

ProSEM

What's New in ProSEM 3.4

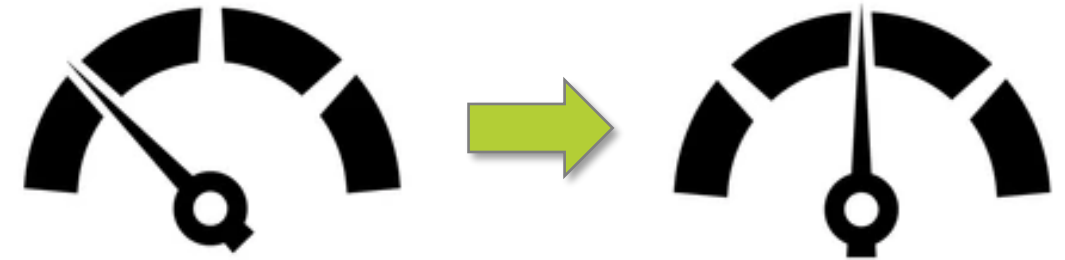
ProSEM 3.4 Key News

- General
 - Display and Processing Performance
- Feature Detection and Export
 - Parabolic Peak fit
 - GDS export for Lines&Spaces
 - Multi-Edge measurement methods
- Layout Integration/ SEM Automation
 - Viewer improvements and python layout methods/ attributes
 - Import/ export of metrology jobs
 - Image registration control and optional scale/ rotation
 - Comparison of layout element and contour/ fitting
 - Improved usability for SEM automation

General

Display and Processing Performance

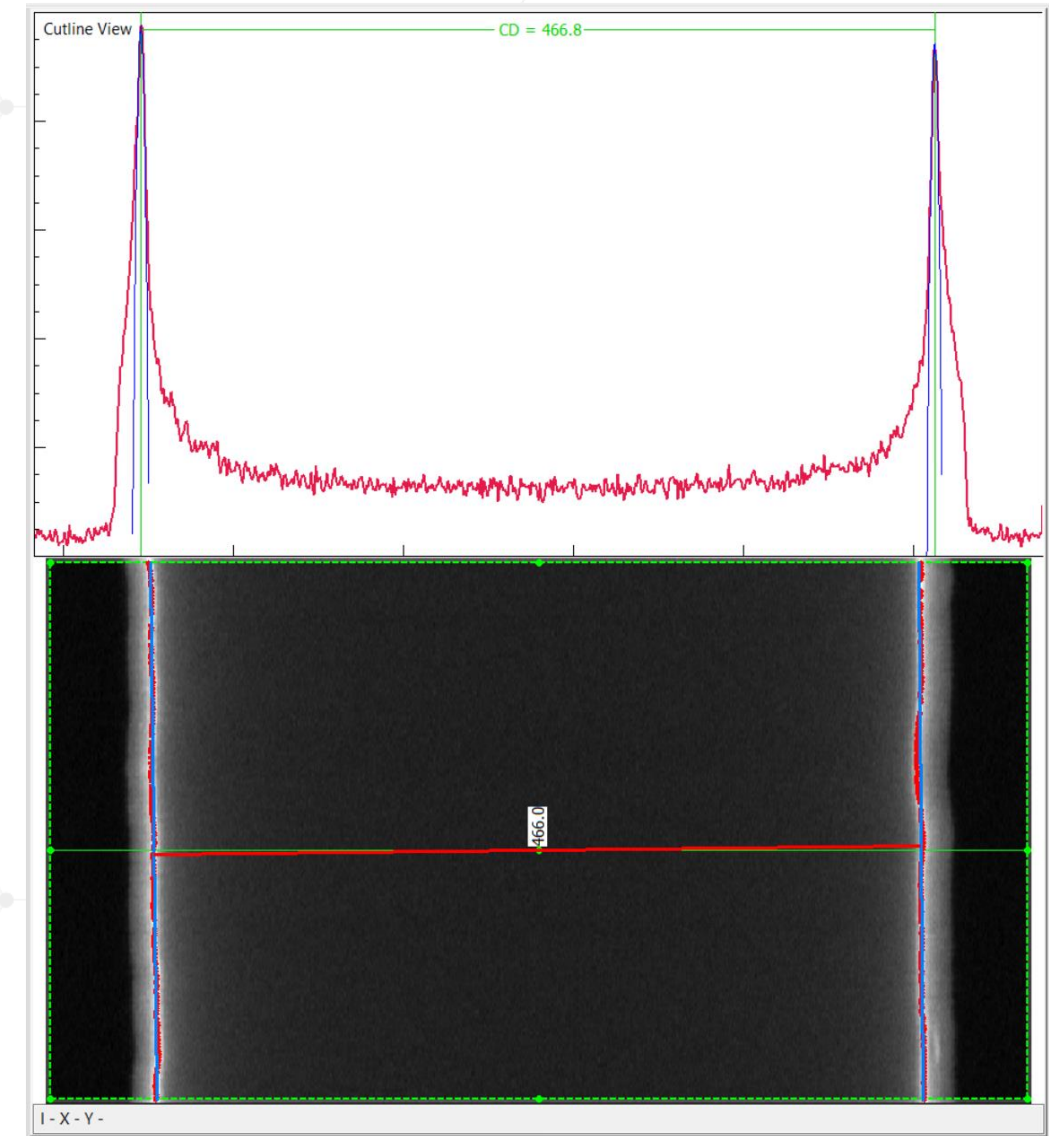
- Improved performance
 - General clean-up and refactoring
 - Focus on more efficient GUI updates
 - Improvement of some algorithms/ methods
 - Achieved faster operation for
 - Loading of layouts
 - Handling projects with many measurements
 - Loading large images
 - Batch processing/ handling many images
 - Find similar template matching



