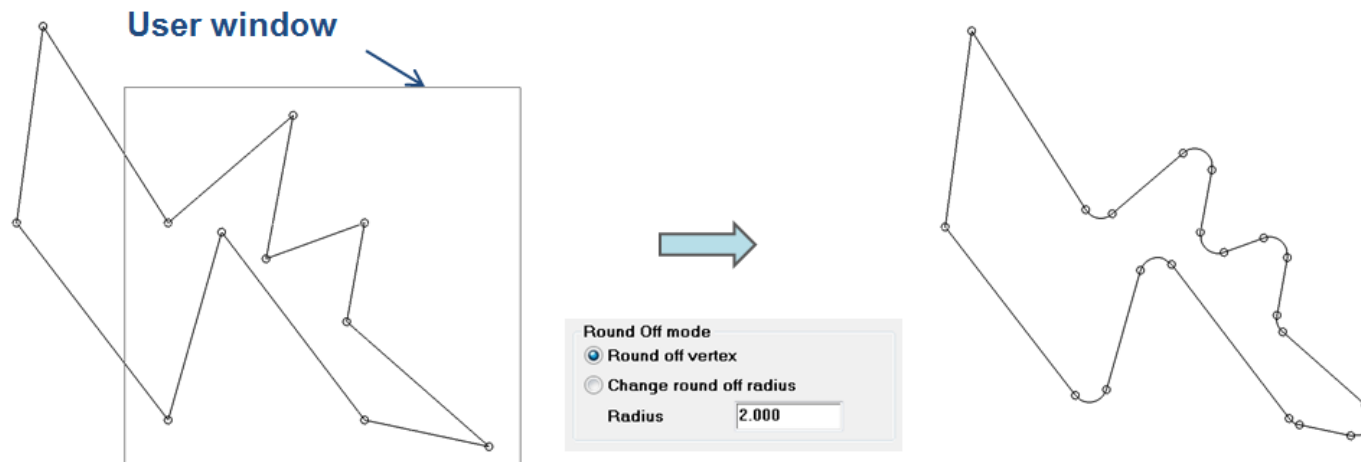
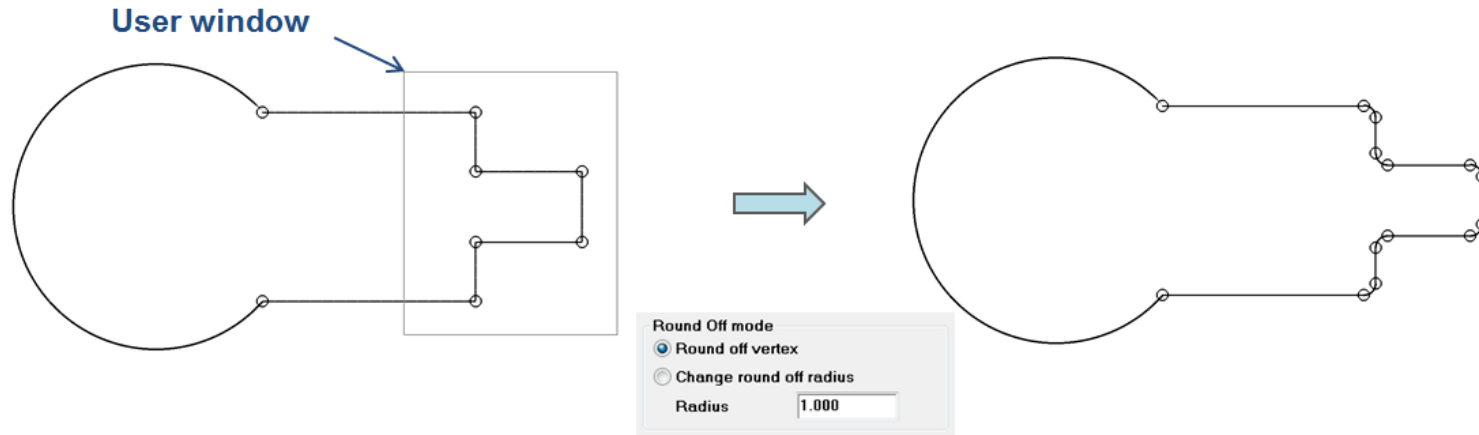


- *Trim to selection window* simply cuts at the window boundary



Shape Utilities – Advanced Boundary Edit

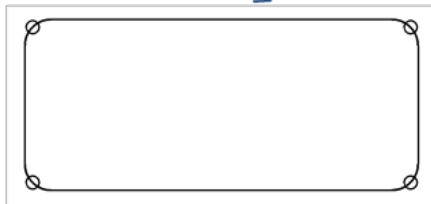
- Round off vertex



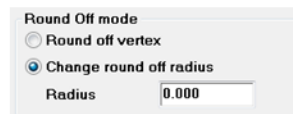
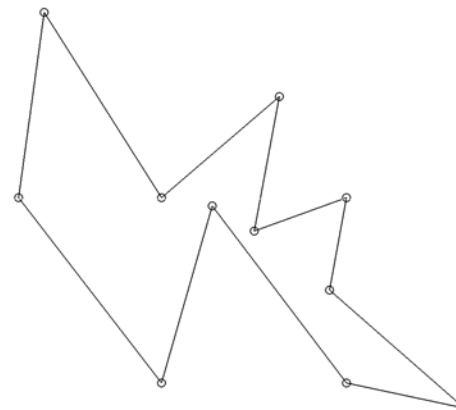
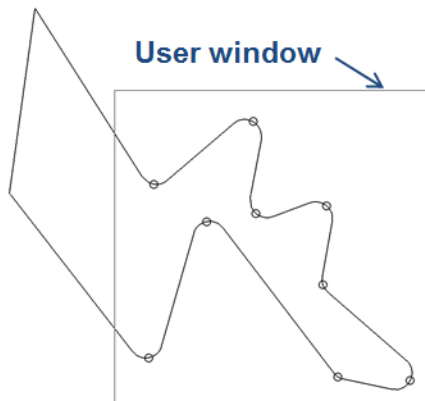
Shape Utilities – Advanced Boundary Edit

- Change round off radius
 - Let's you change existing rounded off corners

User window

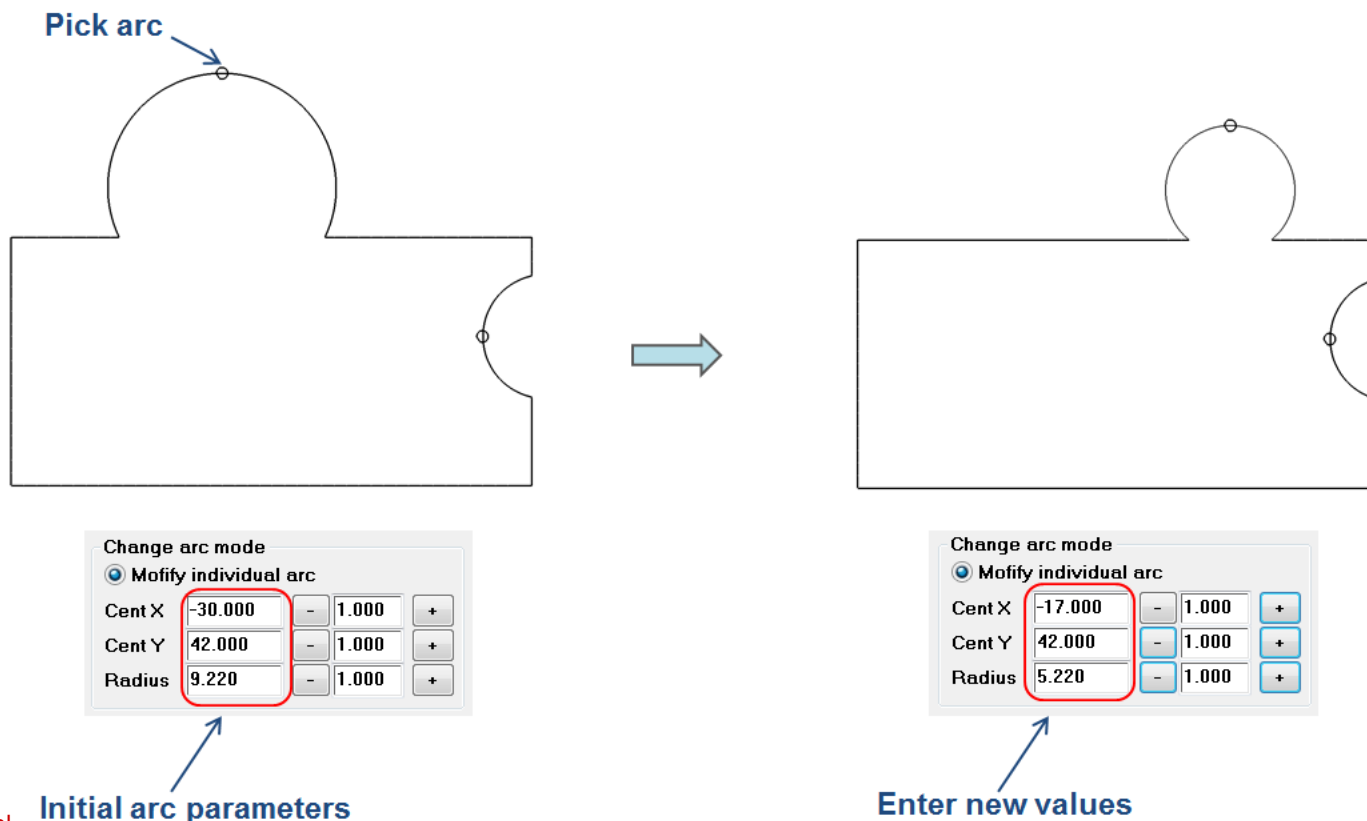


- Can also restore original vertices by specifying a radius of 0.0



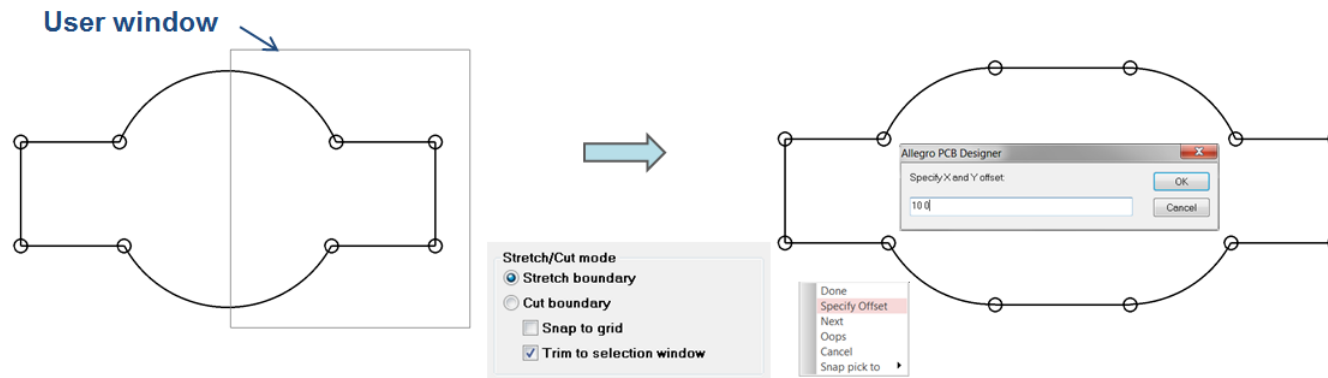
Shape Utilities – Advanced Boundary Edit

- Change arc mode
 - Parameters of existing arcs can be changed in Options panel. End points of adjacent segments will be adjusted automatically. Tuning possible by using +/- buttons.

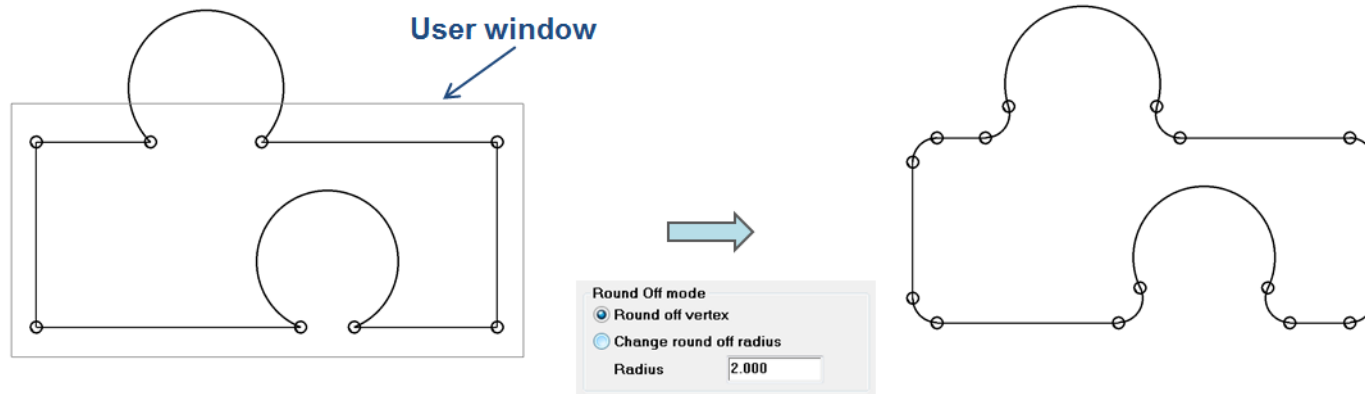


Shape Utilities – Advanced Boundary Edit

- Other highlights
 - Stretch/Cut on arc segments in conjunction with Trim option

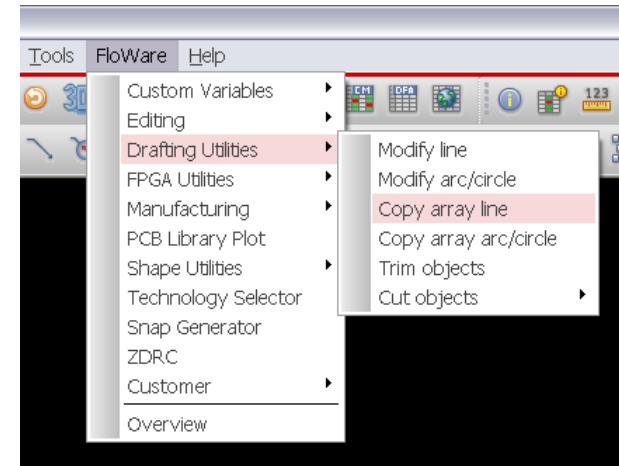


- Round Off with adjacent arc segments



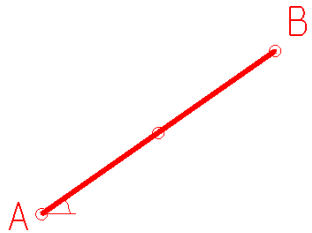
Module: Drafting Utilities

- Includes useful functions for drafting purposes
- Functions support dynamic preview before changes are committed
- Six functions at the moment
 - Modify line
 - Modify arc/circle
 - Copy array line
 - Copy array arc/circle
 - Trim objects
 - Cut objects



Module: Drafting Utilities

Modify line

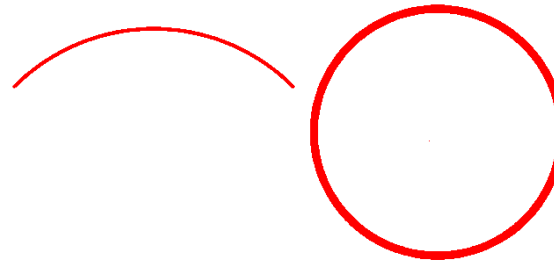


Line attributes

Point	x	y
A	170.200	63.100
Center	176.753	67.689
B	183.306	72.277

Angle: 35.000
 Width: 0.300
 Length: 16.000

Modify arc/circle

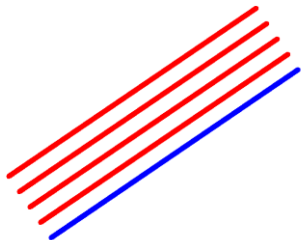


Arc/circle attributes

Center X	127.000
Center Y	63.000
Radius	10.000
Start angle	45.000
Sector angle	90.000
Width	0.200



Copy array line

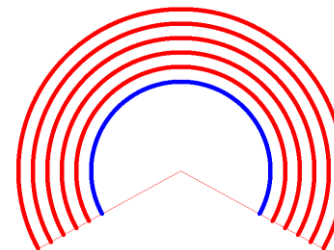


Copy line options

Quantity	4
Air gap	0.700
Center gap	1.000

Swap side

Copy array arc/circle



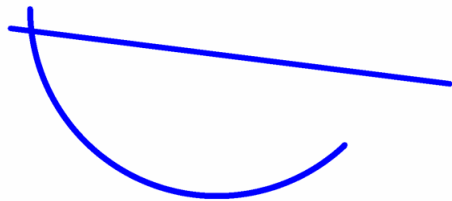
Copy arc/circle options

Copy outside
 Copy inside

Quantity	5
Air gap	0.700
Center gap	1.000

Module: Drafting Utilities

Trim objects



Options

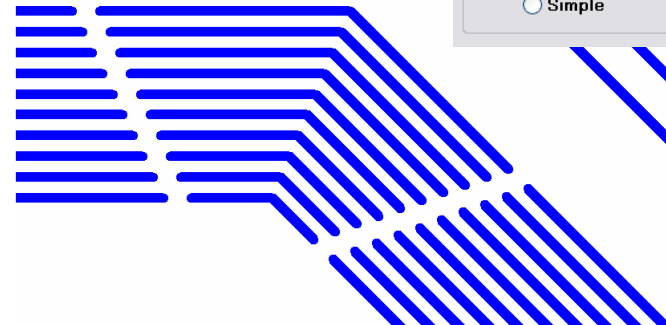
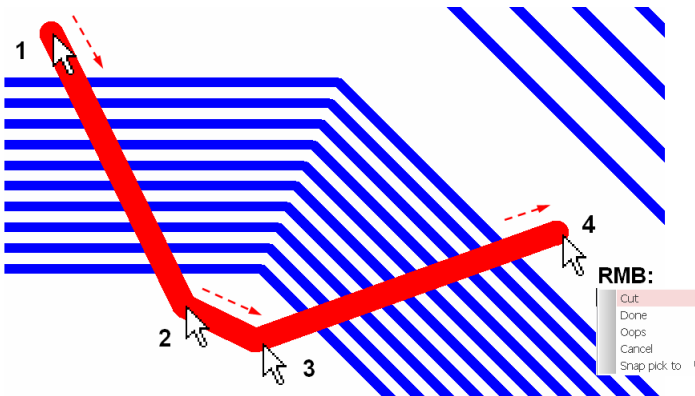
Single point mode Swap

Trim vertex from

- Both objects
- First object only
- Second object only



Cut objects



Options

Cut width

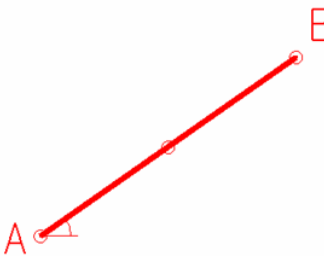
Gap calculation:

- Accurate
- Simple

Module: Drafting Utilities

Modify line

- Change line attributes on a parameter basis:
Coordinates as well as angle, width and length
- Angle display can be swapped
- Fix point for rotation and length changes can be chosen
- Fine-tuning capabilities for angle, width and length



Line attributes

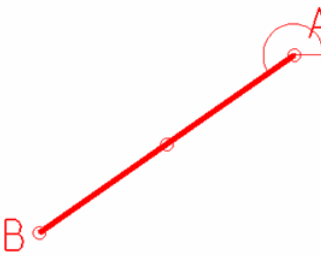
Point	x	y
A	170.200	63.100
Center	176.753	67.689
B	183.306	72.277

Angle: 35.000
Width: 0.300
Length: 16.000

Options

Angle display

Fixpoint (rotation, length changes)
 A B Center



Line attributes

Point	x	y
A	183.306	72.277
Center	176.753	67.689
B	170.200	63.100

Angle: 215.000
Width: 0.300
Length: 16.000

Options

FlowCAD

Licensed for:
FlowCAD, Internal Use Only

Line attributes

Point	x	y
A	170.200	63.100
Center	176.753	67.689
B	183.306	72.277

Angle: 35.000
Width: 0.300
Length: 16.000

Options

Angle display

Fixpoint (rotation, length changes)
 A B Center

Tuning

Parameter: Angle

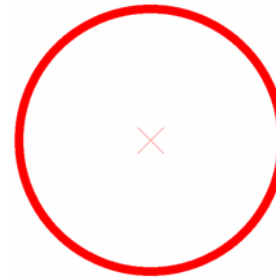
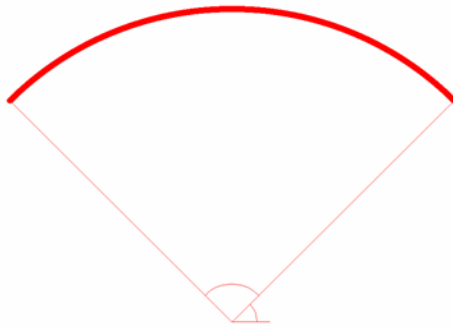
Increment: 5.000



Module: Drafting Utilities

Modify arc/circle

- Change arc or circle attributes on a parameter basis: Center coordinate as well as radius, start angle, sector angle and width
- Fine-tuning capabilities



Arc/circle attributes	
Center X	127.000
Center Y	63.000
Radius	10.000
Start angle	45.000
Sector angle	90.000
Width	0.200

Arc/circle attributes	
Center X	124.000
Center Y	65.000
Radius	4.319
Start angle	
Sector angle	
Width	0.300

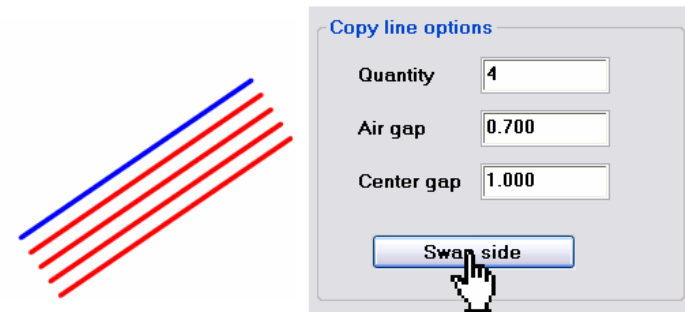
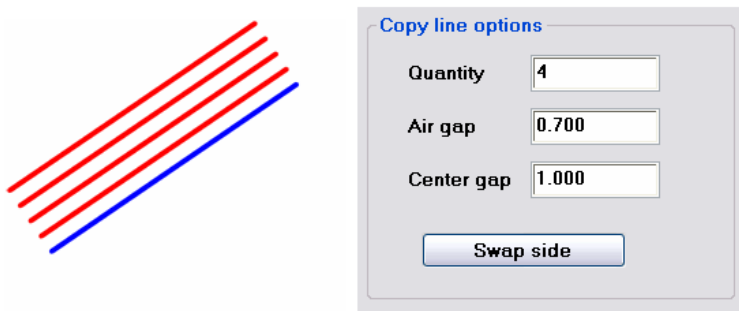
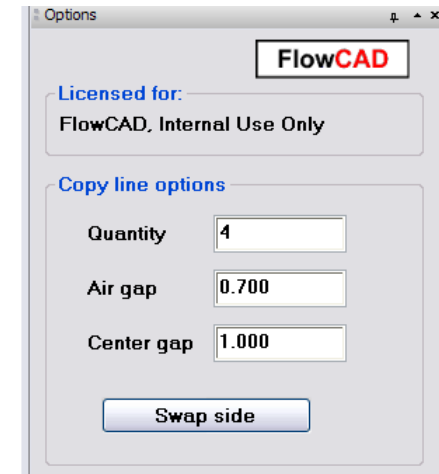
Options	
FlowCAD	
Licensed for: FlowCAD, Internal Use Only	
Arc/circle attributes	
Center X	127.000
Center Y	63.000
Radius	10.000
Start angle	45.000
Sector angle	90.000
Width	0.200
Tuning	
Parameter	Radius
Increment	0.000



Module: Drafting Utilities

Copy array line

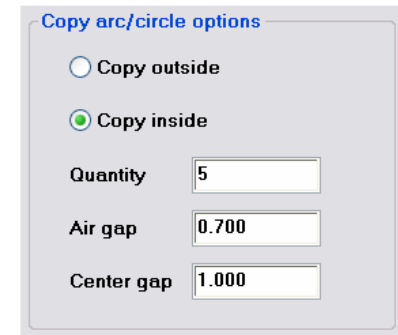
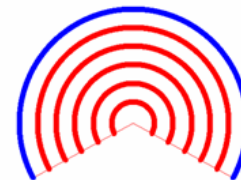
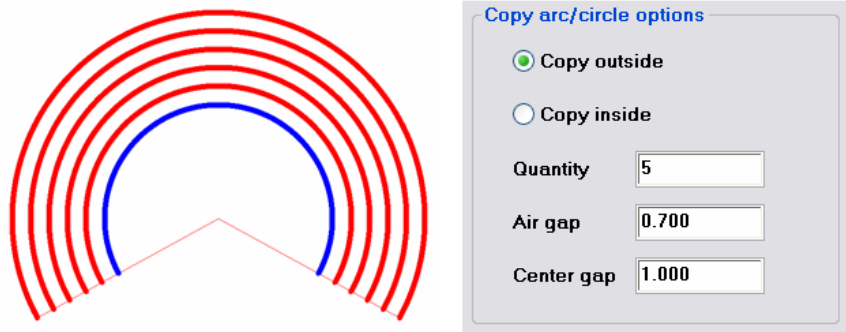
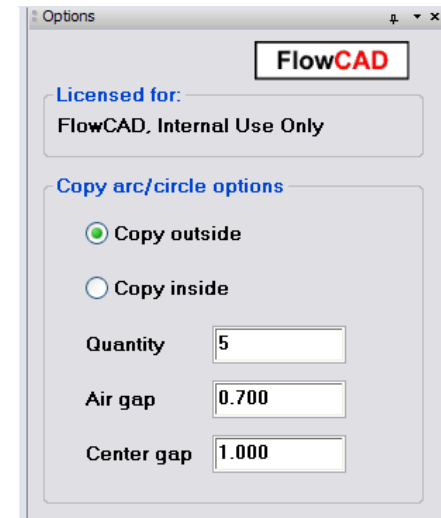
- Copies lines in parallel to a selected object
- Number of copies can be specified as well as air gap (or center gap respectively)
- Swap side



Module: Drafting Utilities

Copy array arc/circle

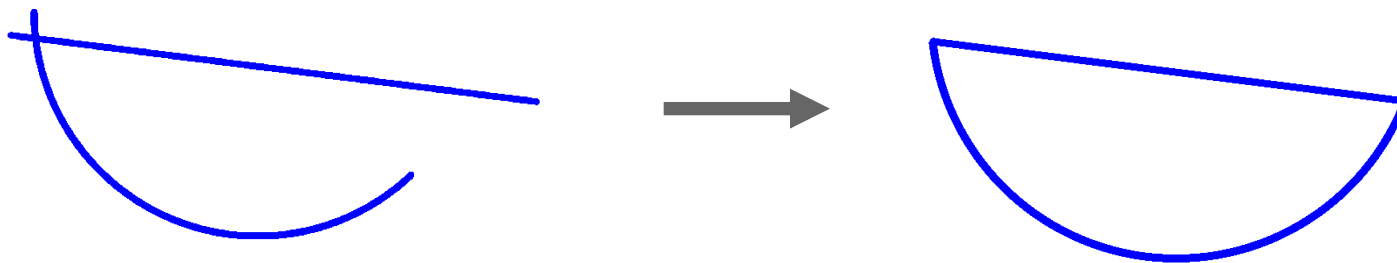
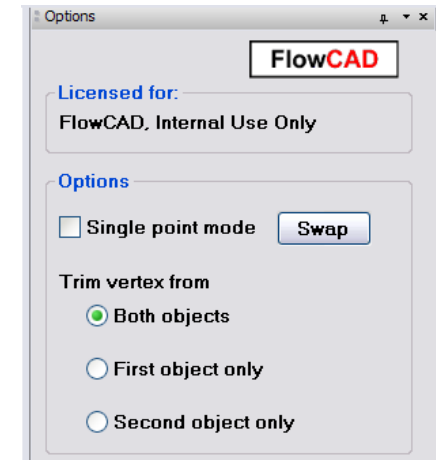
- Copies arcs in a concentric way to a selected object
- Number of copies can be specified as well as air gap (or center gap respectively)
- Direction can be chosen



Module: Drafting Utilities

Trim objects

- Trims object endpoints to calculated intersections
- Works with arcs and line objects
- Single point mode when two intersections are found (in case of arcs), ability to swap
- Trim vertex for both objects, first only or second only

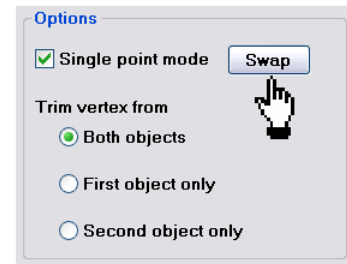
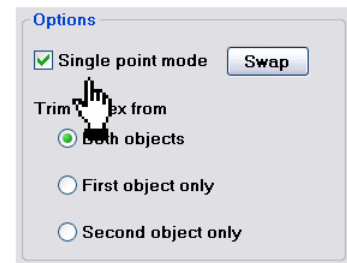
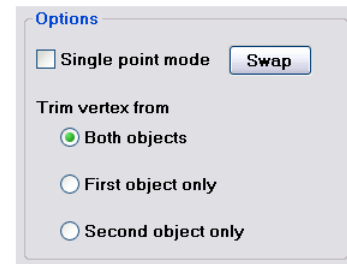
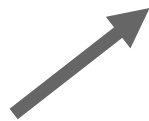
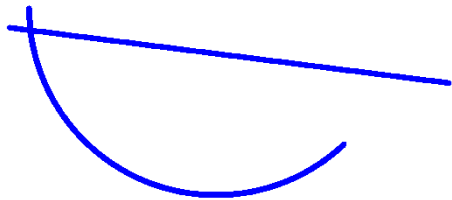


Module: Drafting Utilities

Trim objects: Single point mode

Result

Original objects



Module: Drafting Utilities

Trim objects: Trim vertex from...

The diagram illustrates three different ways to trim a vertex from two intersecting lines. On the left, a blue horizontal line and a red diagonal line intersect. Three arrows point to three different resulting states on the right, each with a corresponding software options panel.

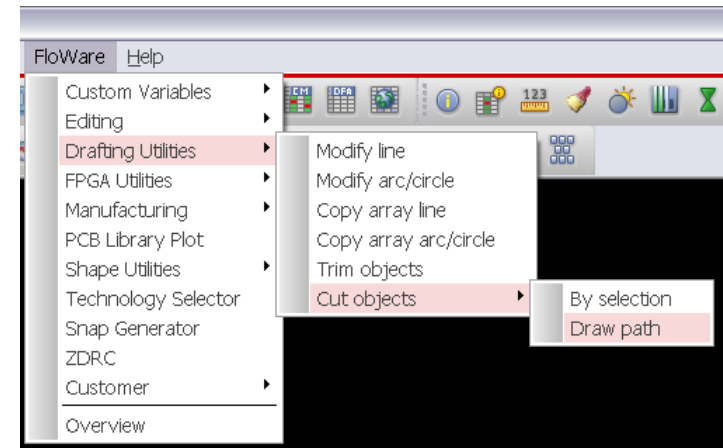
- Top State:** The top-right portion of the red line is removed. The options panel shows "Trim vertex from" set to "Both objects".
- Middle State:** The bottom-right portion of the red line is removed. The options panel shows "Trim vertex from" set to "First object only".
- Bottom State:** The top-right portion of the blue line is removed. The options panel shows "Trim vertex from" set to "Second object only".



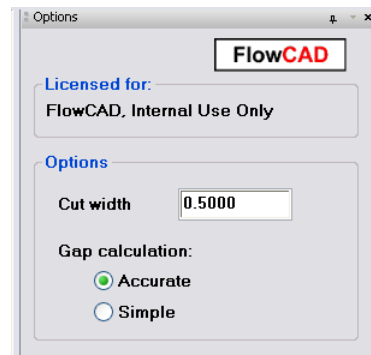
Module: Drafting Utilities

Cut objects

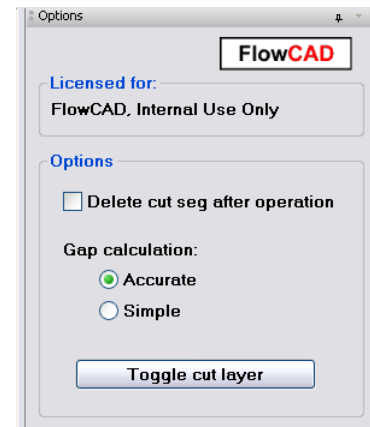
- Enables users to cut line, arc or circle objects for various purposes
- Two commands
 - Cut objects - By selection
 - Cut objects - Draw path
- Useful when layout portions need to be isolated before moving them to a new location



Cut objects - Draw path

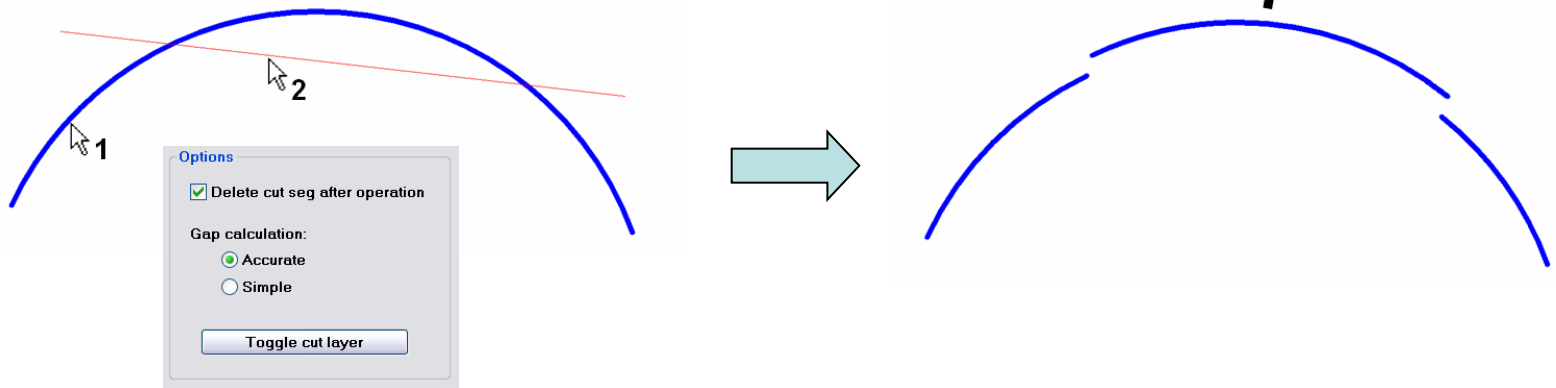


Cut objects – By selection

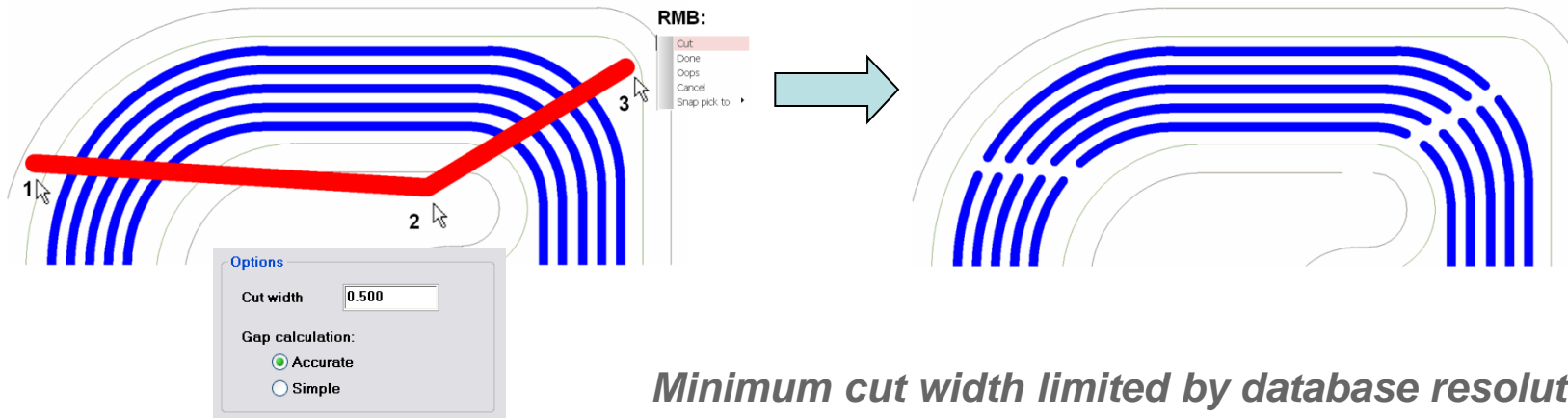


Module: Drafting Utilities

Cut objects – By selection



Cut objects – Draw path

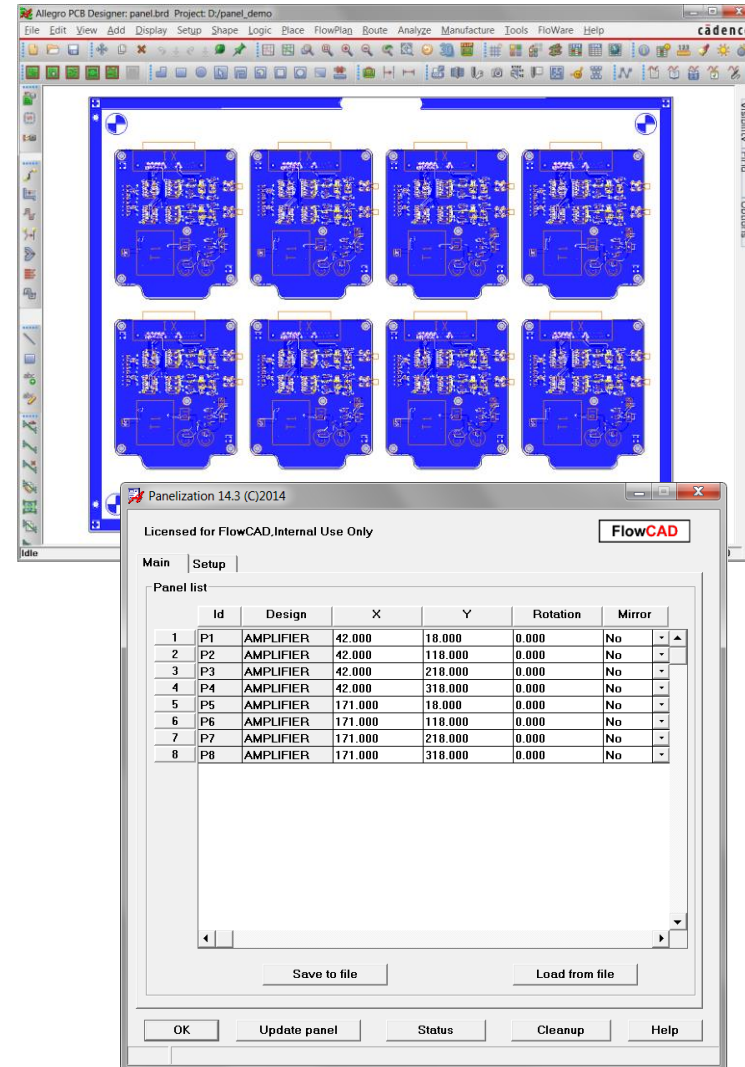


Minimum cut width limited by database resolution



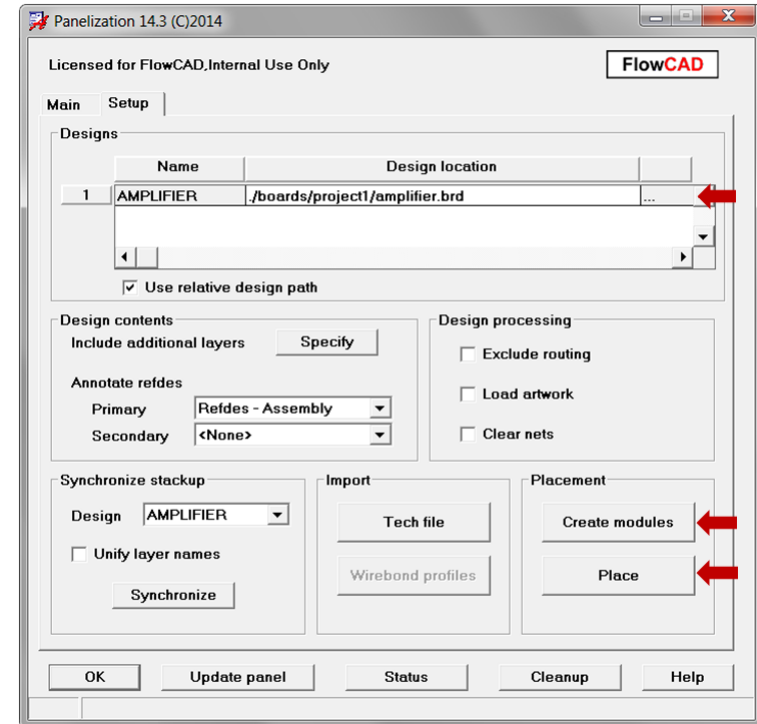
Module: Panelization

- Simplifies panel documentation process
- Boards can be stepped individually or by array
- Boards can be rotated and/or mirrored individually
- Automatic update
- Automatic notification if boards have been modified
- Based on proven mdd-Technology (*Design Reuse, Place Replicate*)
- Supports standard panels as well as family panels
- Configuration stored in database



Module: Panelization

- **Setting up a new panel**
 - Open a new database or panel template
 - Launch *Floware - Panelization*
 - Link your boards
 - Create *modules*
 - Place a single instance or an array of your board
 - Done
- **Updating an existing panel**
(e.g. original layouts have been modified)
 - Open the panel database
 - Launch *Floware - Panelization*
 - Choose *Update panel*
 - Done
 - Create manufacturing data as usual....