→ *Continued effort...*

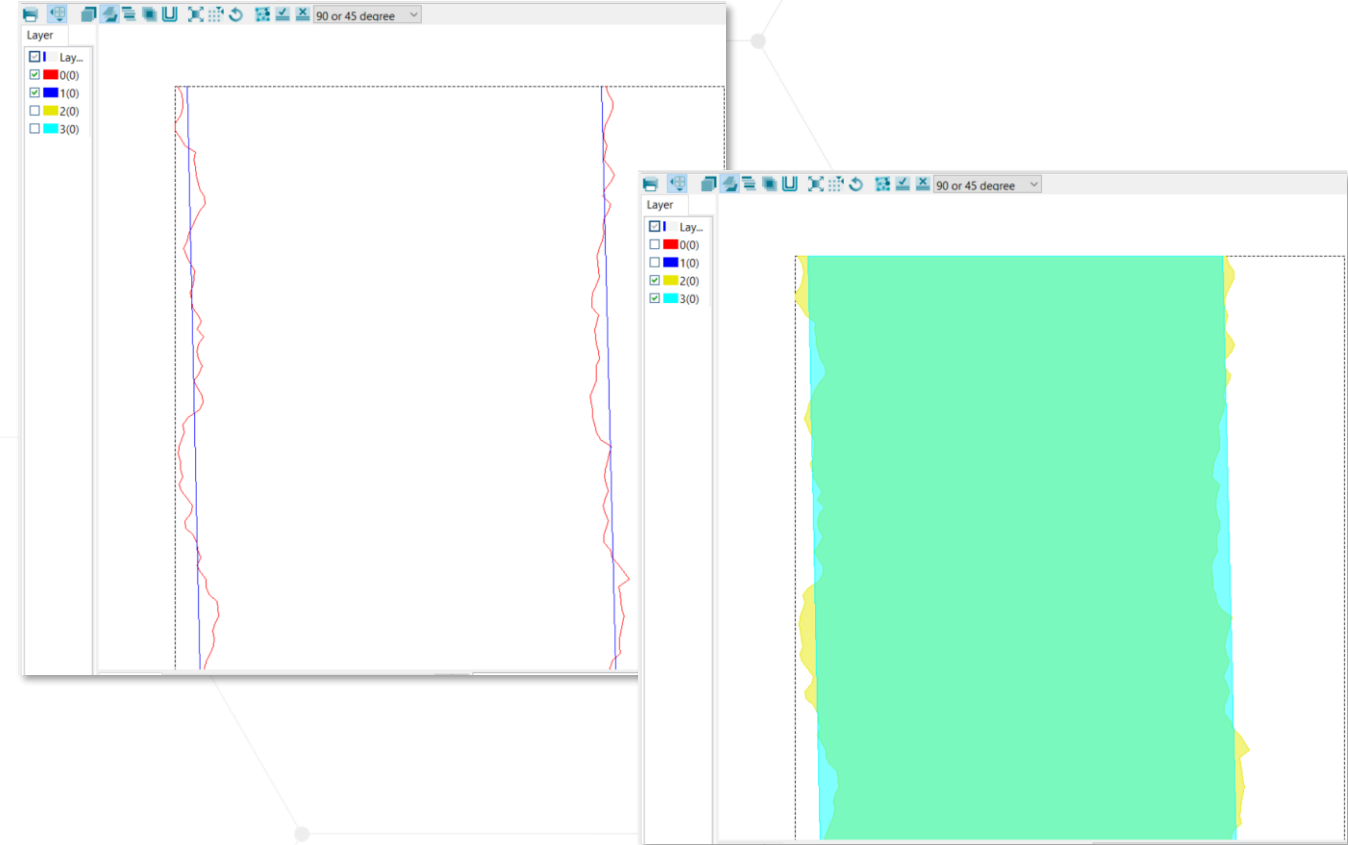
Feature Detection & Export

- Improvements for top edge measurement
 - First level of feature detection based on sigmoid
 - From there apply parabolic fit
 - Unified code with other detection/ fitting methods
 - More stable algorithm
- Better detection robustness



GDS Export for Lines&Spaces

- Extended shapes export for L&S
 - Edge points/ contour and fitted lines
 - Exported in two ways in separate layers
 - Lines (width 0): layers 0 and 1
 - Closed polygons: layers 2 and 3