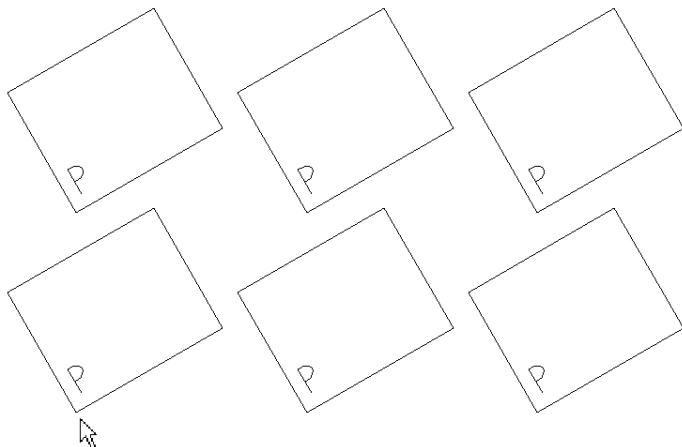
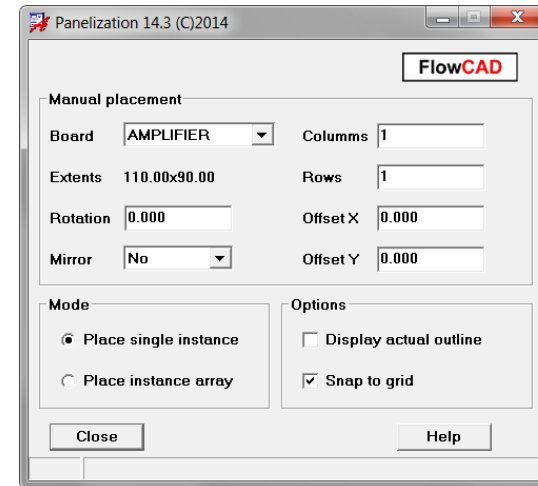


Panels – Made easy

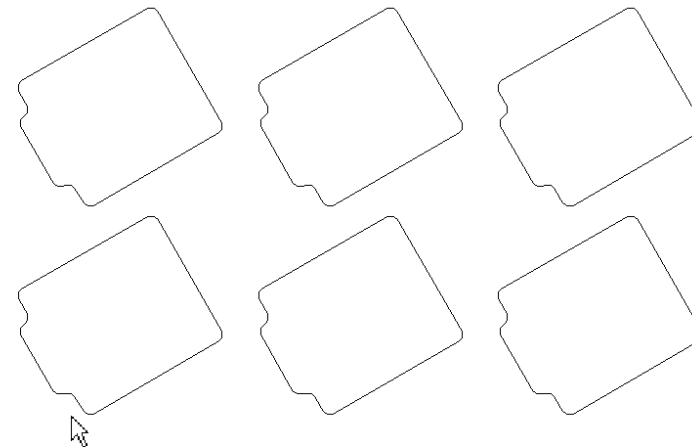


Module: Panelization

- Interactive placement
 - Place single instances or array
 - Dynamic preview attached to cursor (board size, orientation, rotation, mirror)
 - Display design bounding box or actual outline
 - Snap to grid option



Display bounding box

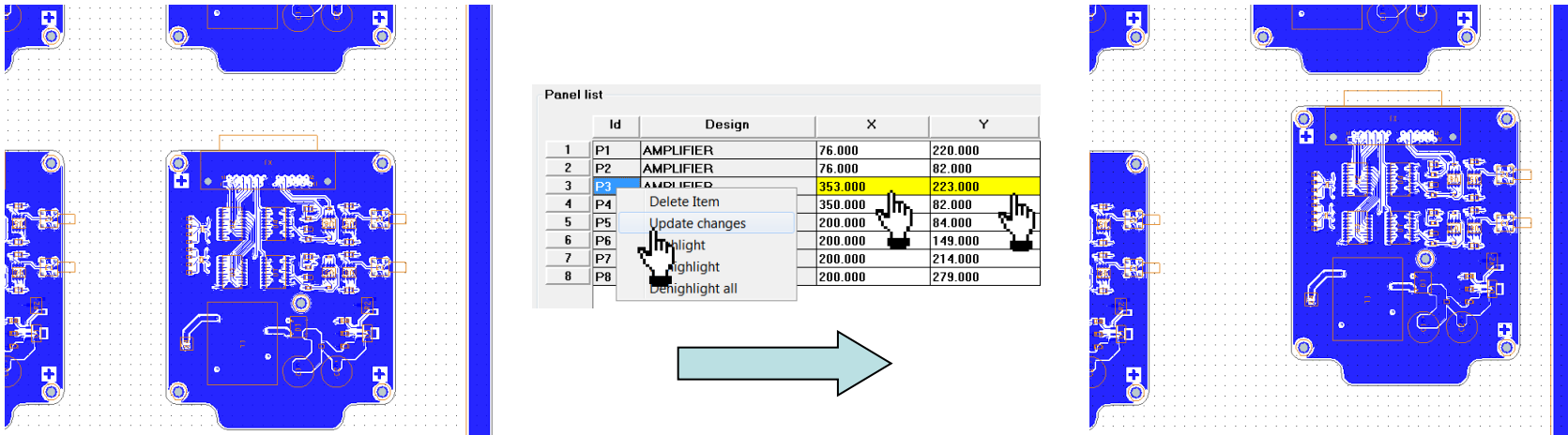


Display actual outline



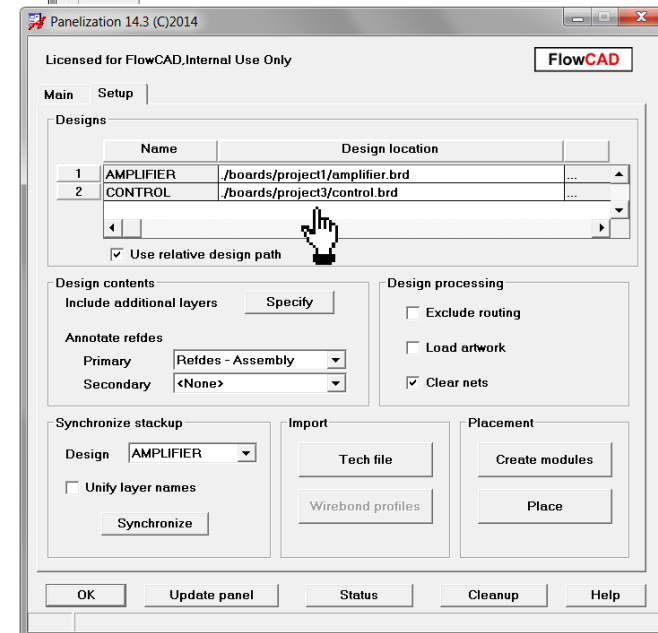
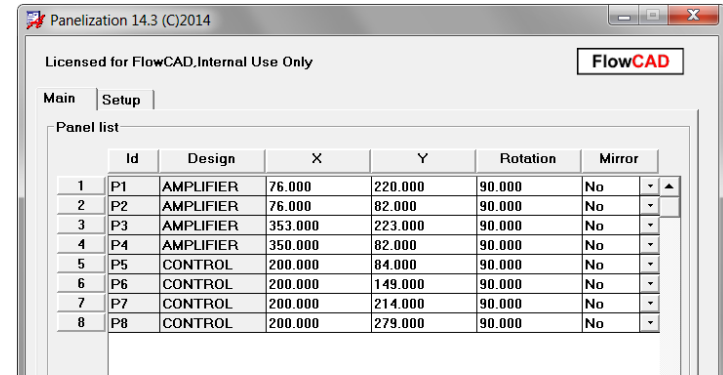
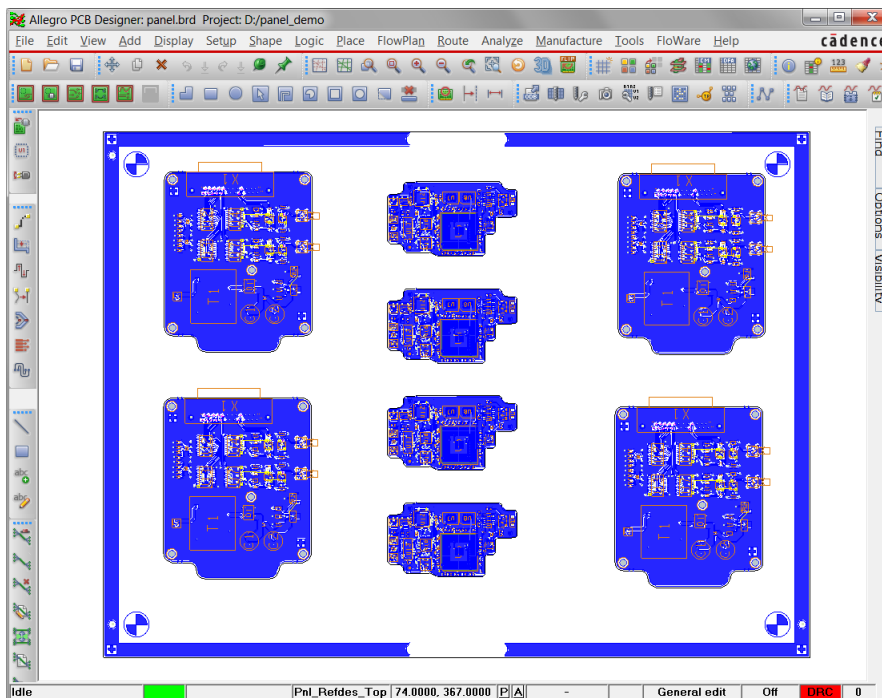
Module: Panelization

- Panel modifications
 - Change parameters (e.g. x,y) of instance to be changed
 - Fields become yellow
 - Choose context menu *Update changes* to confirm



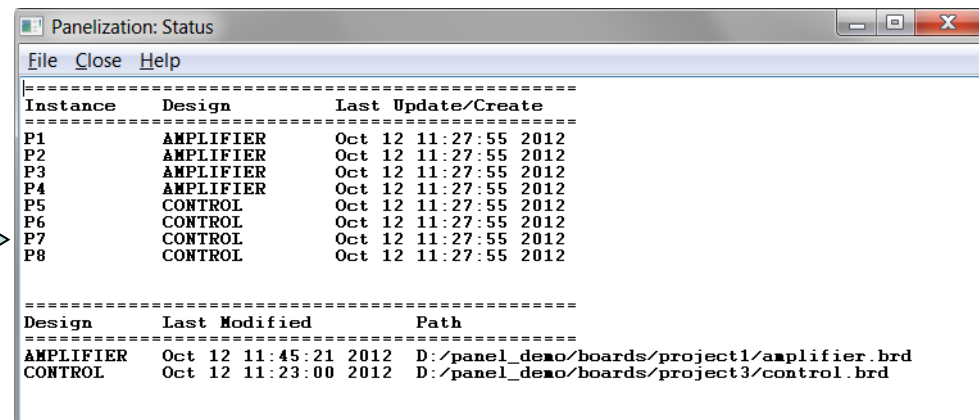
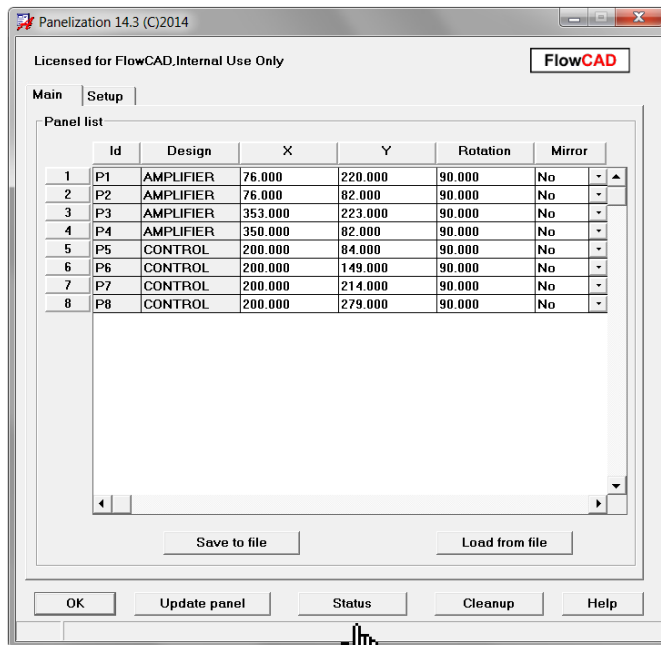
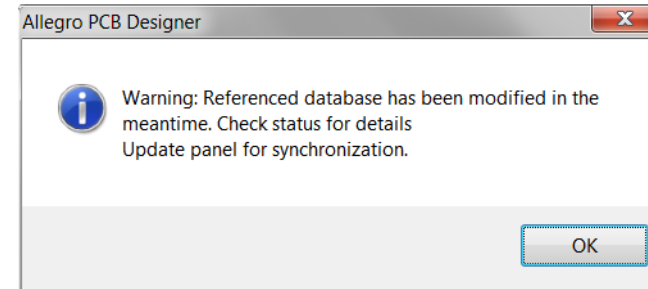
Module: Panelization

- Family panels
 - Contain more than one board layout
 - Simply link the board databases
 - Make your placement



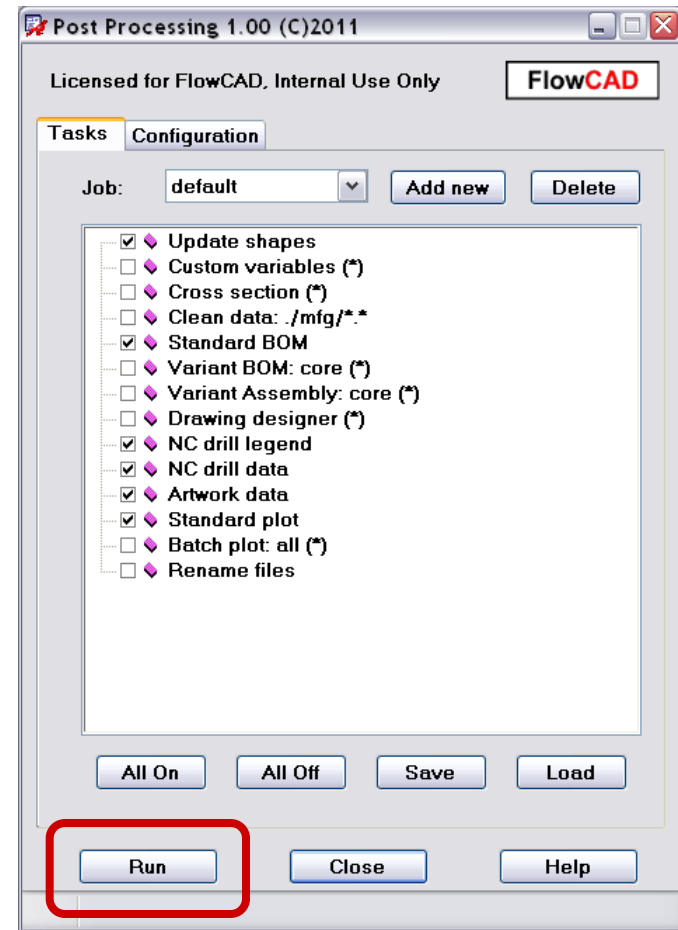
Module: Panelization

- Panel status
 - Automatic notification when board databases have been modified
 - Status report gives details about time stamps



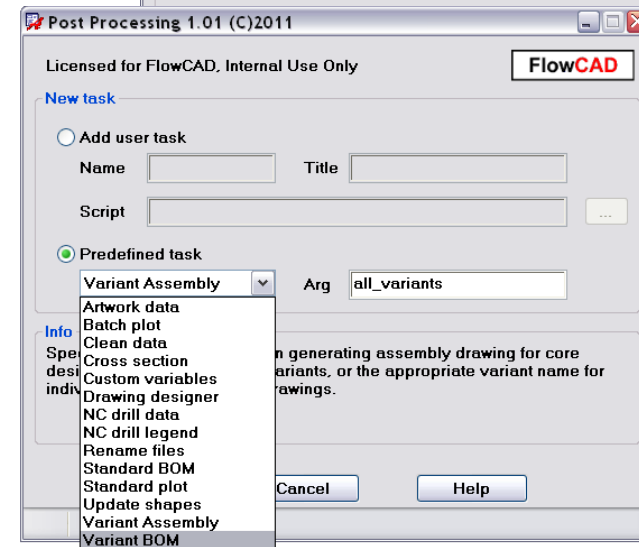
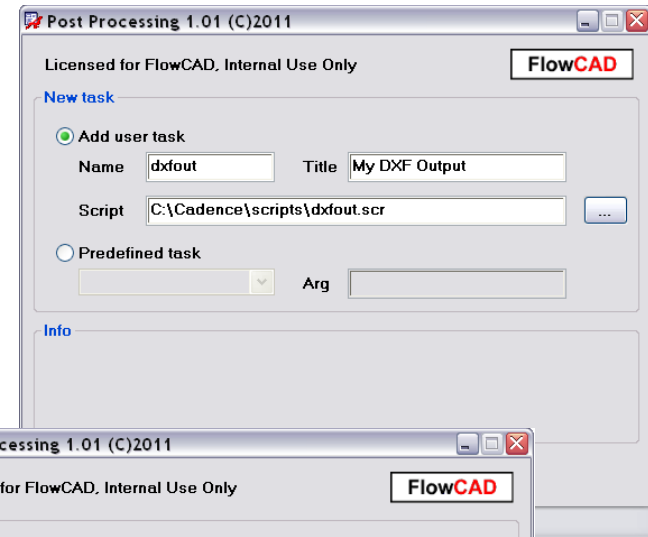
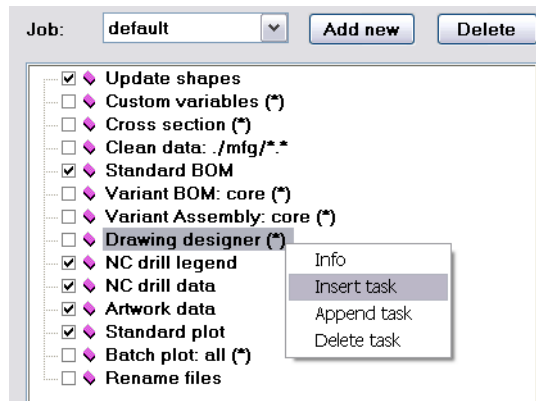
Module: Post Processing

- Central cockpit from which manufacturing output can be configured and generated
- **Hit Button** solution many users are asking for
- Tasks can be enabled/disabled, added and removed individually
 - Standard functions from PCB Editor
 - Skill procedures (e.g. FloWare)
 - User defined scripts
- Jobs can be defined which contain a collection of tasks
- Configuration stored in database
- Import and Export capabilities for the purpose of standardization



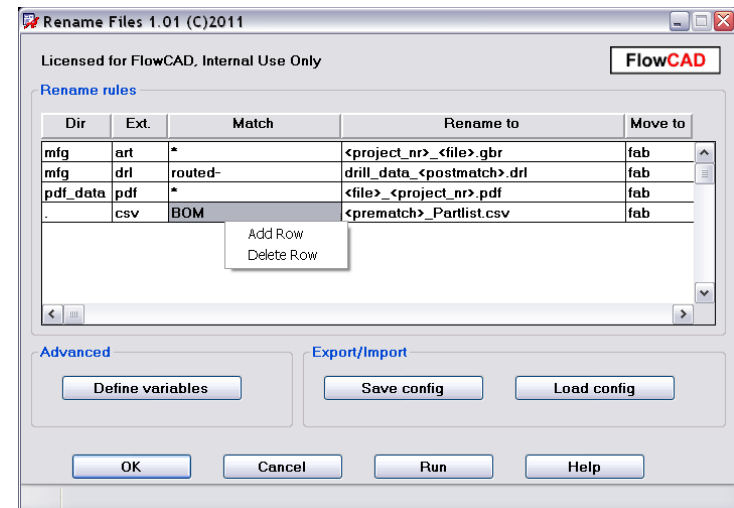
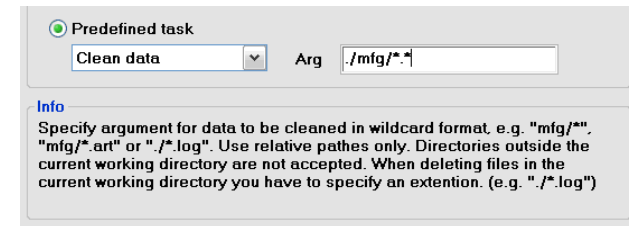
Module: Post Processing

- Context menu provides task editing
 - Info
 - Tasks can be added (appended or inserted)
 - User tasks
 - Prededined tasks including arguments
 - Tasks can be removed if not needed at all



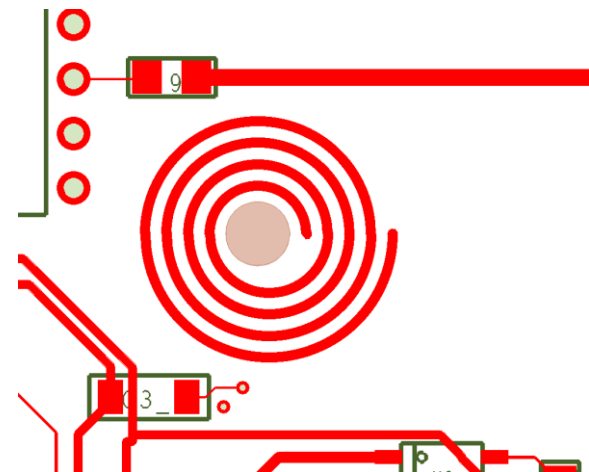
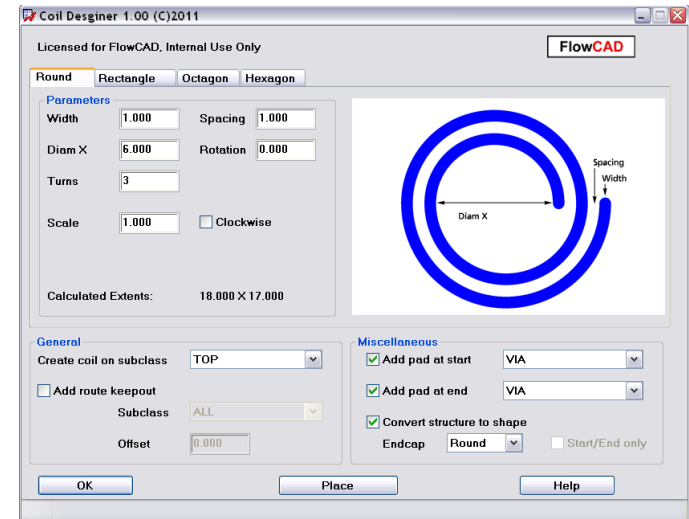
Module: Post Processing

- Additional built-in functions
 - **Clean Data**
Performs file delete operations based on arguments provided including wildcards.
 - **Standard BOM**
Generates standard BOM in text and csv format.
 - **Standard Plot**
Plots all artwork film control records into one PDF file artwork.pdf
 - **Rename Files**
Provides powerful automated file renaming mechanism (wildcards, variables and pattern tags) for PLM purposes



Module: Coil Designer

- Includes useful functions when designing planar spiral inductors on a PCB
- Support for different spiral pattern
 - Round
 - Rectangle
 - Octagon
 - Hexagon
- Features
 - Parameterized input in terms of width, spacing, number of turns etc.
 - Support for rotation, flipping and scaling
 - Dynamic preview during parameter change



Module: Coil Designer

Basic spiral patterns

Round

Round **Rectangle** Octagon Hexagon

Parameters

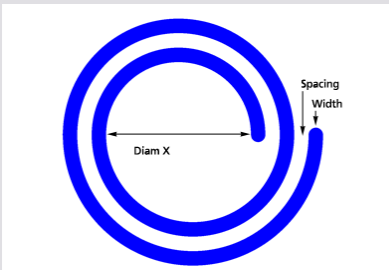
Width: 1.000 Spacing: 1.000

Diam X: 6.000 Rotation: 0.000

Turns: 4

Scale: 1.000 Clockwise

Calculated Extents: 22.000 X 21.000



Rectangle

Round **Rectangle** Octagon Hexagon

Parameters

Width: 1.000 Spacing: 1.000

Diam X: 10.000 Diam Y: 10.000

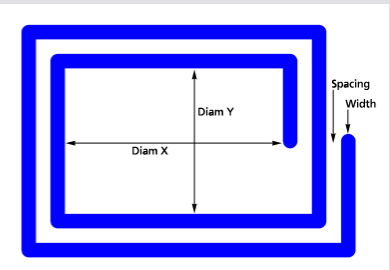
Turns: 3 Rotation: 0.000

Scale: 1.000 Clockwise

Change corner

Style: Miter Size: 2.500

Calculated Extents: 22.000 X 20.000



Octagon

Round **Rectangle** **Octagon** Hexagon

Parameters

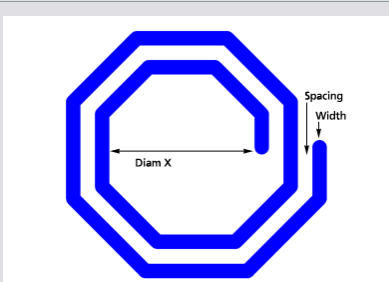
Width: 1.000 Spacing: 1.000

Diam X: 10.000 Rotation: 0.000

Turns: 3

Scale: 1.000 Clockwise

Calculated Extents: 22.000 X 21.000



Hexagon

Round **Rectangle** Octagon **Hexagon**

Parameters

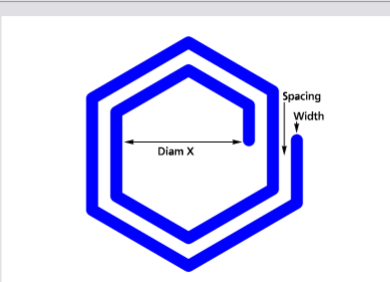
Width: 1.000 Spacing: 1.000

Diam X: 10.000 Rotation: 0.000

Turns: 3

Scale: 1.000 Clockwise

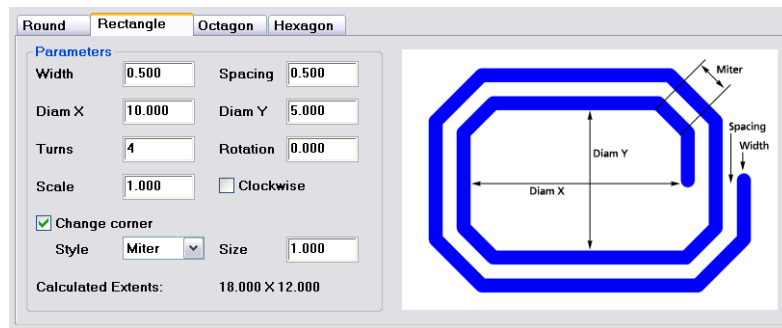
Calculated Extents: 22.000 X 24.249



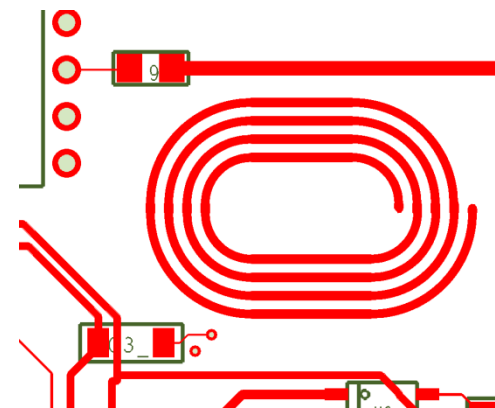
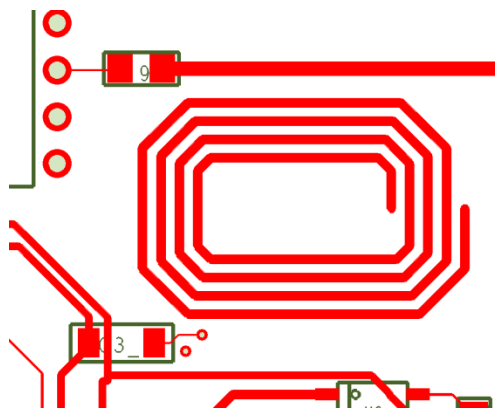
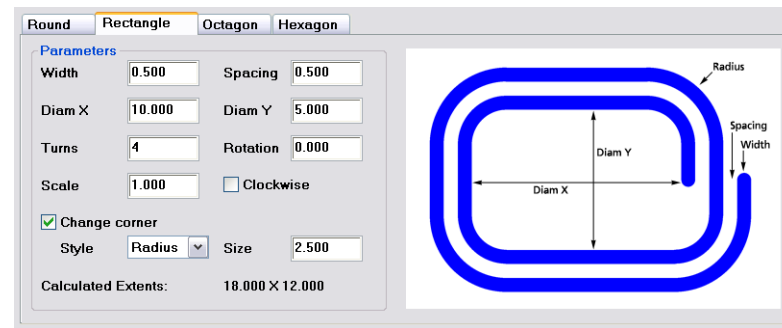

Module: Coil Designer

Rectangle spiral with corner modifications

Mitered corners

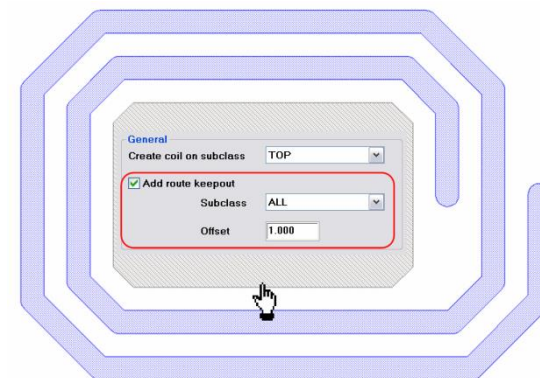
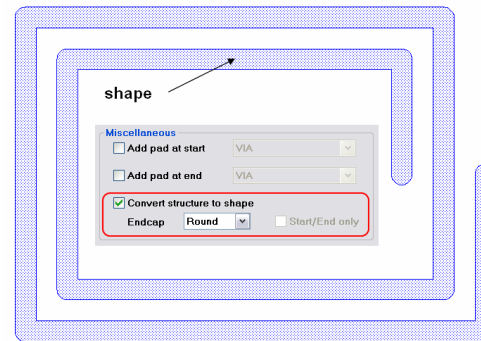
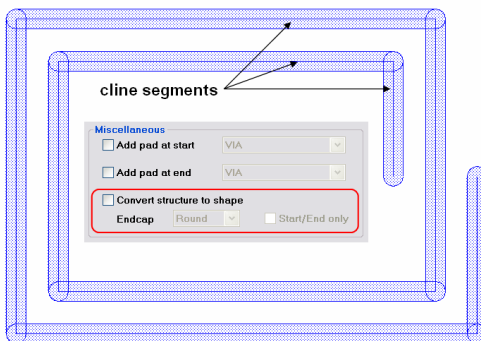


Rounded corners



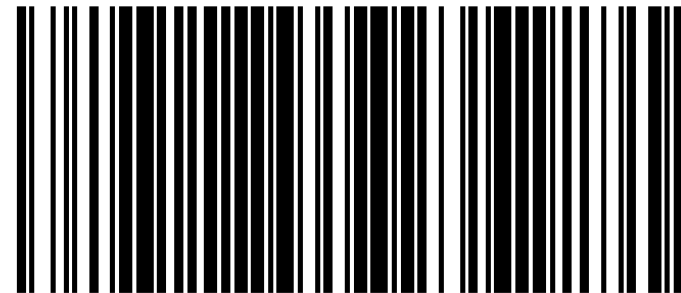
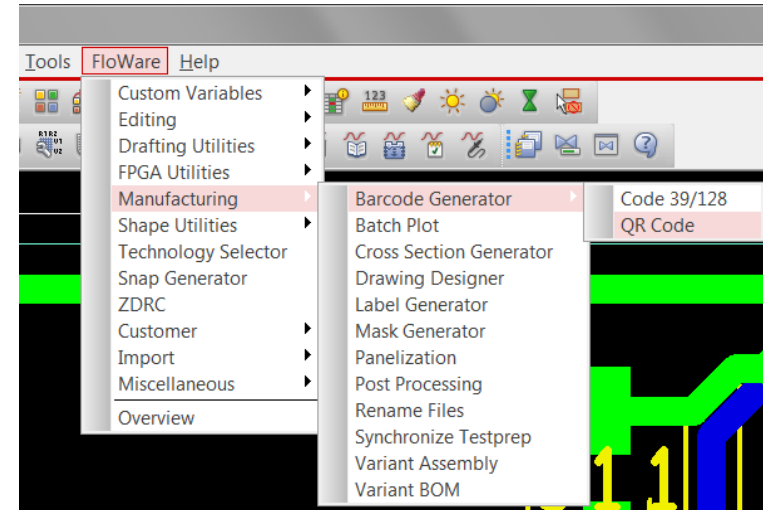
Module: Coil Designer

- Other features
 - Realization as a combination of cline segments or one single shape
 - Addition of padstacks to the start/end points
 - Automatic generation of route keepouts in the inner area



Module: Barcode Generator

- Prints barcodes on a PCB layer as part of the manufacturing process
- Supporting definitions
Code 39, Code 128 and QR Code
- Adjustable parameters corresponding to selected code
- Additional drawing options (e.g. show text, inverted display)
- Dynamic preview during parameter change
- Parameter preset through configuration file



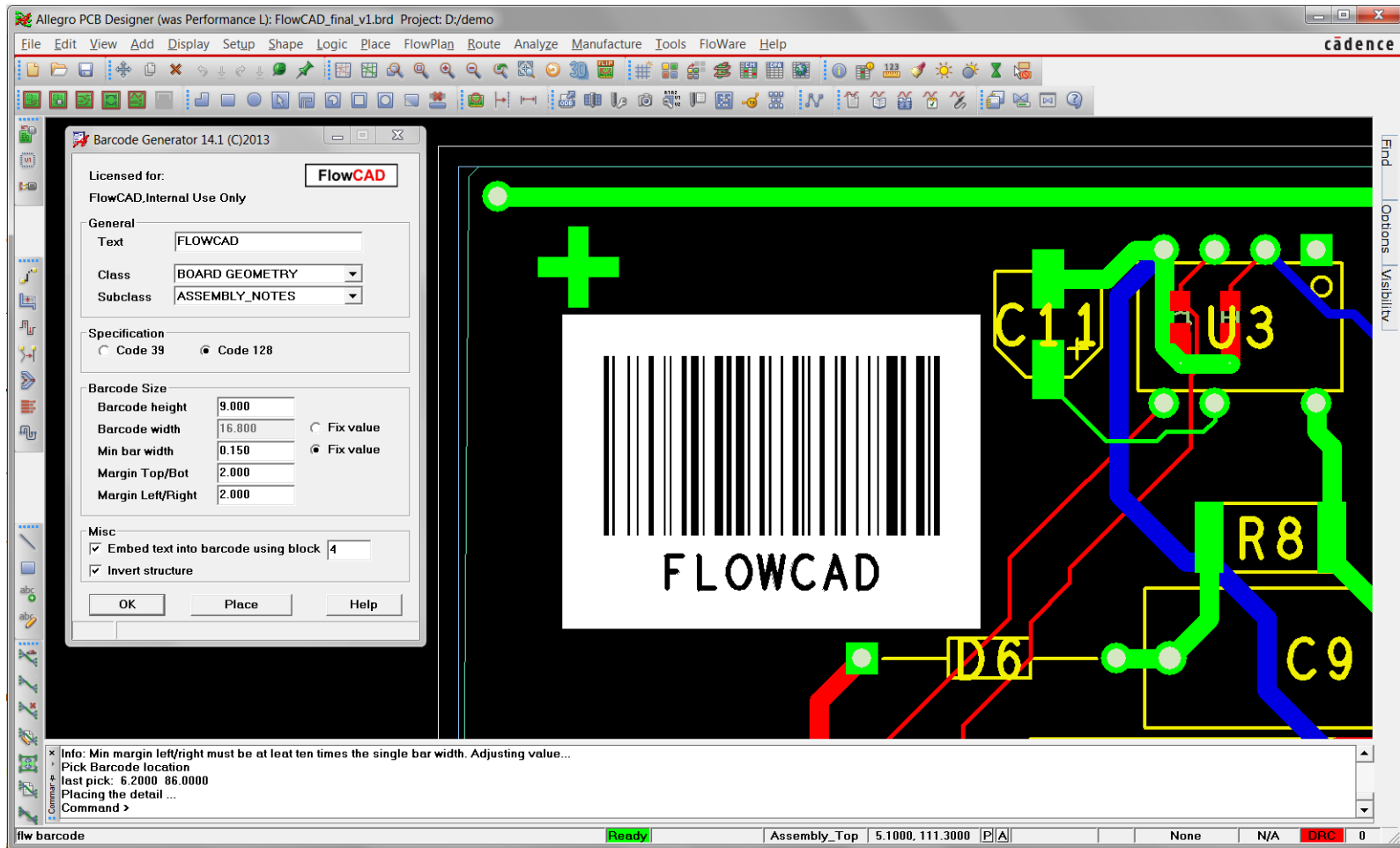
A0123B45678



100

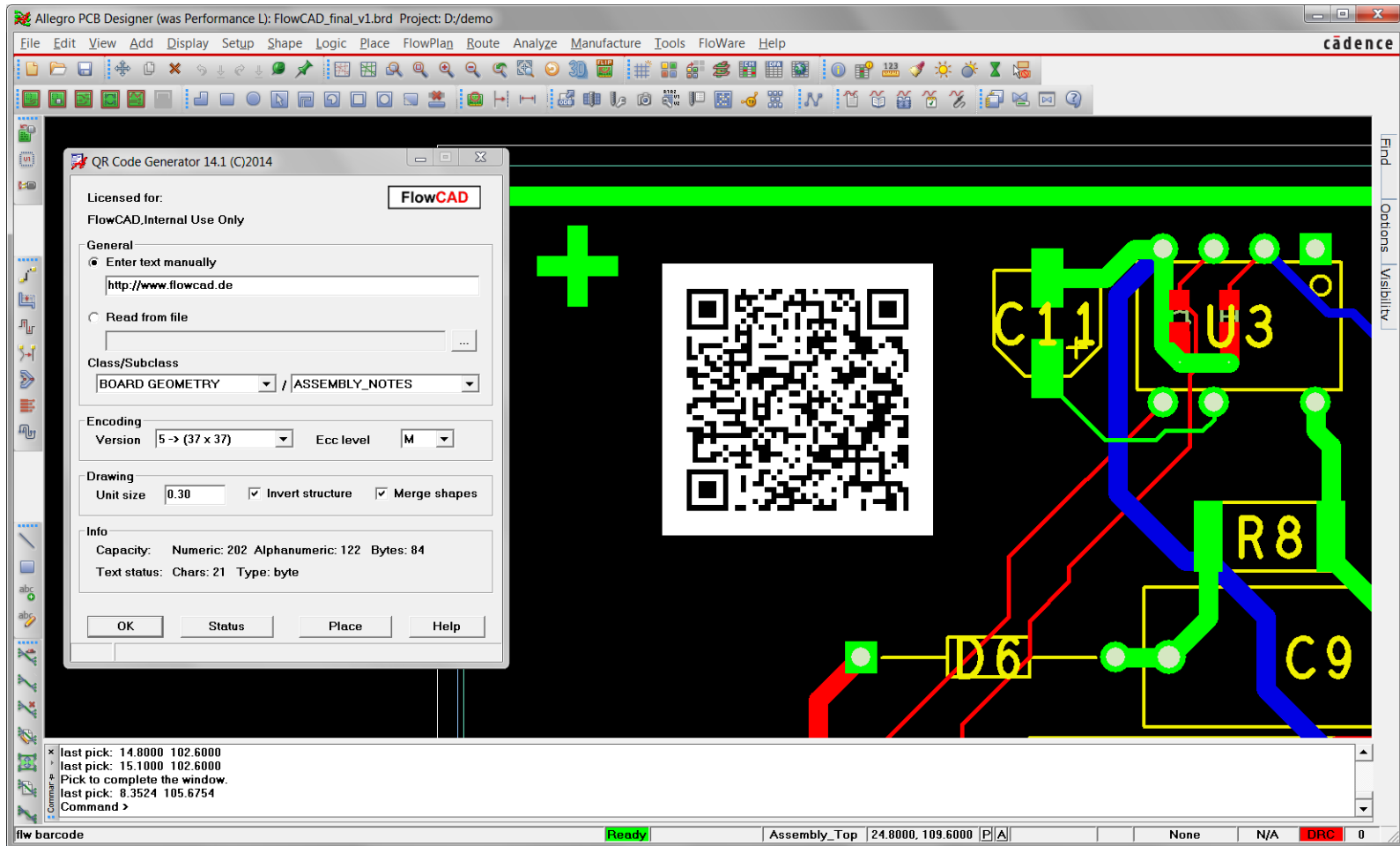
Module: Barcode Generator

Example: Code 128, show text, inverted display



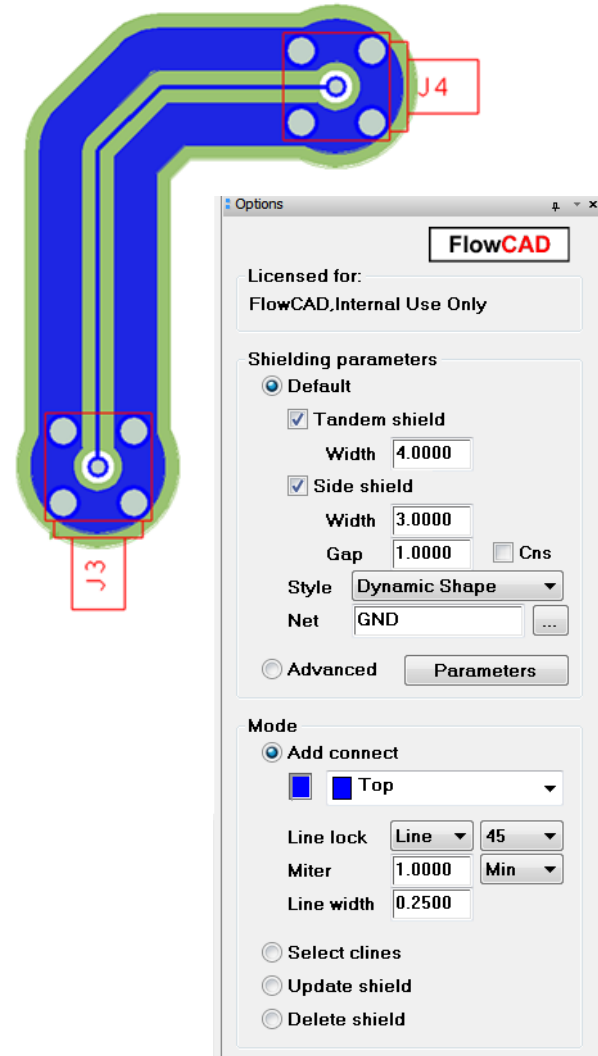
Module: Barcode Generator

Example: QR Code, inverted display



Module: Shield Routing

- Creates shield for critical signals in a semiautomatic way
 - Through interactive routing including dynamic preview
 - By selecting existing clines
- Support for side and tandem shields including parameters for gap and width and net name
- Support for dynamic or static shapes as well as route keepouts
- Advanced parameters can be used to control layers individually
- Parameters stored in database for each shield structure separately
 - Existing shields can be updated at any time without reentering information



Module: Shield Routing

- Default shield parameters
 - For regular applications
 - Side shielding (width and gap)
 - Tandem shielding (width) on adjacent layers only
 - Shape style and net name
- Advanced parameters
 - Can be used to define parameters for several layers individually
 - Export/Import settings for reuse purposes

Shielding parameters

Default

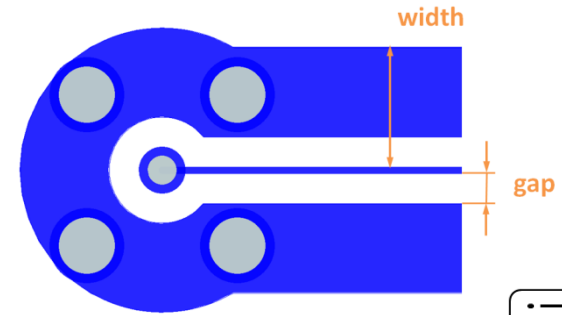
Tandem shield
Width 4.0000

Side shield
Width 3.0000
Gap 1.0000 Cns

Style Dynamic Shape

Net GND

Advanced



Shield Routing 13.1 (C)2013

Licensed for: FlowCAD, Internal Use Only FlowCAD

Side shielding

Create side shield Dynamic Shape Width 3.000 Gap 1.000 Void by Cns

Tandem shielding

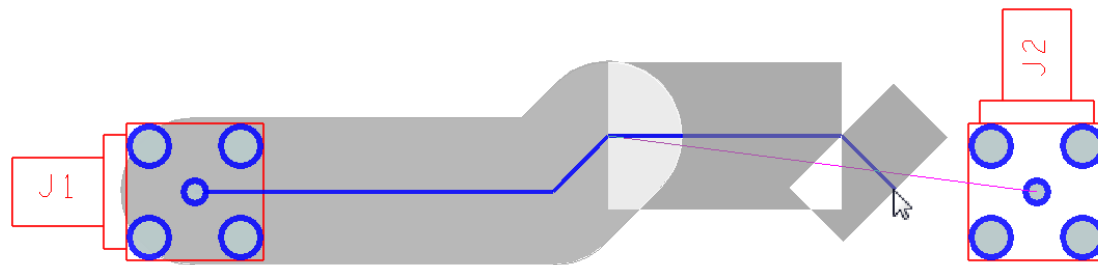
	Enable	Layer	Tandem style	Tandem width
1	<input type="checkbox"/>	TOP	Dynamic Shape	2.000
2	<input checked="" type="checkbox"/>	L2	Dynamic Shape	4.000
3	<input checked="" type="checkbox"/>	L3	Dynamic Shape	5.000
4	<input checked="" type="checkbox"/>	L4	Dynamic Shape	6.000
5	<input type="checkbox"/>	L5	Dynamic Shape	2.000
6	<input type="checkbox"/>	BOTTOM	Dynamic Shape	2.000

Global

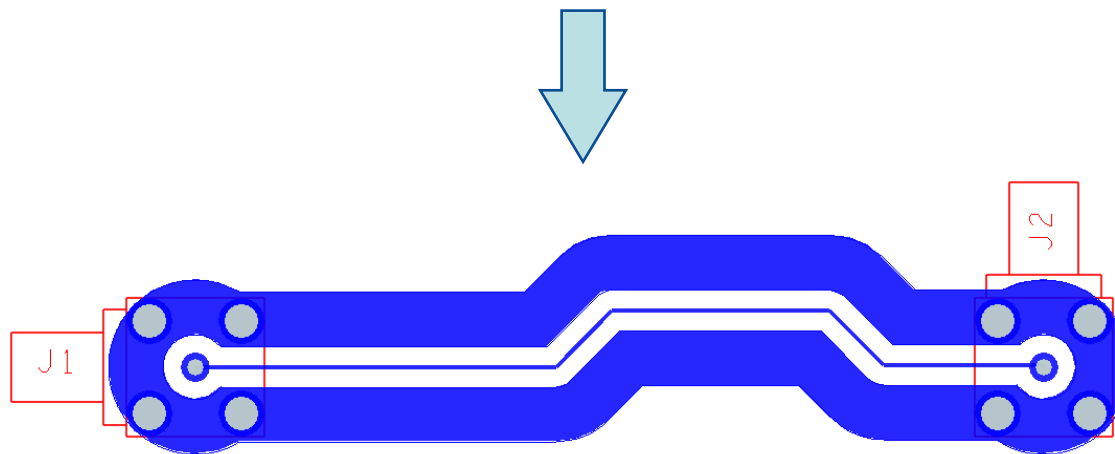
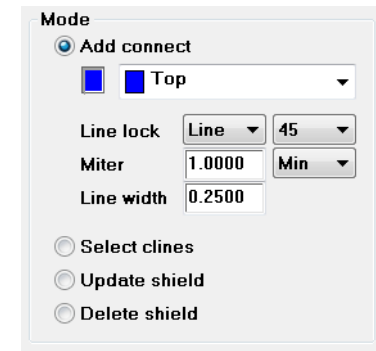
Net name GND