- More/ better controlled data export
- Enables additional analysis



- Extended method settings
 - For measurement methods peak and valley
 - Additional settings control over polarity
 - Specify to rising or falling (like sigmoid)
- More intuitive display
 - Definitions table is default upon start
 - For Multi-Edge and Segmented Contour

Feature Detection

Feature Type Multi-Edge

ROI [px]

LL X 260

LL Y 195

Width 556

Height 205

Show Results

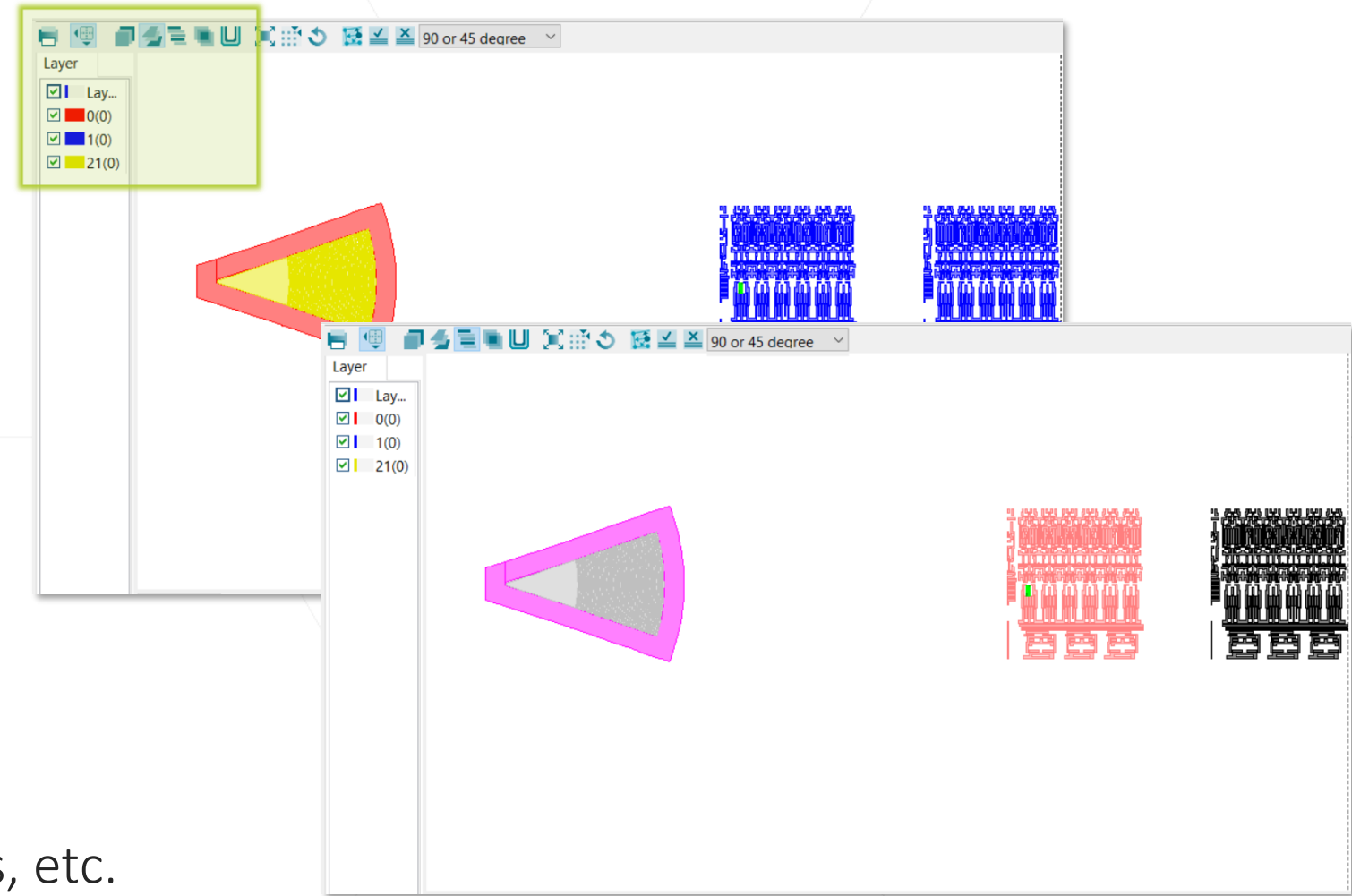
Define Measurement...