Module: Shield Routing

- Routing shields interactively



Dynamic preview while routing with cursor



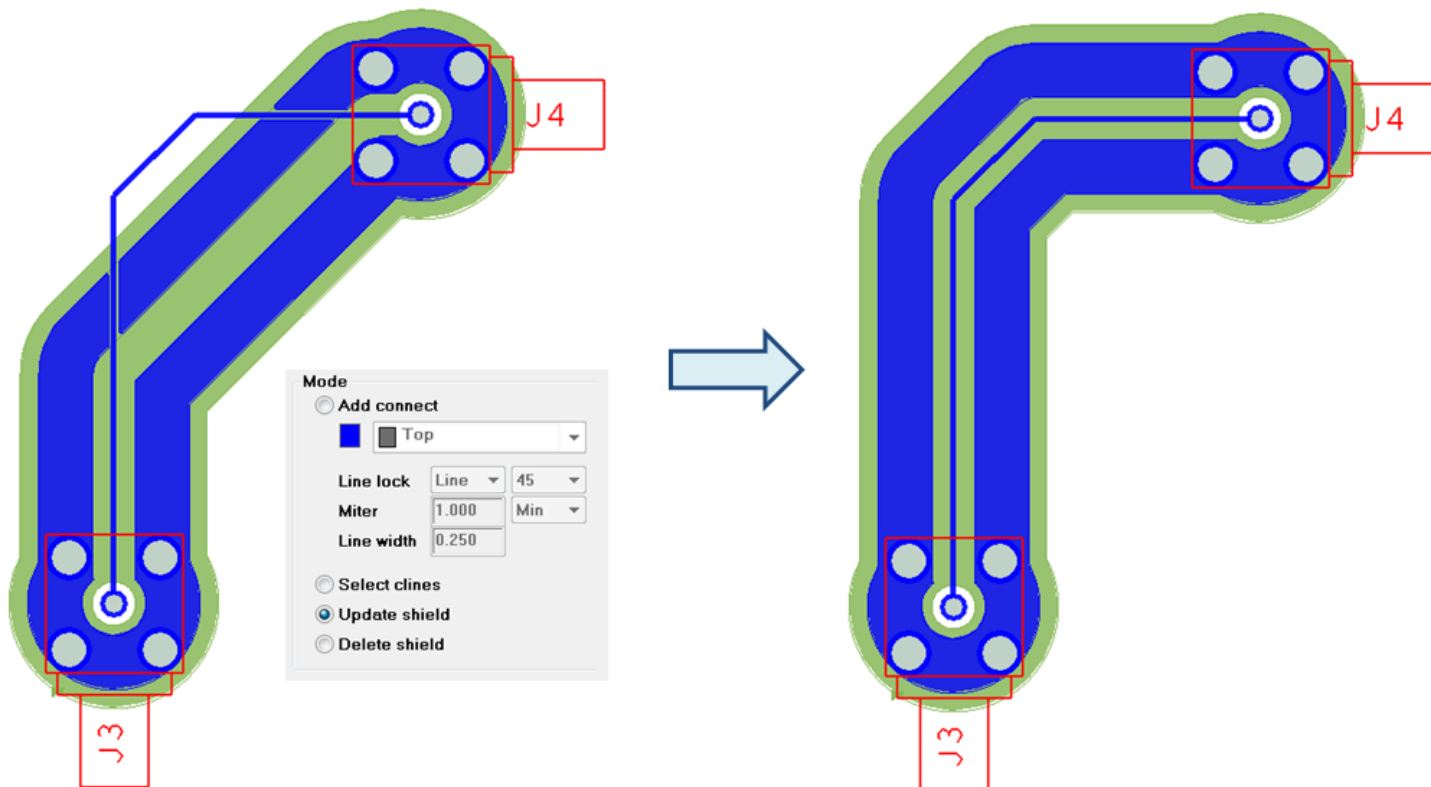
Final structure once snapping to pin or via



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Module: Shield Routing

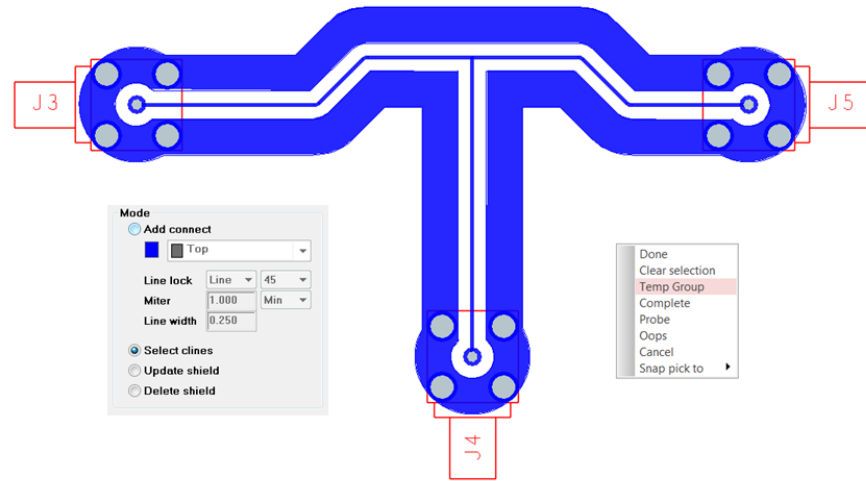
- Updating existing shield structures due to routing modifications
 - Seamless update since parameters are stored in the database for each shield structure



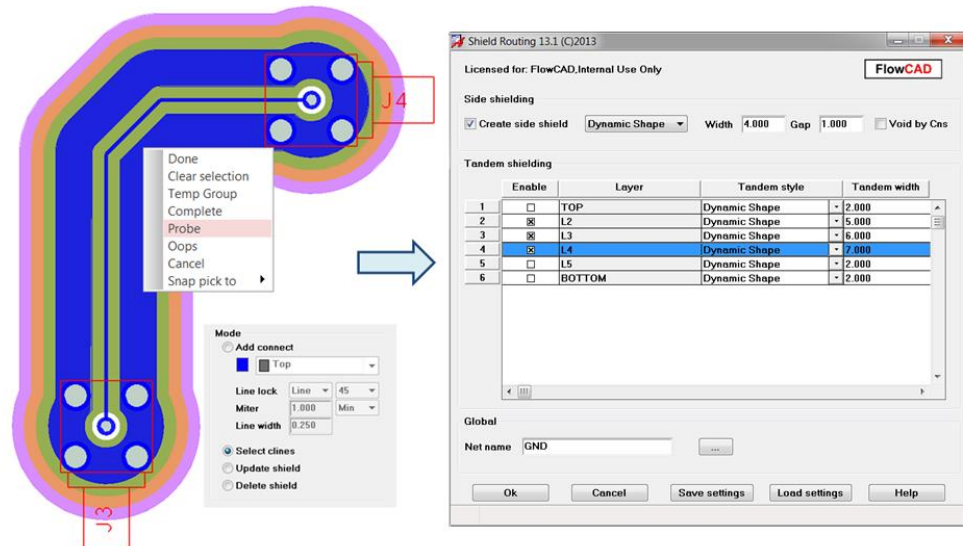
Module: Shield Routing

- Creating combined shields for several contiguous clines
 - Through *Temp Group* command

– Through *Temp Group* command

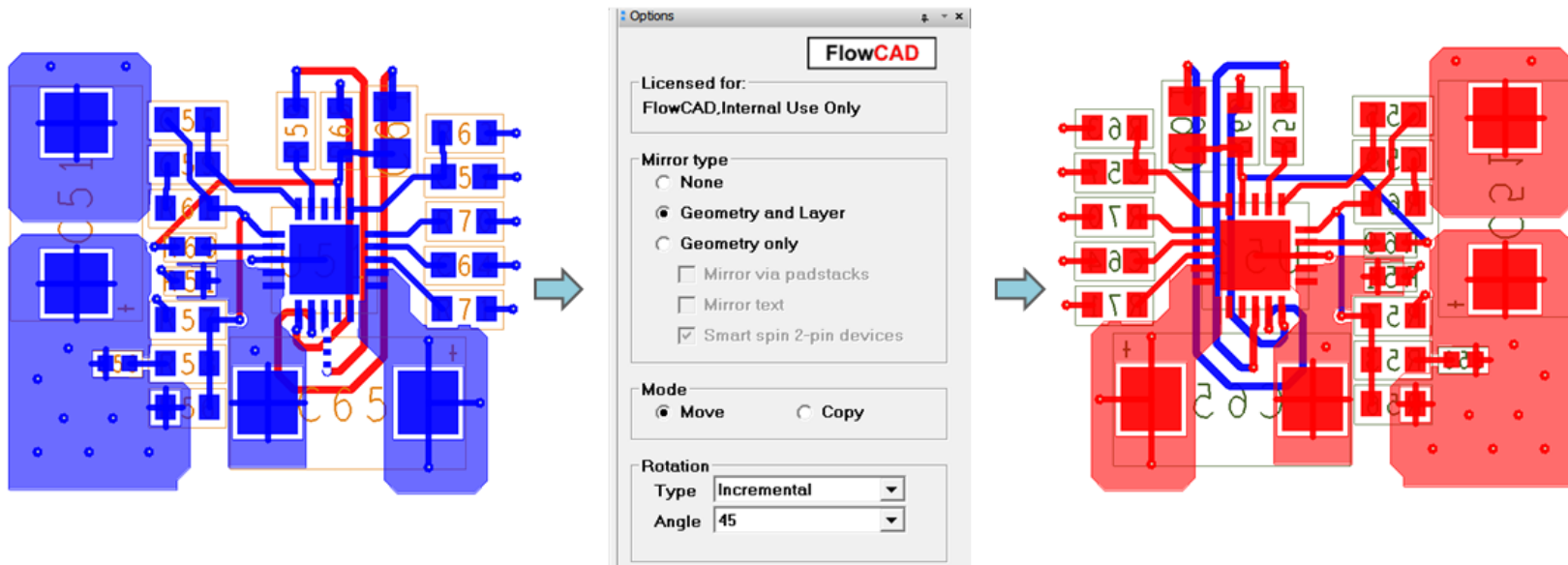


- Parameter probe
 - Simply copy parameters from one structure to another
 - Parameters will be extracted and can be applied to other clines



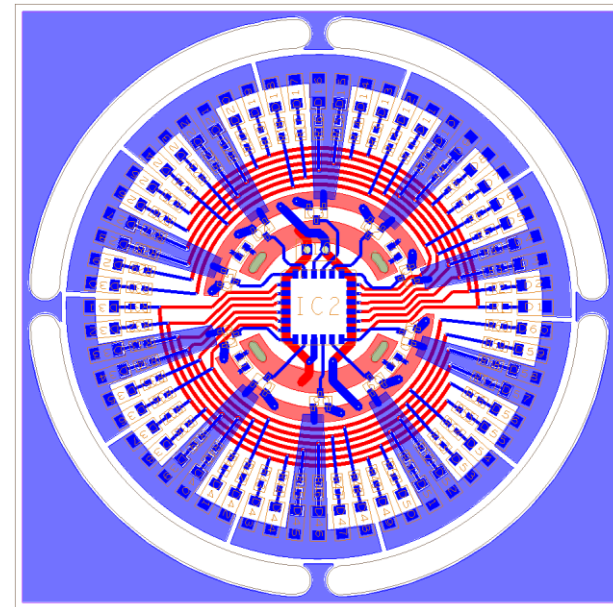
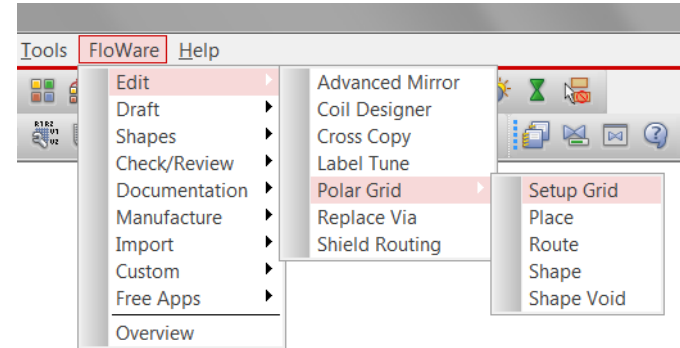
Module: Advanced Mirror

- Enables mirror operations while moving or copying elements
 - Mirror across subclasses (*Geometry and Layer*)
 - Mirror on the same subclass (*Geometry only*)
- Including placement and routing
- Selection through window or single pick, dynamic preview
- Special handling for symbols, vias and text in *Geometry only* mode



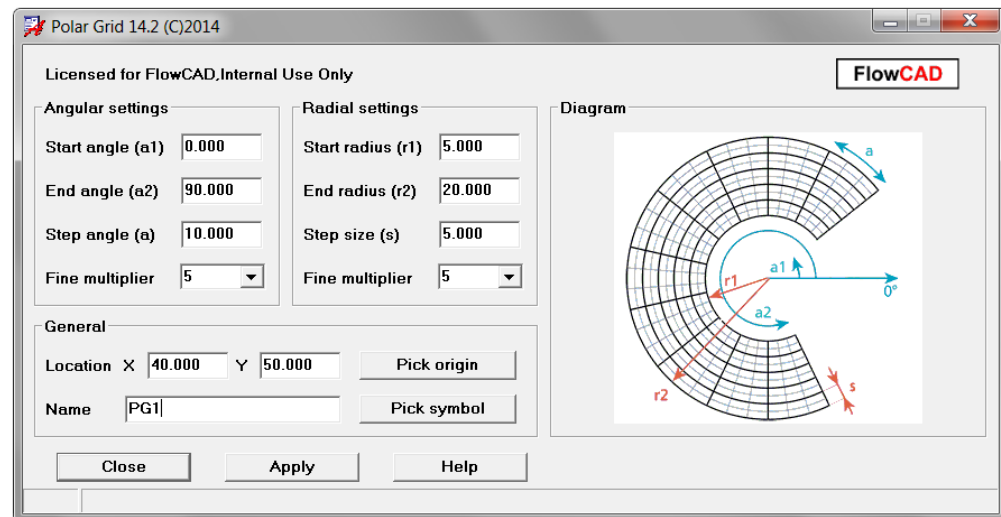
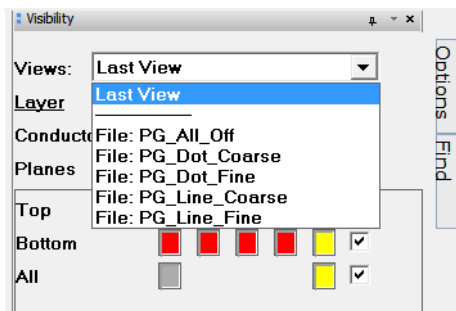
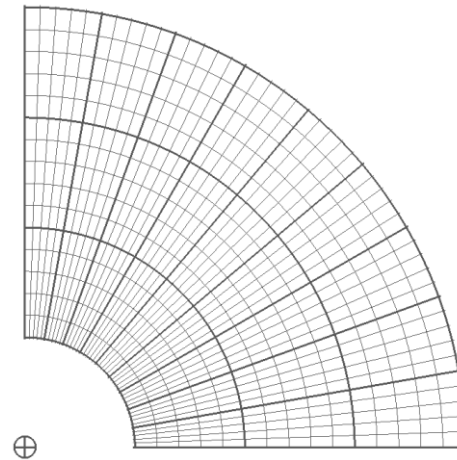
Module: Polar Grid Utilities

- Useful for boards where circular placement and routing is required.
- Providing a set of functions
 - Defining and editing a polar grid
 - Polar placement
 - Polar routing
 - Polar shape editing including voids
- Snap control
 - Coarse and fine grid
 - System grid
- Polar grid can be also used in conjunction with standard PCB Editor commands using *RMB - Snap pick to - Intersection*



Module: Polar Grid Utilities

- Polar Grid Setup
 - Define a new grid
 - Edit an existing grid
 - Fully parameterized
 - Coarse and fine grid settings
 - Line and dot style support
 - Stored as format symbol in database
 - Visibility control



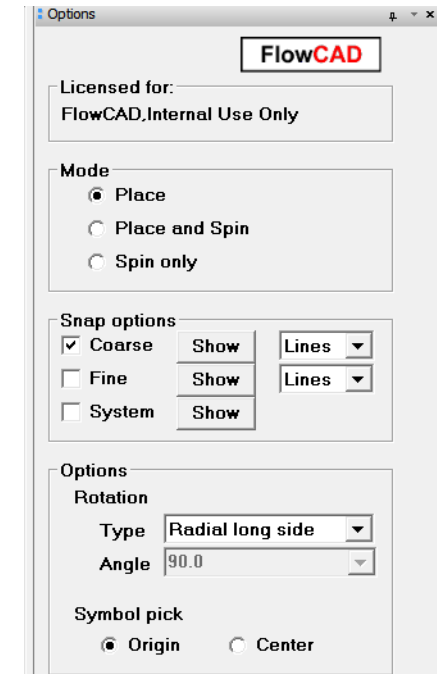
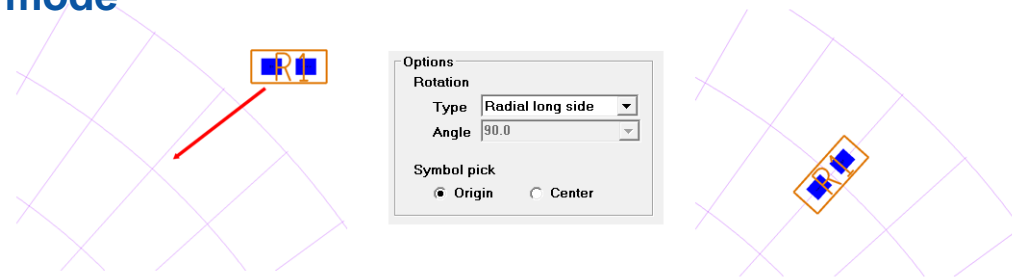
110

Module: Polar Grid Utilities

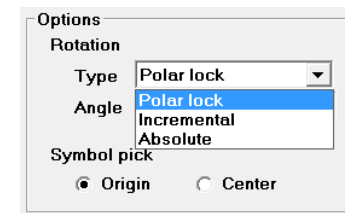
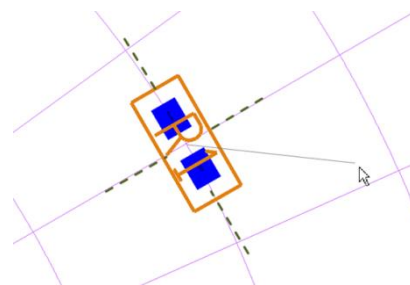
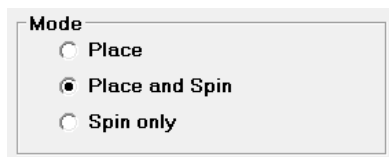
• Polar placement

- Special mode for placing component in circular or radial fashion
- Snap to fine or coarse grid
- Various alignment and rotation capabilities
- Spinning on polar grid basis (e.g. *Polar lock*)

Place mode



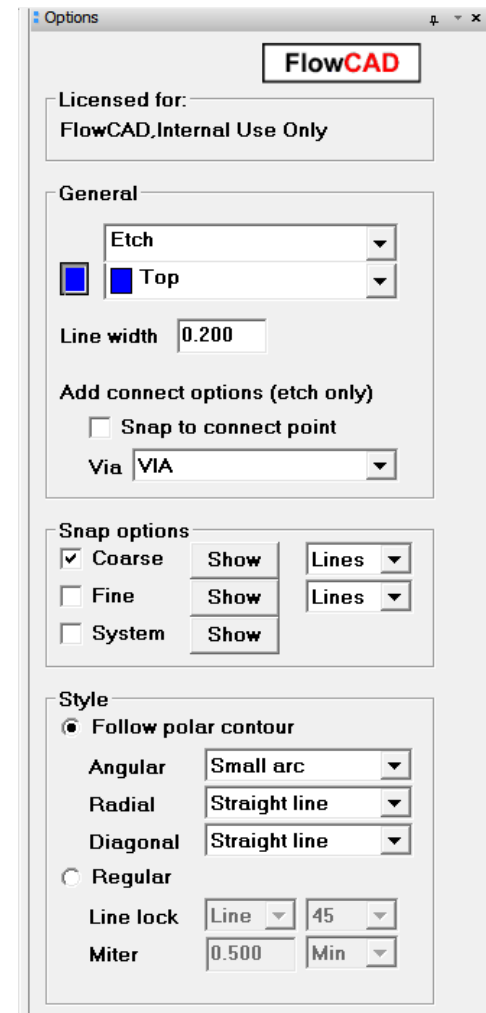
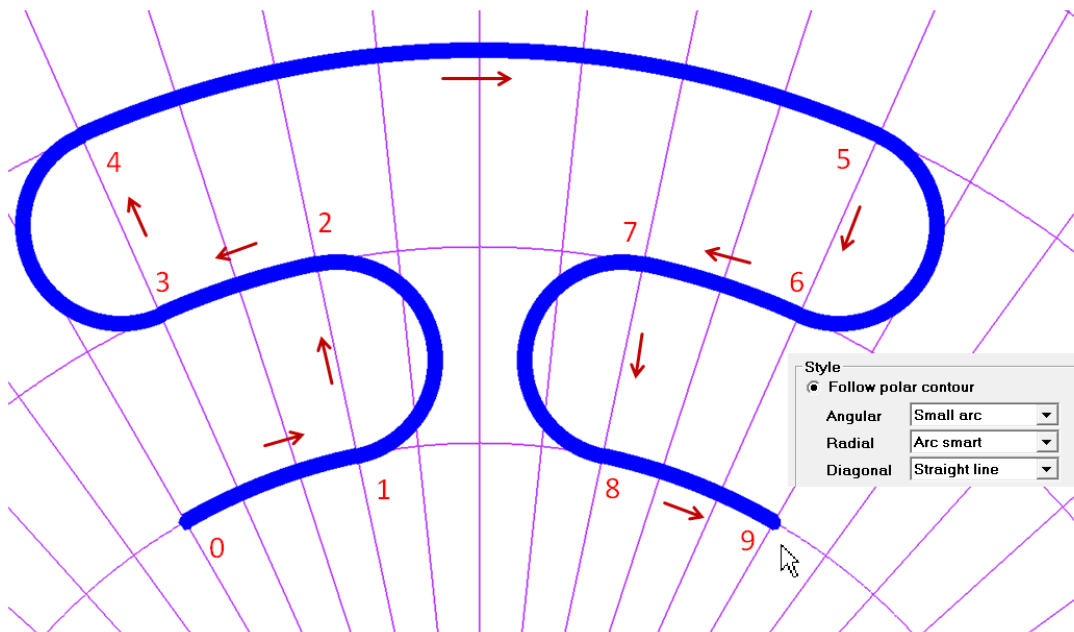
Place and Spin mode