Pixel Size 5.208 nm/px

Name:	E_1	E_2	E_3
Find Mode	Peak	Peak	Valley
Signal	Signal	Signal	1st Deriv
Threshold	50	50	10
Measure	Signal	Signal	Signal
Method	Sigmoid	Peak	Valley
Polarity	Falling	Rising	Falling
Position	Mid		

Layout/ Automation

- Viewer improvements
 - Color by layer as new default
 - Now all Viewer fill options are available
 - Better visibility
 - Intuitive field checks etc.
- Python for Layout
 - New methods and attributes
 - Load layouts, jobs, apply measurements, etc.
 - For details see the integrated help



- New registration tab with additional functionality
 - Option to correct for scale and rotation
 - Apply downsampling for faster registration
 - Disable direct registration
- Improved SEM calibration based on lithography
- Faster image registration for large sets
- Control timing of registration and processing

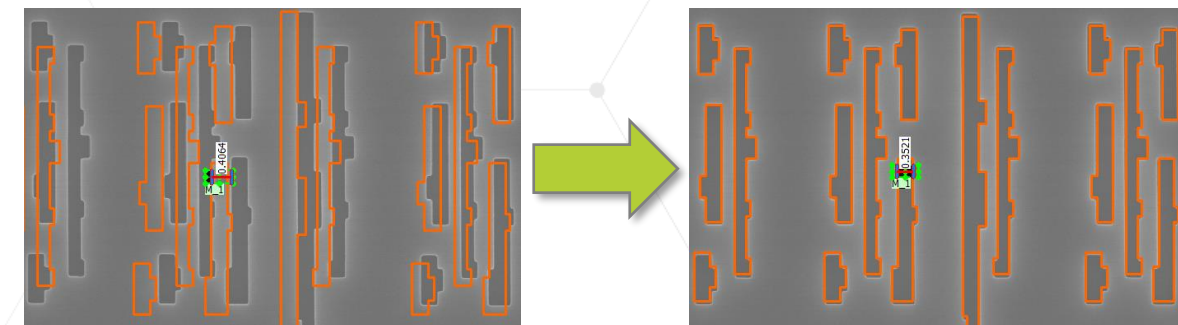
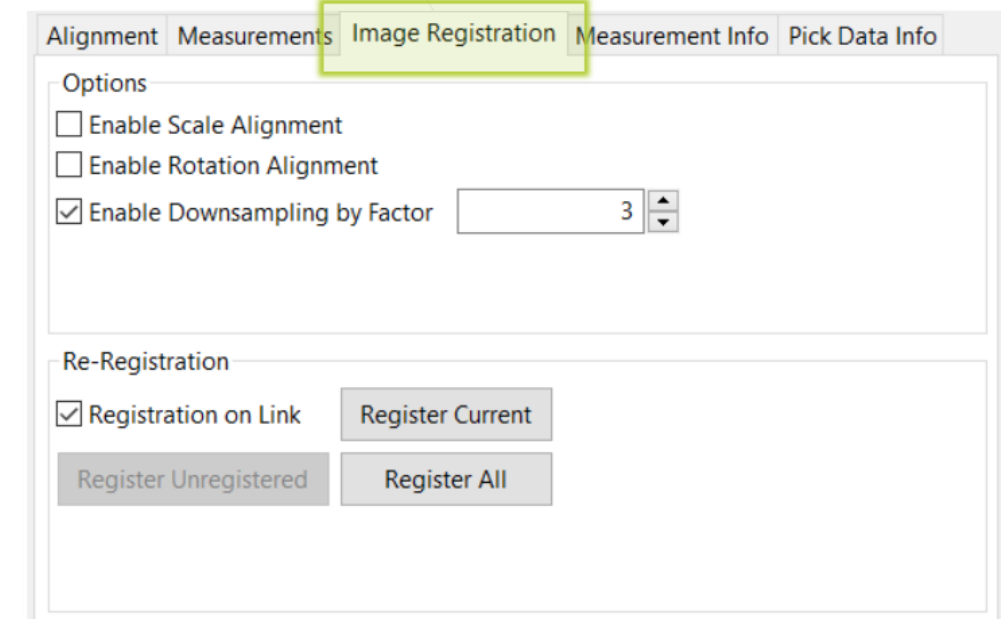
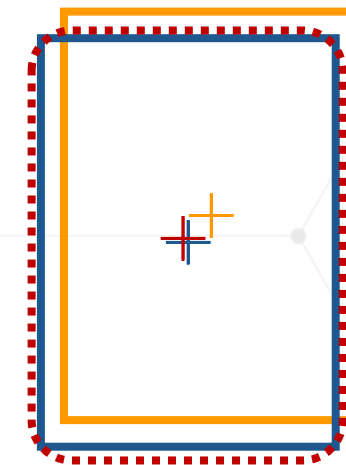
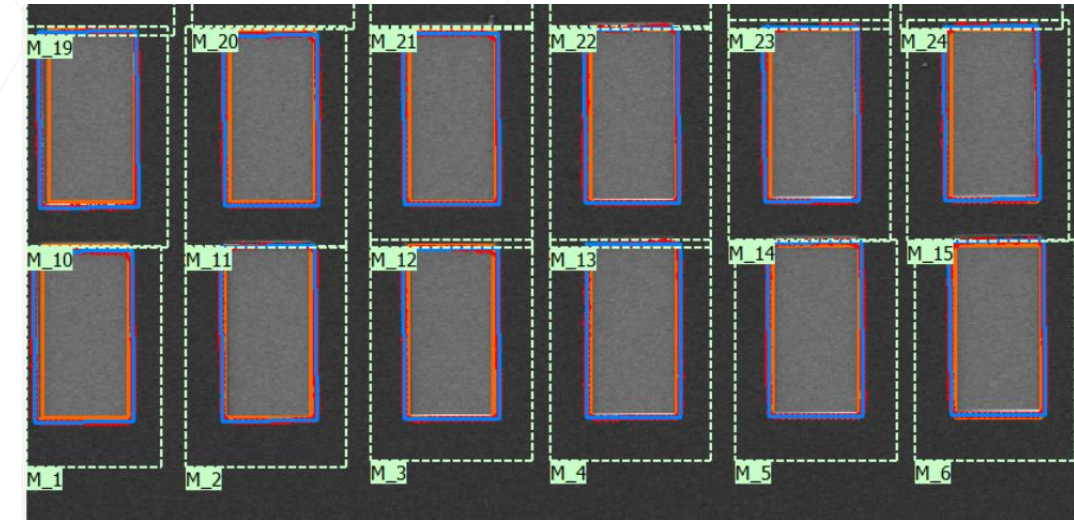


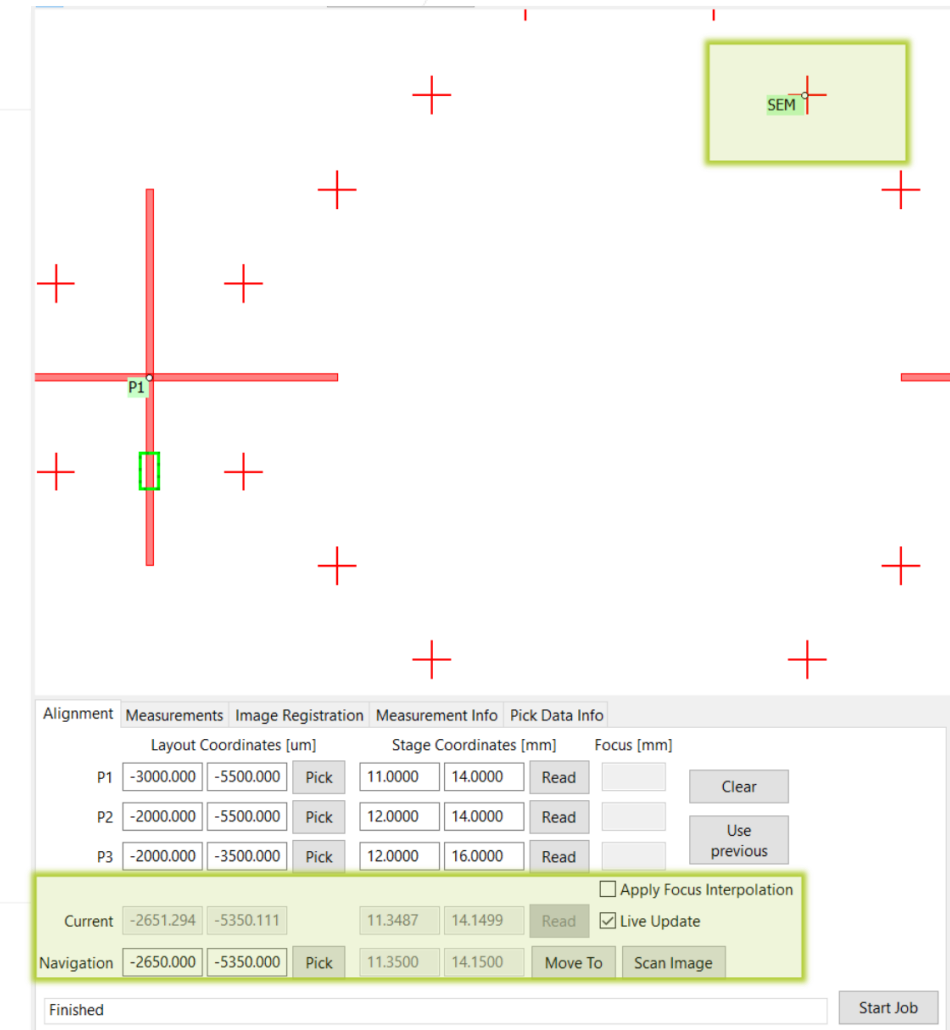
Image-to-Layout Comparison

- Comparison of element position
 - Determine center of gravity for **edge contour** (red) or center of **fitted shape** (blue, if available)
 - Identify nearest **layout element** (orange) and position
 - Calculate difference and report as “LayoutShiftX/Y”
- Additional data/ analysis based on layout reference