Module: Polar Grid Utilities

• Polar routing

- Special mode for drafting or routing in a circular or radial fashion
- Snap to fine or coarse grid
- Ability to follow radial and angular contour
- Alternate path options (e.g. *Arc smart*)

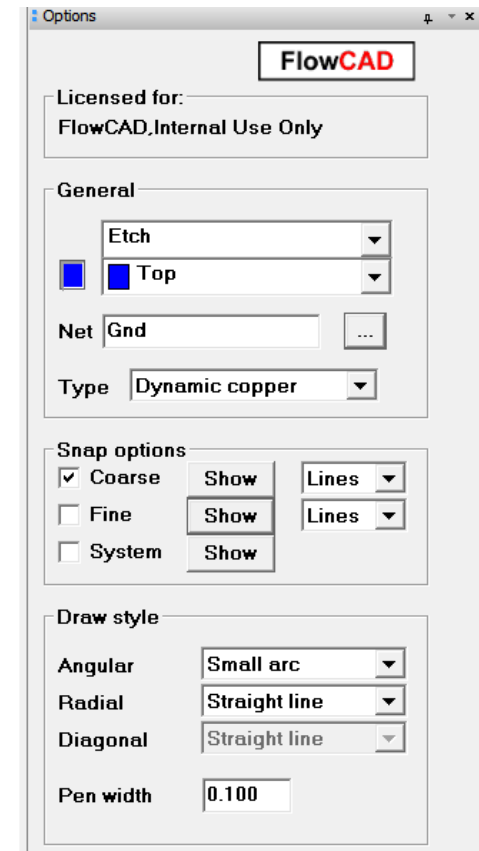
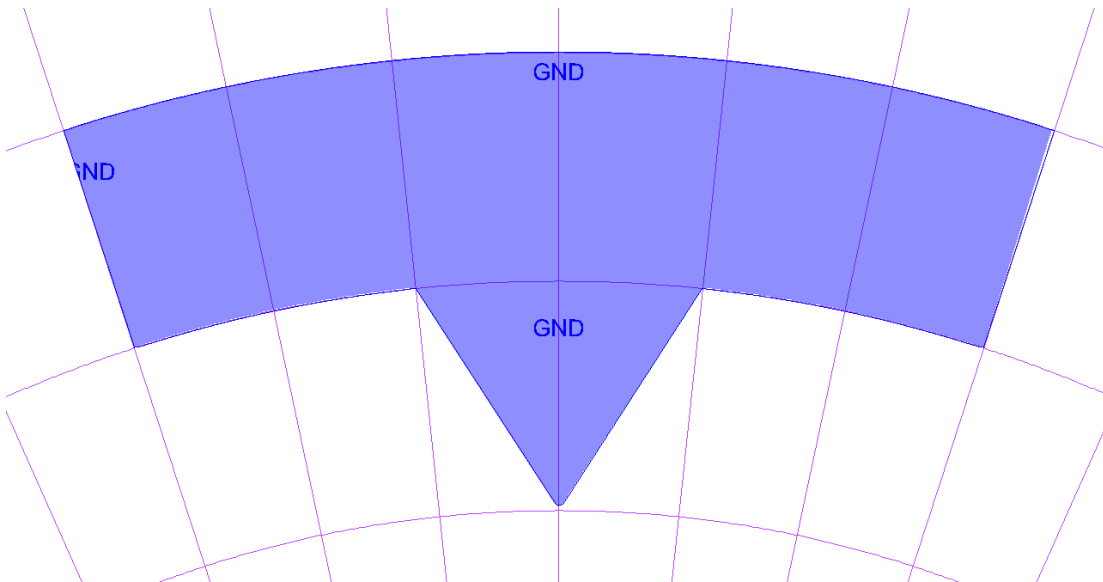


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Module: Polar Grid Utilities

- Polar shape and void editing

- Special mode for creating shapes and voids in a polar grid
- Snap to fine or coarse grid
- Ability to follow radial and angular contour
- Alternate path options (e.g. *Arc smart*)

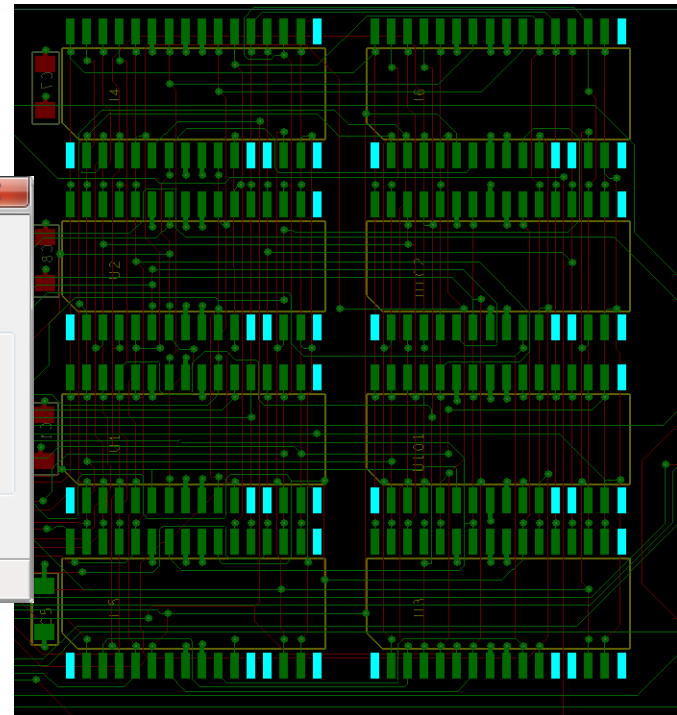
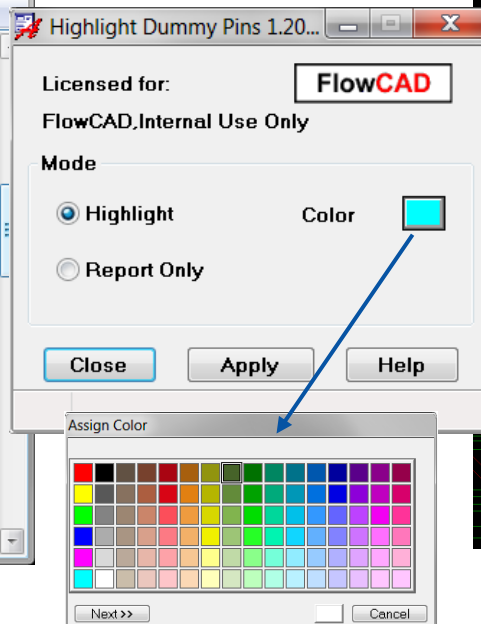


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Module: Highlight Dummy Pins

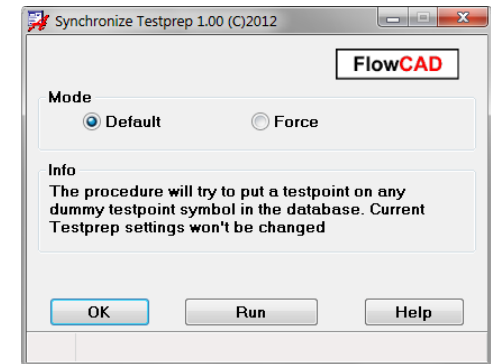
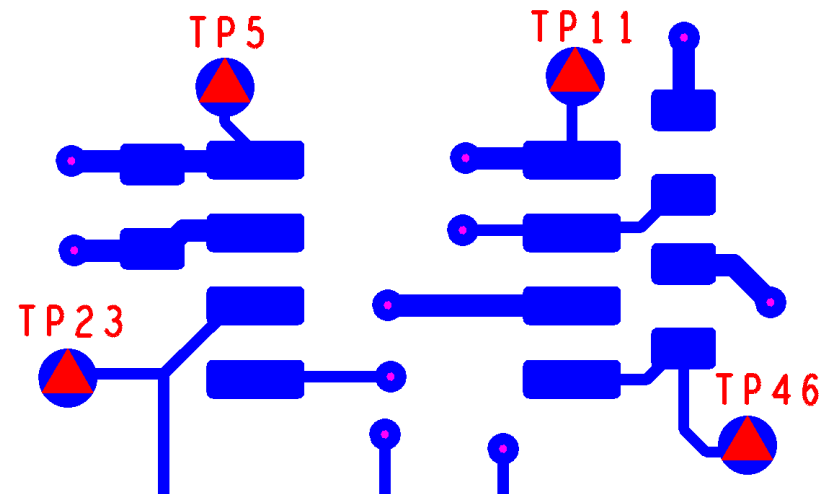
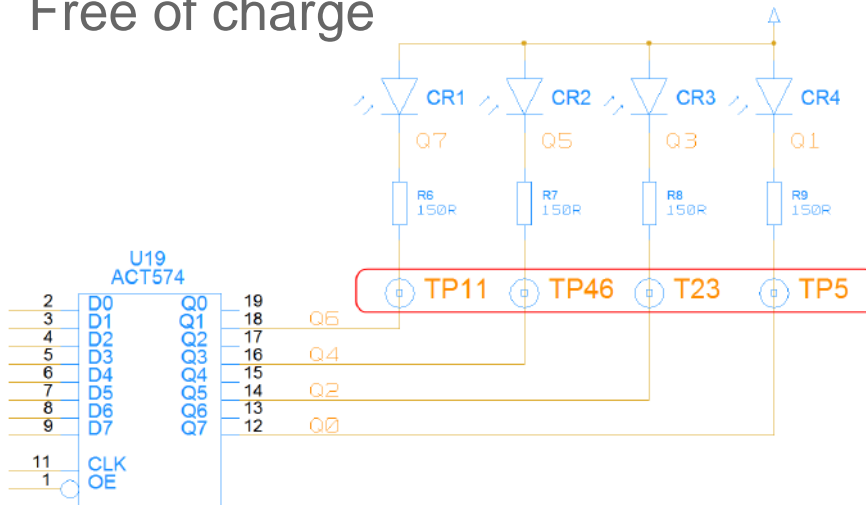
- Assigns a color to all pins in a design which are not connected to any net
- Including report and crossprobe functionality
- Useful for review purposes
- Free of charge

Dummy Pin Report		
File	Close	Help
U1.13	(65.405 69.215)	
U1.16	(69.215 69.215)	
U1.17	(69.215 78.74)	
U101.1	(73.66 69.215)	
U101.12	(87.63 69.215)	
U101.13	(88.9 69.215)	
U101.16	(92.71 69.215)	
U101.17	(92.71 78.74)	
U102.1	(73.66 82.55)	
U102.12	(87.63 82.55)	
U102.13	(88.9 82.55)	
U102.16	(92.71 82.55)	
U102.17	(92.71 92.075)	
U17.7	(28.575 50.8)	
U18.6	(-1.905 96.52)	
U19.13	(26.289 46.66)	
U19.15	(23.749 46.66)	
U19.17	(21.209 46.66)	
U19.19	(18.669 46.66)	
U2.1	(50.165 82.55)	
U2.12	(64.135 82.55)	
U2.13	(65.405 82.55)	
U2.16	(69.215 82.55)	
U2.17	(69.215 92.075)	
U22.1	(60.833 48.768)	
U22.3	(60.833 43.688)	
U22.5	(68.453 41.148)	
U22.6	(68.453 43.688)	
U26.13	(166.405 86.438)	



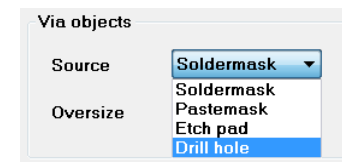
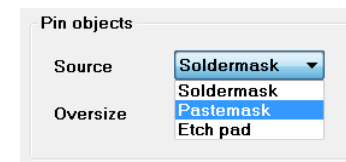
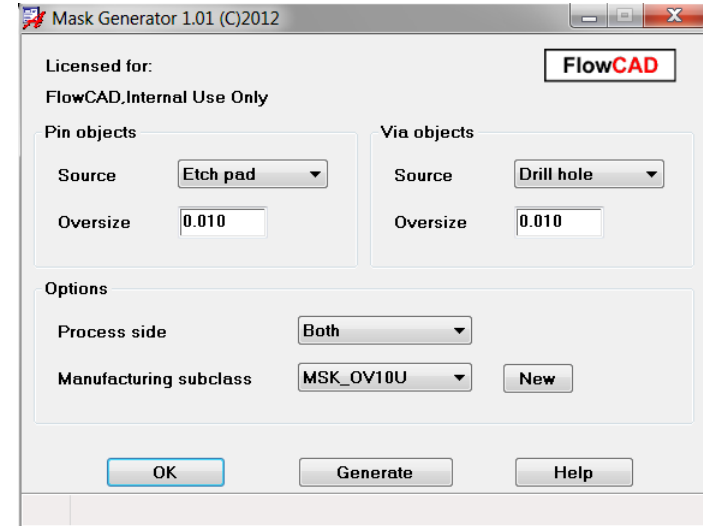
Module: Synchronize Testprep

- Automates the testpoint assignment in PCB Editor when dummy testpoint symbols (one-pin components with Refdes TP*) have been used in the schematic.
- Generates testpoint on corresponding pin in PCB
- Postprocessing can then be done using PCB Editor Testprep functionality.
- Free of charge



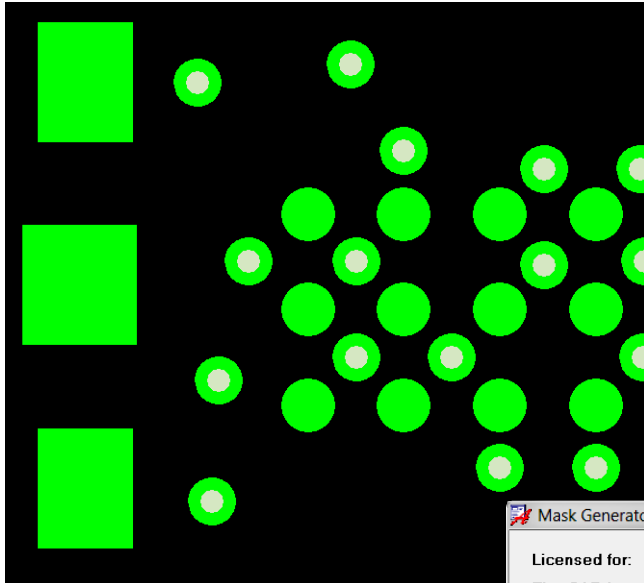
Module: Mask Generator

- In some cases customers may want to oversize mask data (soldermask, pastemask) due to manufacturing requirements.
- Data will be generated on Manufacturing subclass. The original padstacks won't be touched.
- Input parameters
 - Source data (“What to oversize”) can be specified separately for vias and pins
 - Oversize values (positive and negative)
 - Side to process
 - Manufacturing subclass where data will be written to
- Free of charge

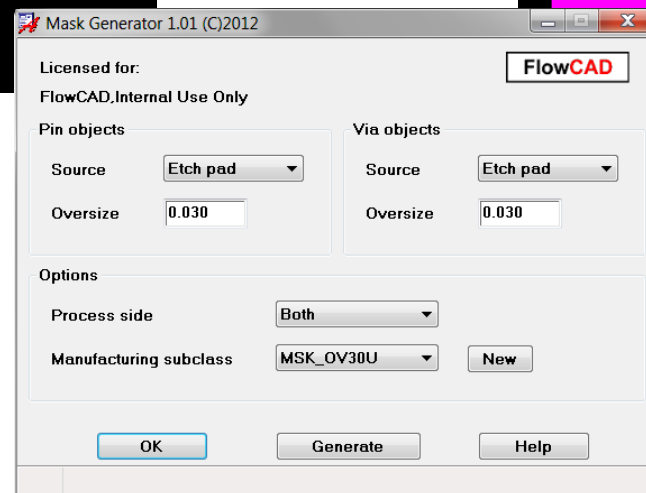
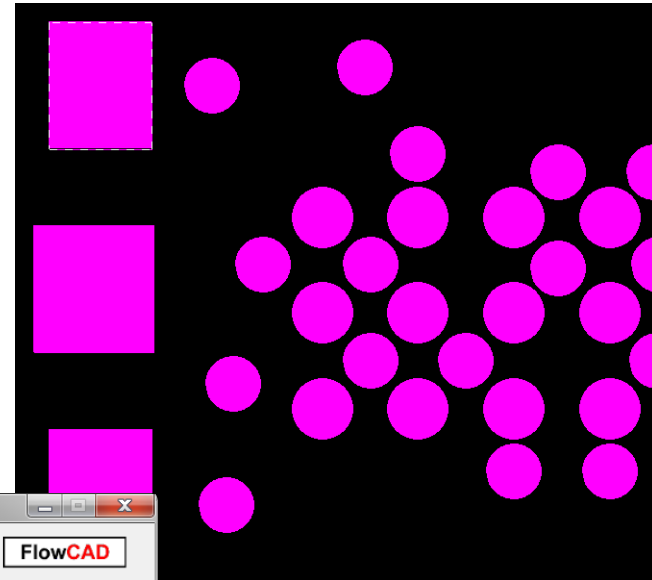


Module: Mask Generator

Pins and vias on TOP



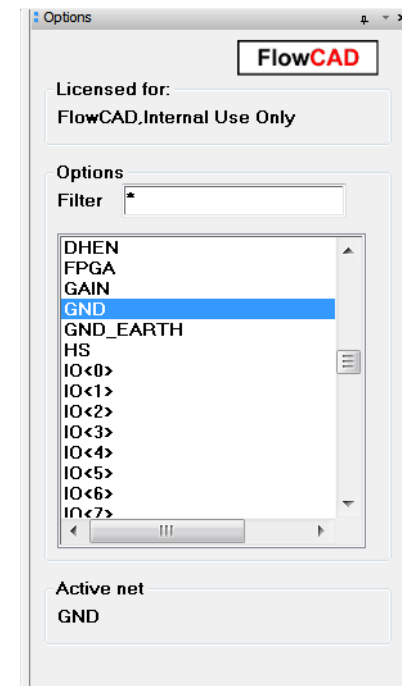
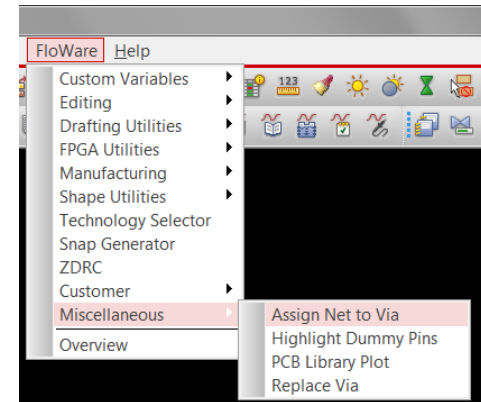
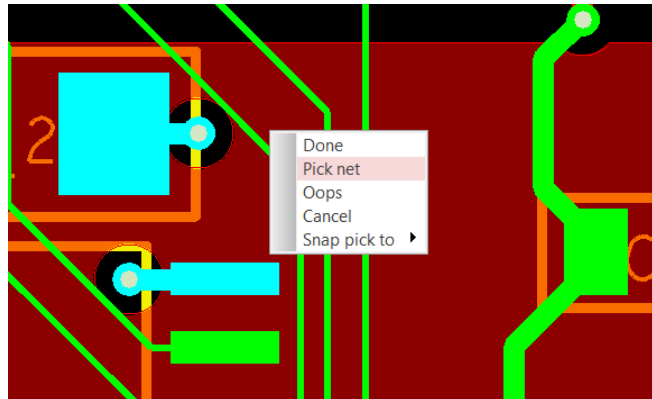
Manufacturing subclass MSK_OV30U_TOP



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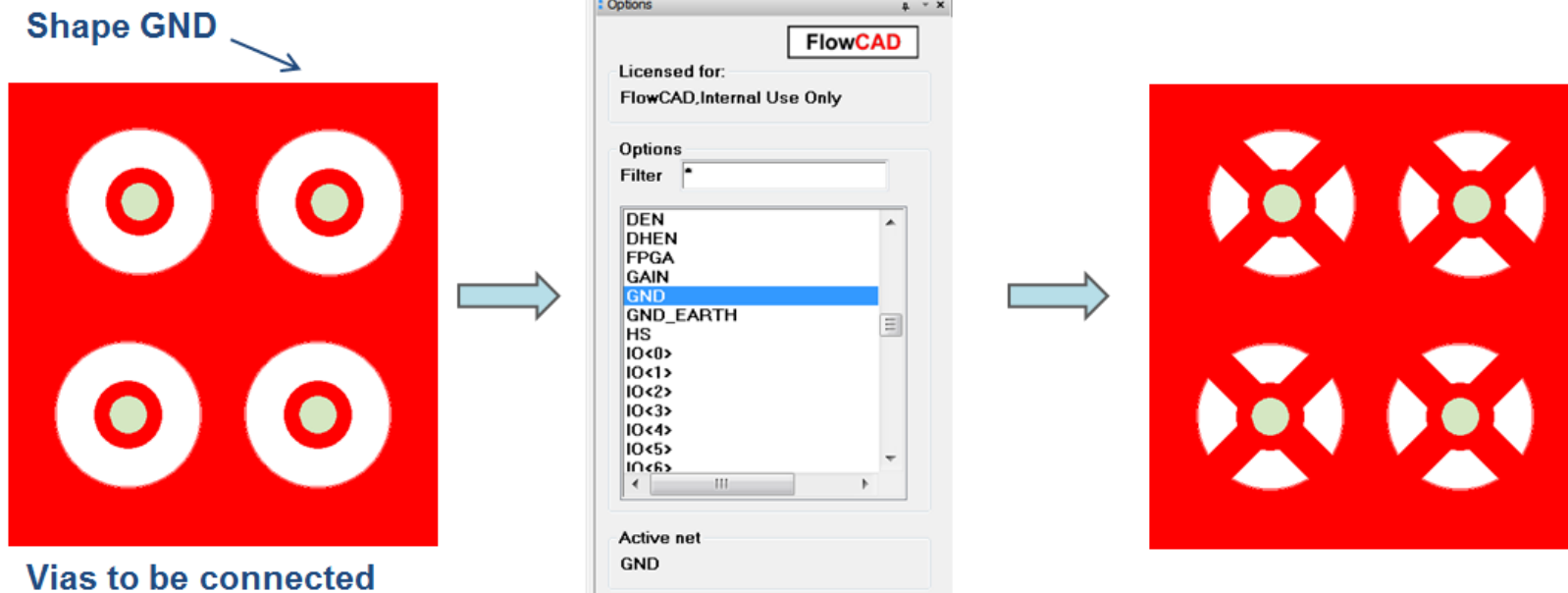
Module: Assign Net to Via

- Enables users to change the net on existing vias
- No need to delete and route new ones
- Use model
 - Select net from list (including wildcard support) or by context *RMB - Pick Net*
 - Click on one or more vias
 - Choose *RMB – Done* to confirm
- Free of charge



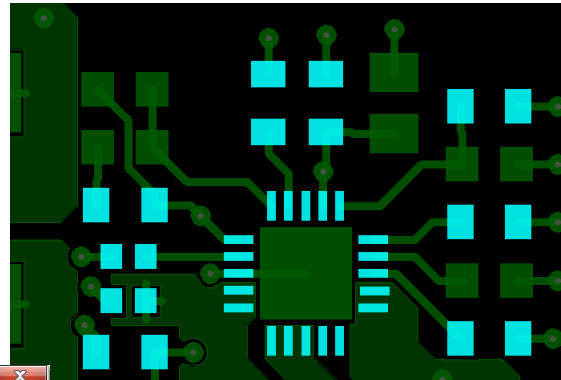
Module: Assign Net to Via

- Example

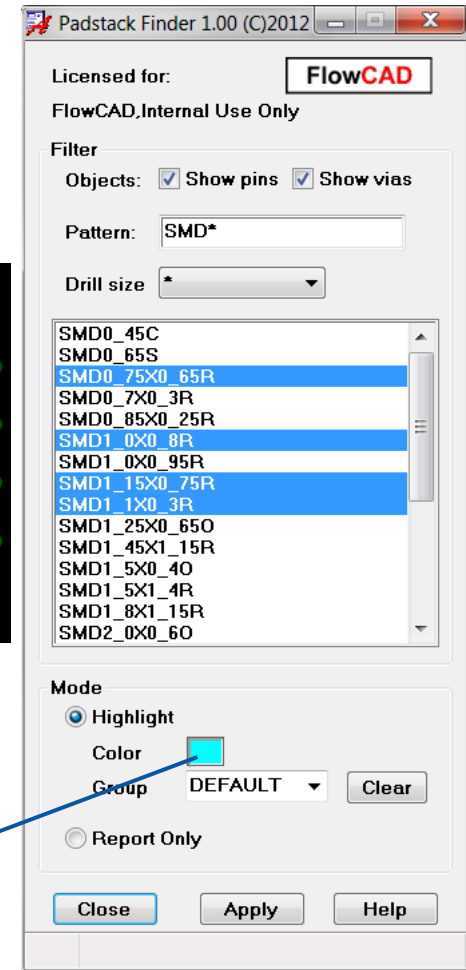


Module: Padstack Finder

- Enables users to search and navigate for padstacks in the current design
 - Filter capabilities
 - Distinguish between pins and vias
 - Padstack name
 - Drill size
 - Wildcard support
 - Highlight and crossprobe
 - Color by group
- Free of charge



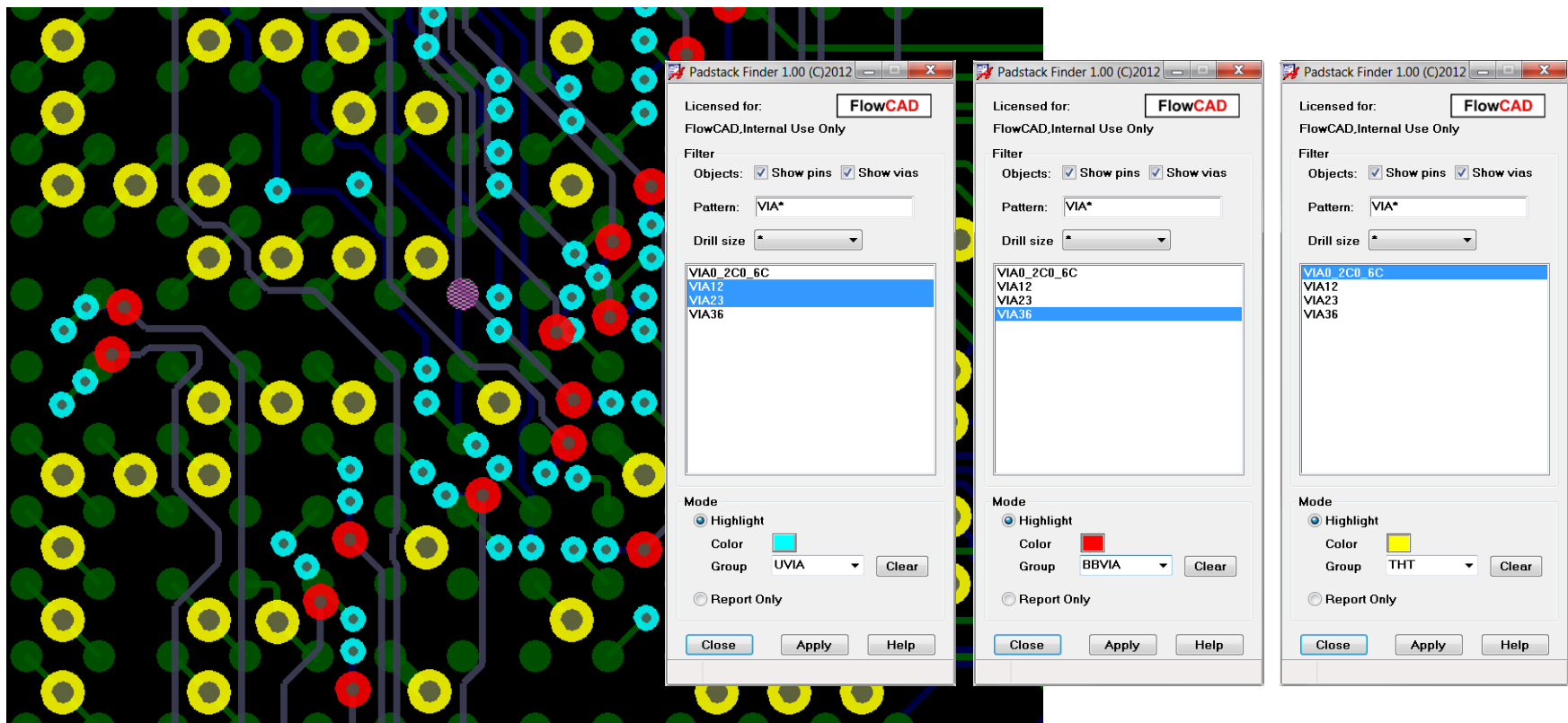
Name	Location	DrillSize	Start<->End
SMD0_75X0_65R	(164.3 81.0)	0.0	TOP<->TOP
SMD0_75X0_65R	(164.3 79.7)	0.0	TOP<->TOP
SMD0_75X0_65R	(164.3 52.0)	0.0	TOP<->TOP
SMD0_75X0_65R	(164.3 50.7)	0.0	TOP<->TOP
SMD0_75X0_65R	(163.3 81.0)	0.0	TOP<->TOP
SMD0_75X0_65R	(163.3 79.7)	0.0	TOP<->TOP
SMD0_75X0_65R	(163.3 52.0)	0.0	TOP<->TOP
SMD0_75X0_65R	(163.3 50.7)	0.0	TOP<->TOP
SMD0_75X0_65R	(130.6 19.0)	0.0	TOP<->TOP
SMD0_75X0_65R	(130.6 20.0)	0.0	TOP<->TOP
SMD0_75X0_65R	(90.3 26.7)	0.0	TOP<->TOP
SMD0_75X0_65R	(90.3 27.7)	0.0	TOP<->TOP
SMD0_75X0_65R	(48.0 47.5)	0.0	TOP<->TOP
SMD0_75X0_65R	(49.0 47.5)	0.0	TOP<->TOP
SMD0_75X0_65R	(49.0 46.2)	0.0	TOP<->TOP
SMD0_75X0_65R	(48.0 46.2)	0.0	TOP<->TOP
SMD1_0X0_8R	(175.25 85.4)	0.0	TOP<->TOP
SMD1_0X0_8R	(175.25 82.0)	0.0	TOP<->TOP
SMD1_0X0_8R	(175.25 78.6)	0.0	TOP<->TOP
SMD1_0X0_8R	(175.25 56.4)	0.0	TOP<->TOP
SMD1_0X0_8R	(175.25 53.0)	0.0	TOP<->TOP
SMD1_0X0_8R	(175.25 49.6)	0.0	TOP<->TOP
SMD1_0X0_8R	(173.55 85.4)	0.0	TOP<->TOP
SMD1_0X0_8R	(173.55 82.0)	0.0	TOP<->TOP
SMD1_0X0_8R	(173.55 78.6)	0.0	TOP<->TOP



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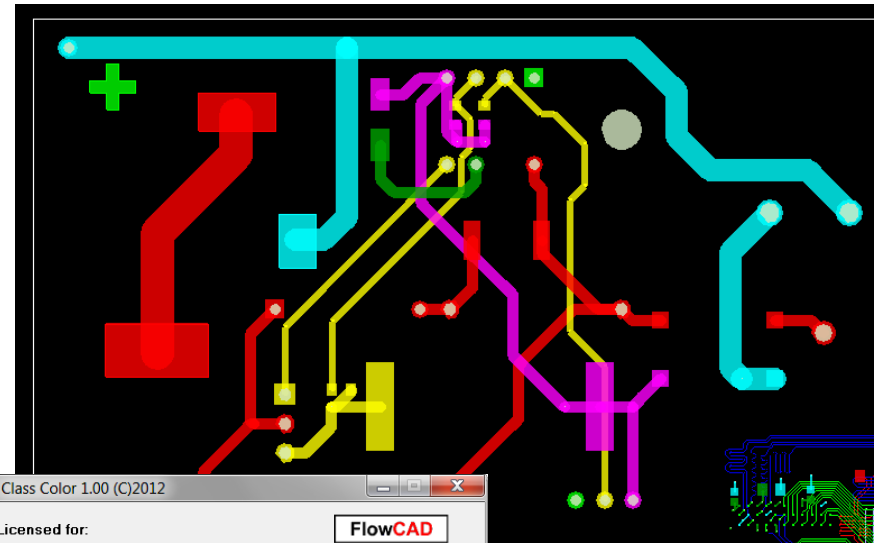
Module: Padstack Finder

- Color by group
 - By specifying a group name individual groups can be colored



Module: Class Color

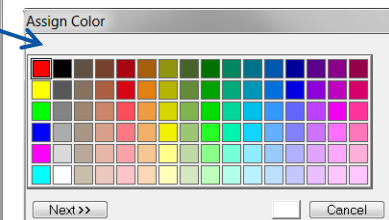
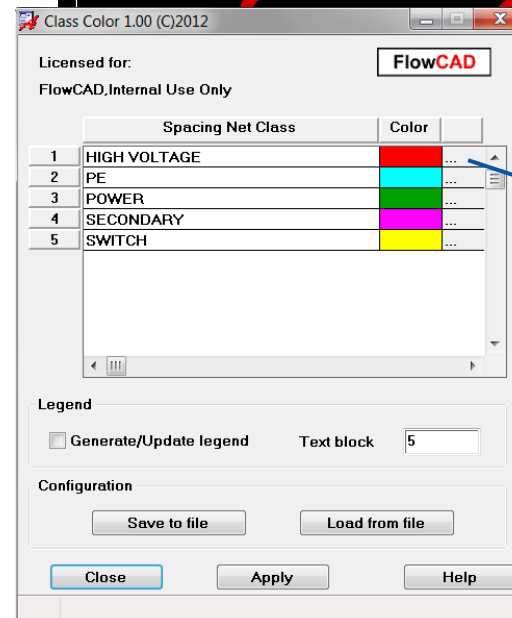
- Enables users to color spacing net classes for review and documentation purposes
 - Color chooser
 - Legend support
 - Settings stored in database
 - Export/import settings
- Free of charge



Legend

Generate/Update legend Text block

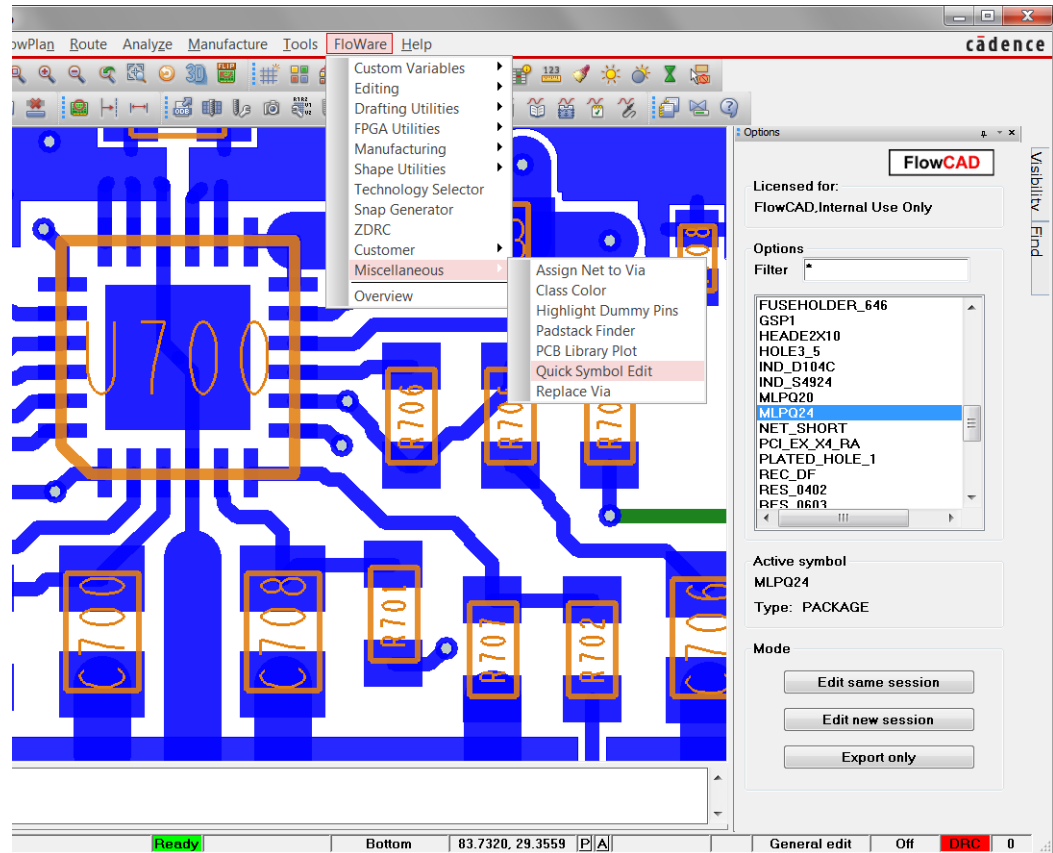
CLASS	COLOR
HIGH VOLTAGE	
PE	
POWER	
SECONDARY	
SWITCH	



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Module: Quick Symbol Edit

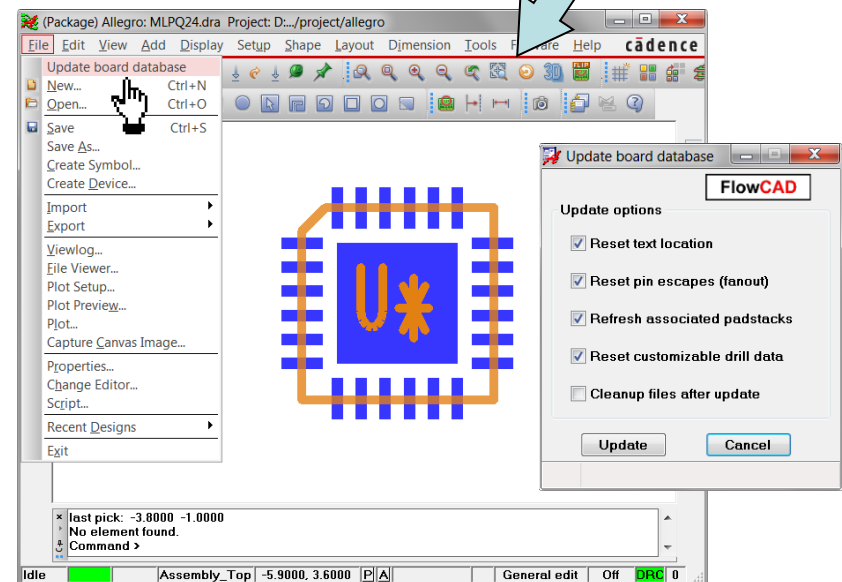
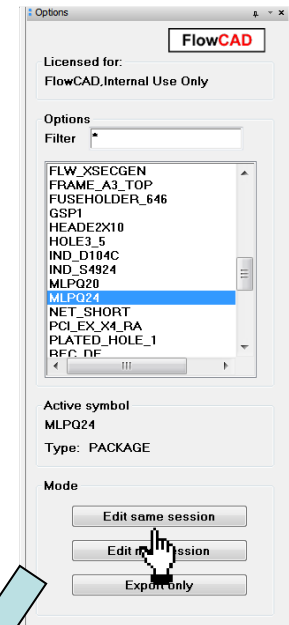
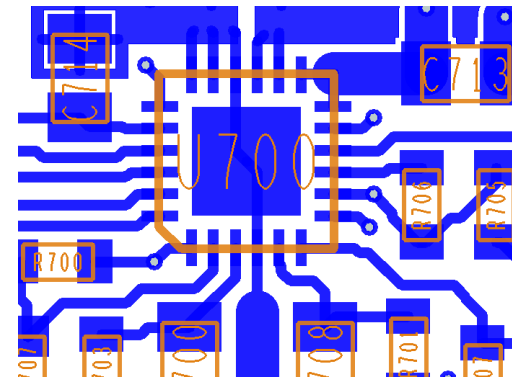
- Opens symbol editor out of a layout database for viewing or editing purposes
- Three modes
 - **Edit same session**
 - Acts similar to *Tools – Modify Design Padstack* (next slide)
 - **Edit new session**
 - Launches a new session and open the symbol dra file
 - **Export only**
 - Only exports symbol data (dra, psm, pad etc.) for the selected symbol to a specified directory
- Free of charge



Module: Quick Symbol Edit

• Edit same session

- Seamless edit and update of a symbol definition in board context
- Acts like Tools – Modify Design Padstack
- Steps
 1. Launch *Quick Symbol Edit* in layout context
 2. Select a symbol
 3. Current database closes, symbol dra file will be opened
 4. Make your modifications
 5. Finally choose *File – Update board database*
 6. Specify update settings
 7. The layout database from which the command was launched opens again and the footprints will be updated.