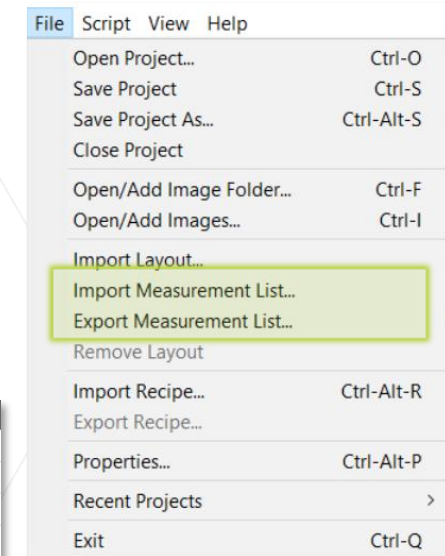
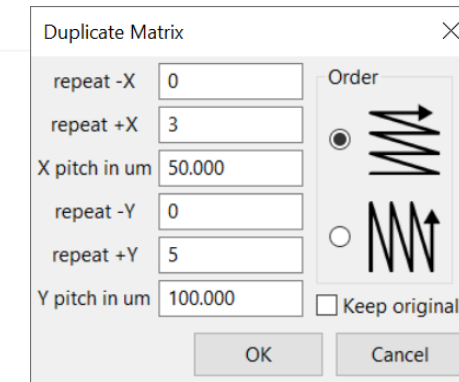


LayoutShiftX[nm]	LayoutShiftY[nm]
19.8	-166.9

- Improved usability
 - Current SEM stage position visualized in Layout Viewer
 - Focus correction used for interactive navigation (when focus interpolation is enabled)
- SEM position always visible
- Navigation can be tested including focus correction
- More intuitive and interactive alignment/ navigation



- Improved functionality and usability
 - Duplicate matrix for creating many measurement
 - Previous settings are saved
 - X/Y ordering can be controlled
 - Import/ export of metrology jobs



→ Useful for large metrology jobs
→ Create and share jobs easily

	A	B	C	D	E	F	G	
1	# ROI Center X [um], ROI Center Y [um], ROI Width [um], ROI Height [um], Feature Type [l/c/e/r], Layer, Array [y,1/n,0], Image Key							
2	-3000, -5550, 10, 20, l, 0(0), n,							
3	-2500, -5550, 10, 20, l, 0(0), n,							
4	-2000, -5550, 10, 20, l, 0(0), n,							
5	-3000, -5050, 10, 20, l, 0(0), n,							
6	-2500, -5050, 10, 20, l, 0(0), n,							
7	-2000, -5050, 10, 20, l, 0(0), n,							
8	-3000, -4550, 10, 20, l, 0(0), n,							
9	-2500, -4550, 10, 20, l, 0(0), n,							
10	-2000, -4550, 10, 20, l, 0(0), n,							
11	-3000, -4050, 10, 20, l, 0(0), n,							
12	-2500, -4050, 10, 20, l, 0(0), n,							
13	-2000, -4050, 10, 20, l, 0(0), n,							
14	-3000, -3550, 10, 20, l, 0(0), n,							
15	-2500, -3550, 10, 20, l, 0(0), n,							
16	-2000, -3550, 10, 20, l, 0(0), n,							

	Center X [um]	Center Y [um]	Width [um]	Height [um]	Feature Type	Find Similar	Layer	Status	Key / File
	-3000.000	-5550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2500.000	-5550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2000.000	-5550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-3000.000	-5050.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2500.000	-5050.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2000.000	-5050.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-3000.000	-4550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2500.000	-4550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2000.000	-4550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-3000.000	-4050.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2500.000	-4050.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2000.000	-4050.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-3000.000	-3550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2500.000	-3550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>
	-2000.000	-3550.000	10.000	20.000	Lines & Spaces	<input type="checkbox"/>	0(0)	scan pending	<automatic>

Thank You!

support@genisys-gmbh.com



Headquarters

GenISys GmbH
Eschenstr. 66
D-82024 Taufkirchen (Munich)
GERMANY

📞 +49-(0)89-3309197-60

📠 +49-(0)89-3309197-61

✉ info@genisys-gmbh.com

USA Office

GenISys Inc.
P.O. Box 410956
San Francisco, CA
94141-0956
USA

📞 +1 (408) 353-3951

✉ usa@genisys-gmbh.com

Japan / Asia Pacific Office

GenISys K.K.
German Industry Park
1-18-2 Hakusan Midori-ku
Yokohama 226-0006
JAPAN

📞 +81 (0)45-530-3306

📠 +81 (0)45-532-6933

✉ apsales@genisys-gmbh.com