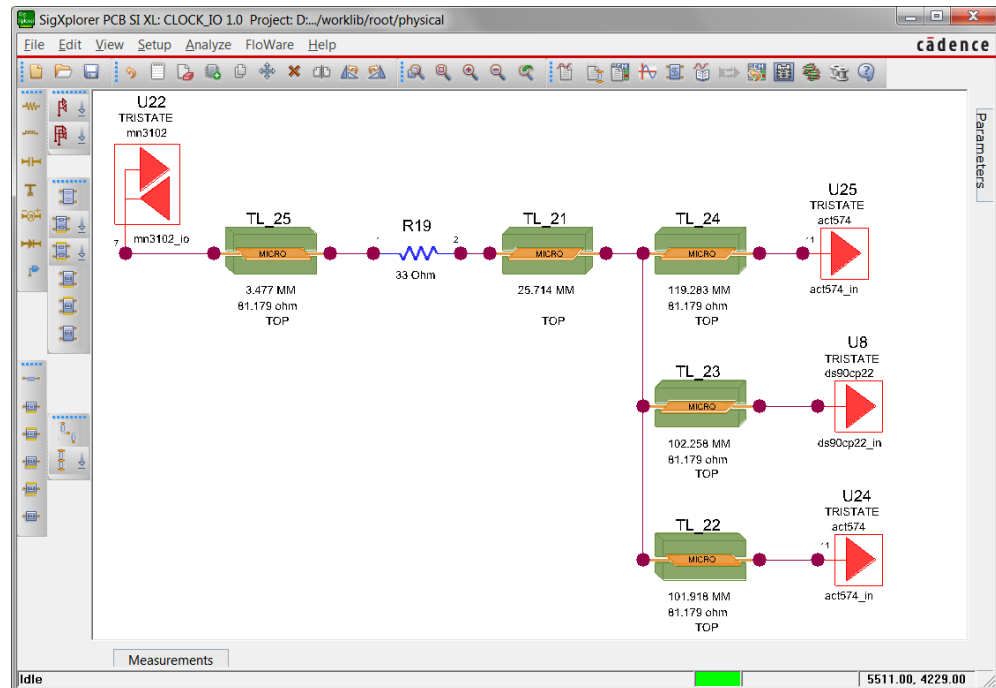
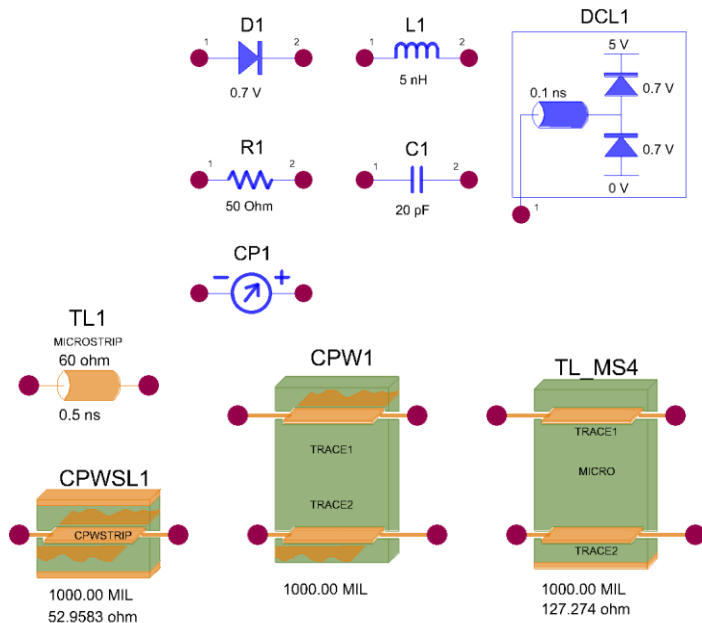
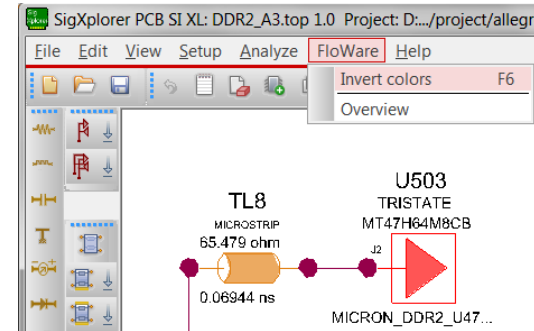
FloWare Modules Signal Explorer

- [Invert Display Colors](#)
- [IBIS Prototype Modeler](#)



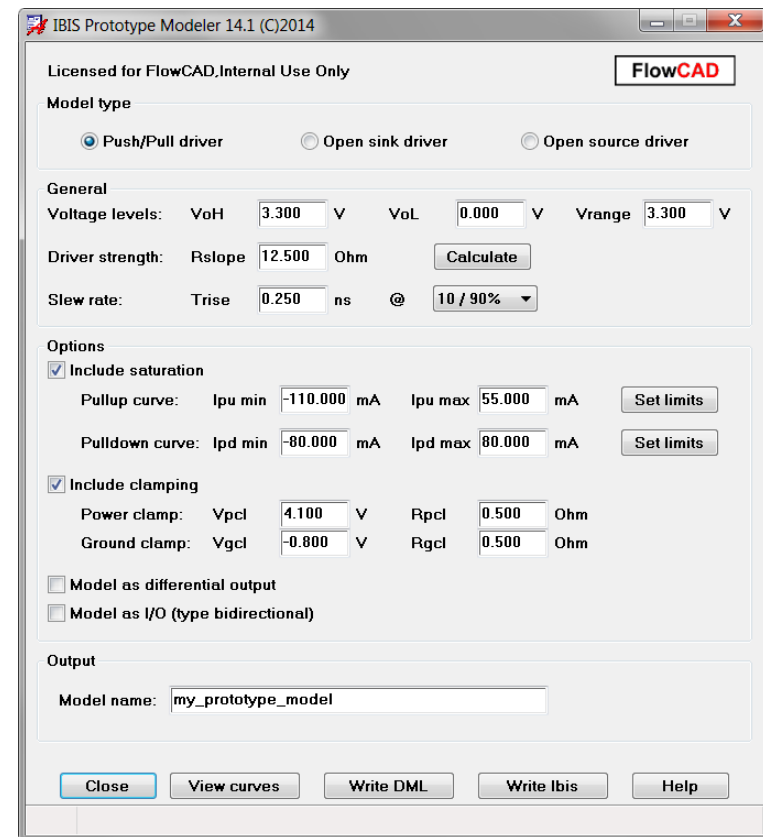
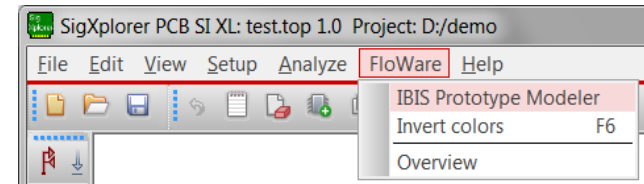
Module: Invert Display Color

- Adjusts color scheme to white background
- Useful for presentation and documentation purposes (screenshots)
- Free of charge



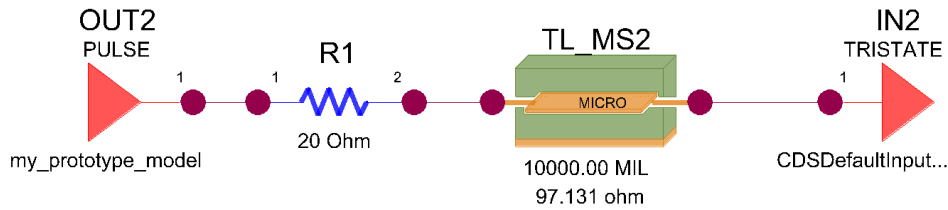
Module: IBIS Prototype Modeler

- Creates scalable IBIS models for early stage signal integrity analysis
- Features include
 - Ability to create Push/Pull, Open-Sink and Open-Source buffers
 - Adjustable voltage levels
 - Adjustable internal resistance including a calculator
 - Adjustable slew rate dV/dt
 - Ability to include saturation and clamping effects
 - Support for single-ended as well as differential outputs
 - Support for output only and bidirectional models
 - Ability to view curves in *Sigwave*
 - Generate DML models as well as native IBIS models



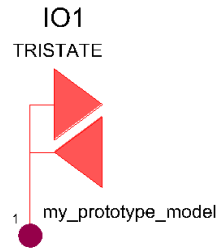
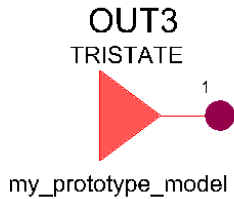
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Module: IBIS Prototype Modeler

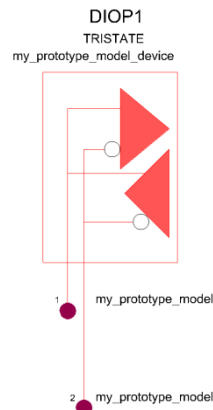
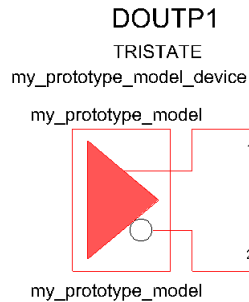


Output only

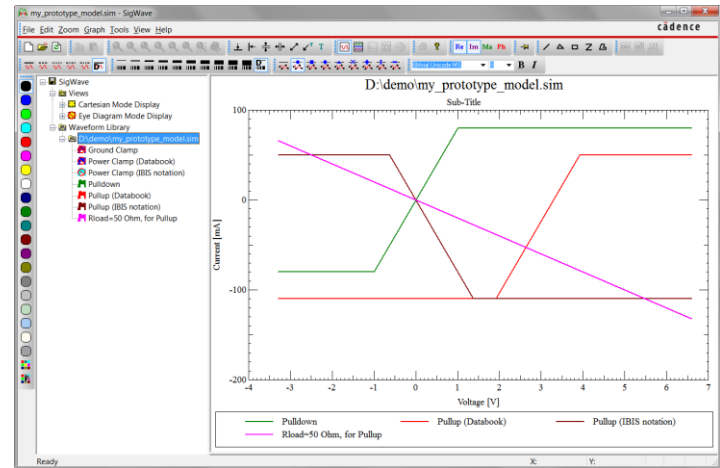
Bidirectional



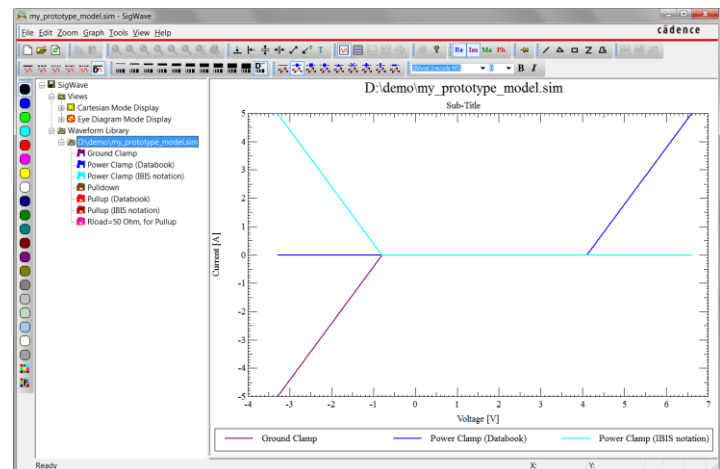
Single ended



Differential



Pullup, Pulldown and Rload curves



Power, Ground clamp



FloWare Modules Schematic Entry

- [Tortoise SVN Integration](#)



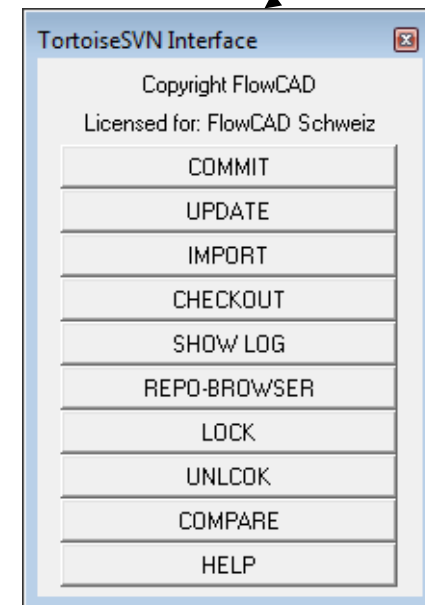
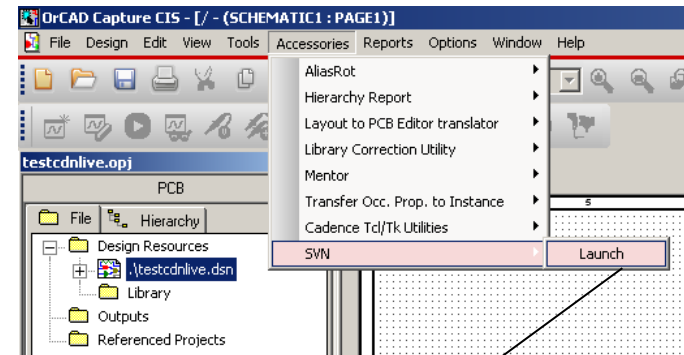
Module: Tortoise SVN Integration

• Features

- Import a project to a SVN directory
- Committing your project to the server
- Load the latest project version from the server
- View the log-file
- Checkout a directory
- Lock / unlock a project
- Compare – ONLY WITH CIS LICENSE!
- Each command is directly available in CAPTURE!
- This Module always use your entire project directory

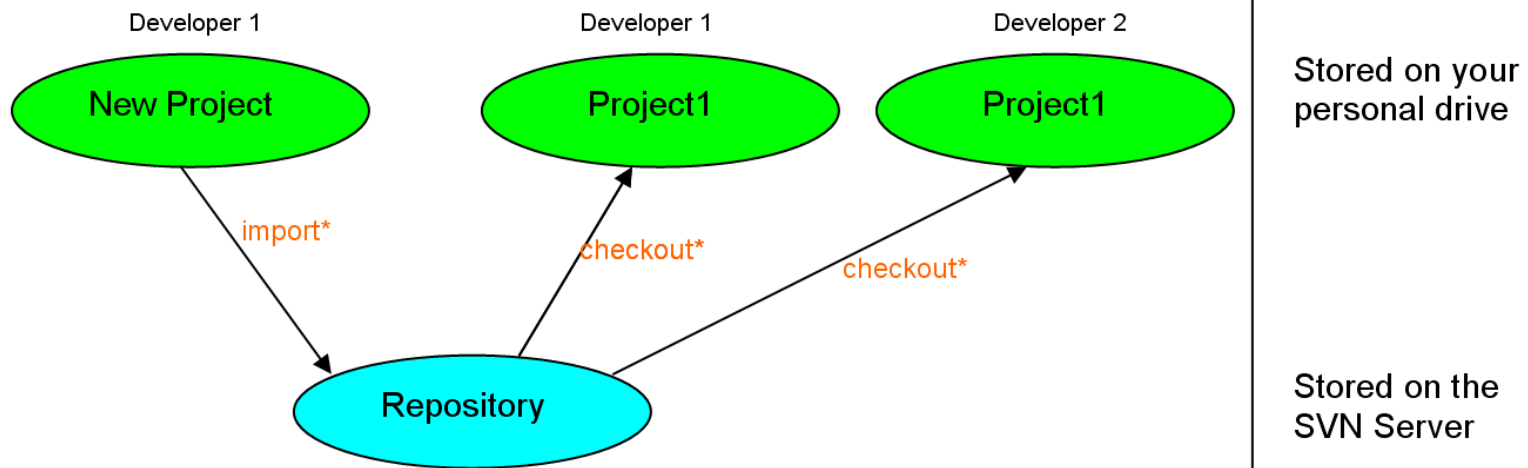
• Prerequisites

- Tortoise SVN (Open Source)
- SVN Server (Open Source)



Module Tortoise SVN Integration

Use model: Creating a new project

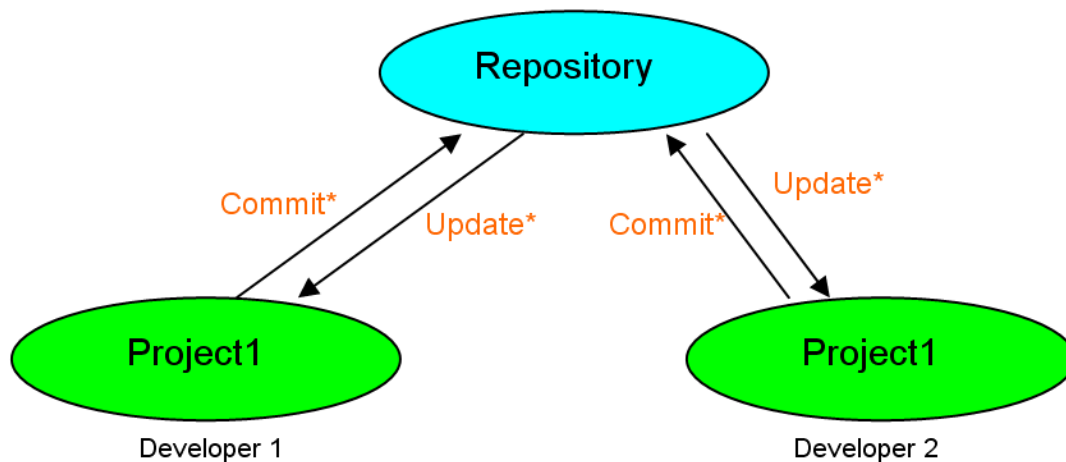


* Commands launched from the Capture TortoiseSVN interface



Module Tortoise SVN Integration

Use model: During the daily use



Stored on the
SVN Server

Stored on your
personal drive

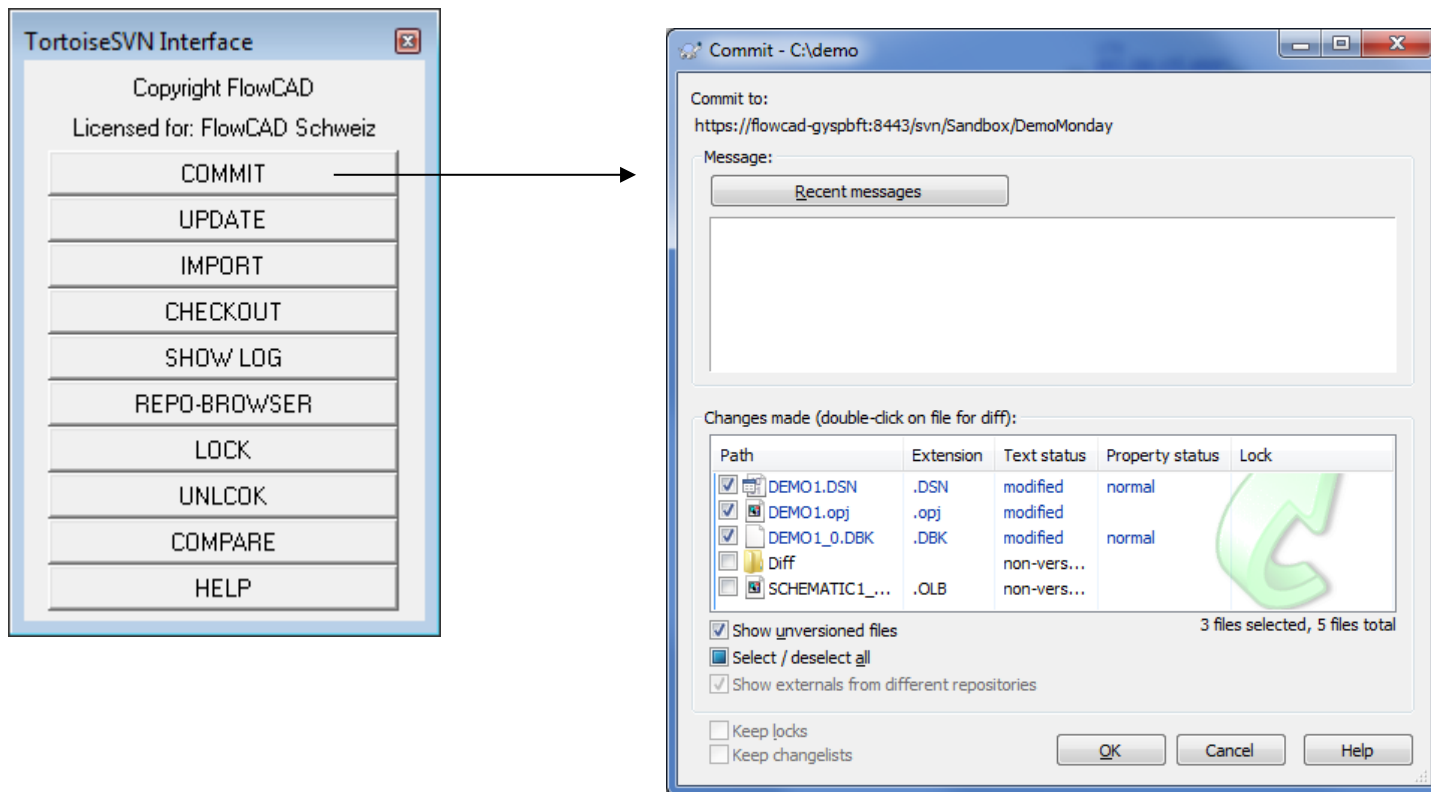
* Commands launched from the Capture TortoiseSVN interface



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Module Tortoise SVN Integration

When committing a project, you can add messages which will be stored on your server, for example:



Module Tortoise SVN Integration

View the log messages on your project history

The screenshot shows the TortoiseSVN Log Messages dialog for the project TESTCDNLIVE.DSN. The dialog displays a list of revisions from 51 to 57, all by author Marco on May 6, 2011. Revision 57 is selected, with the message "Modified C3!". Below the list, a table shows the actions for the selected revision: Modified /CDNLIVE/TESTCDNLIVE.DSN, Modified /CDNLIVE/TESTCDNLIVE.opj, and Modified /CDNLIVE/TESTCDNLIVE_0.DBK. The dialog also includes a search bar, date filters, and checkboxes for "Hide unrelated changed paths", "Stop on copy/rename", and "Include merged revisions".

Revision	Actions	Author	Date	Message
57		Marco	13:47:58, Freitag, 6. Mai 2011	Modified C3!
54		Marco	13:45:27, Freitag, 6. Mai 2011	Added R3!
53		Marco	13:36:47, Freitag, 6. Mai 2011	
52		Marco	13:34:45, Freitag, 6. Mai 2011	
51		Marco	13:30:42, Freitag, 6. Mai 2011	

For complete history deselect 'Stop on copy/rename'

Action	Path	Copy from path	Revision
Modified	/CDNLIVE/TESTCDNLIVE.DSN		
Modified	/CDNLIVE/TESTCDNLIVE.opj		
Modified	/CDNLIVE/TESTCDNLIVE_0.DBK		

Showing 5 revision(s), from revision 51 to revision 57 - 1 revision(s) selected.

Hide unrelated changed paths
 Stop on copy/rename
 Include merged revisions

Buttons: Show All, Next 100, Refresh, Statistics, Help, OK

The TortoiseSVN Interface menu is also visible, listing the following options: COMMIT, UPDATE, IMPORT, CHECKOUT, SHOW LOG, REPO-BROWSER, LOCK, UNLCOK, COMPARE, HELP.

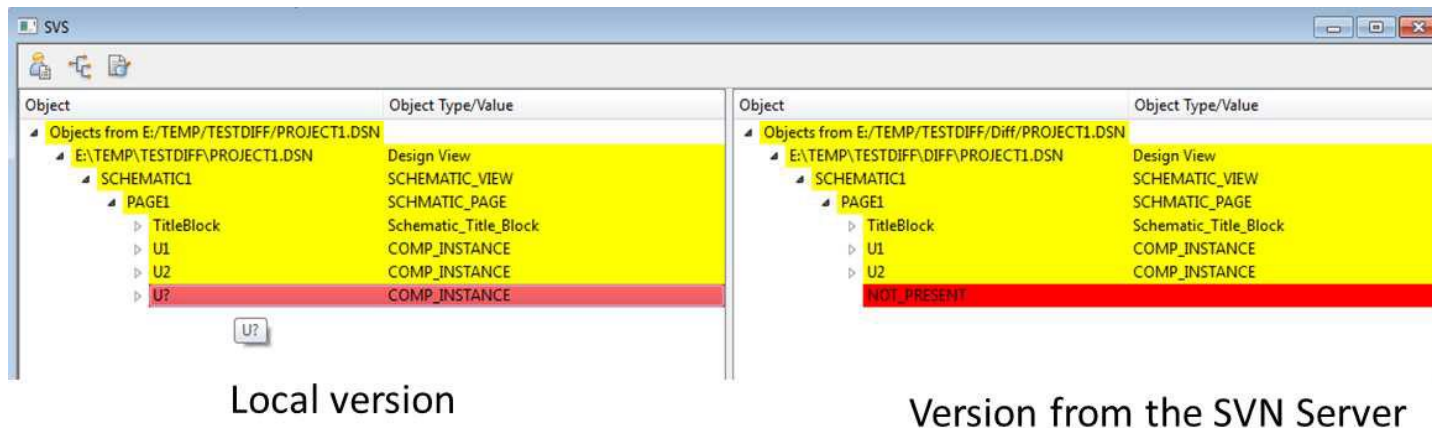


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Module Tortoise SVN Integration

Design Compare:

The latest version from the SVN Server will be compared with your local version



This command works only when you have a CIS License

