

MASKER

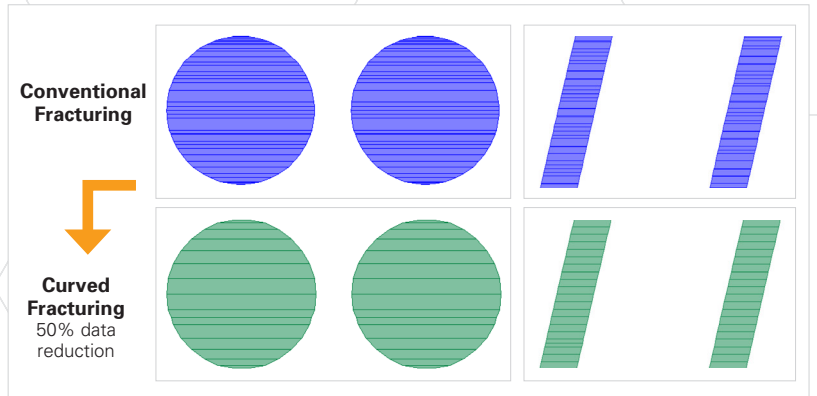
Mask Making beyond CMOS

Mask Data Preparation and Process Correction

Optimal mask productivity and
quality for photonics, display,
IoT and special devices



The Solution for
Mask-Data-Preparation
Mask-Process-Correction



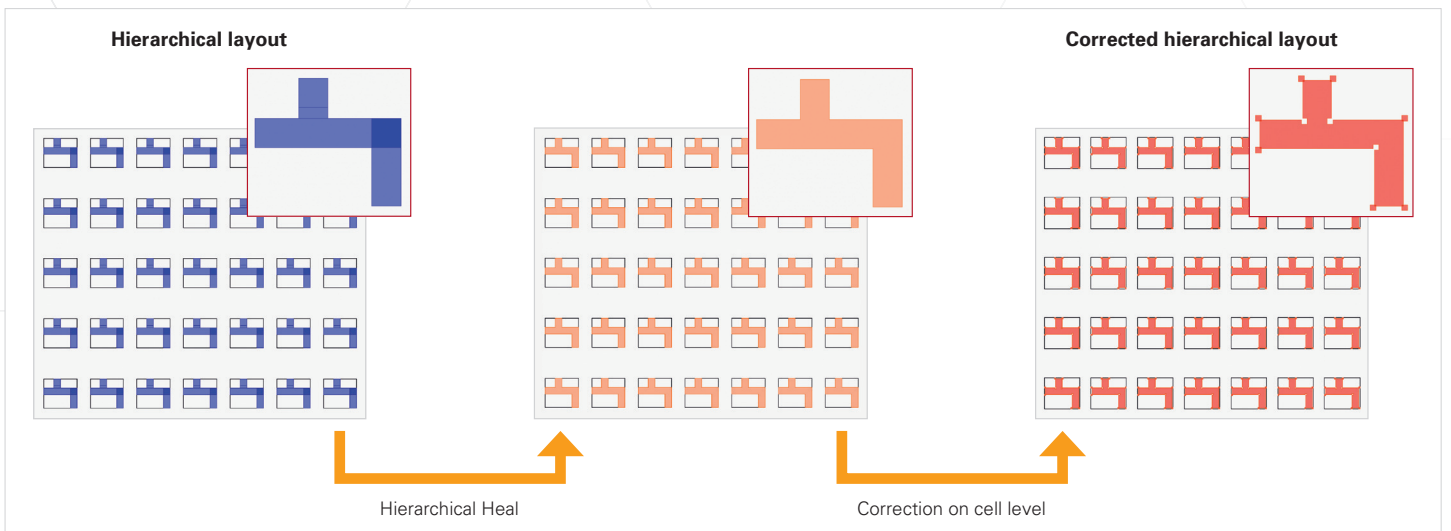
MASKER is a data preparation software package optimized for highest productivity and quality especially for masks in the application areas of photonics, displays, IoT and special devices. It extends today's technologies with many evolutionary developments that were adapted to these special applications over many years.

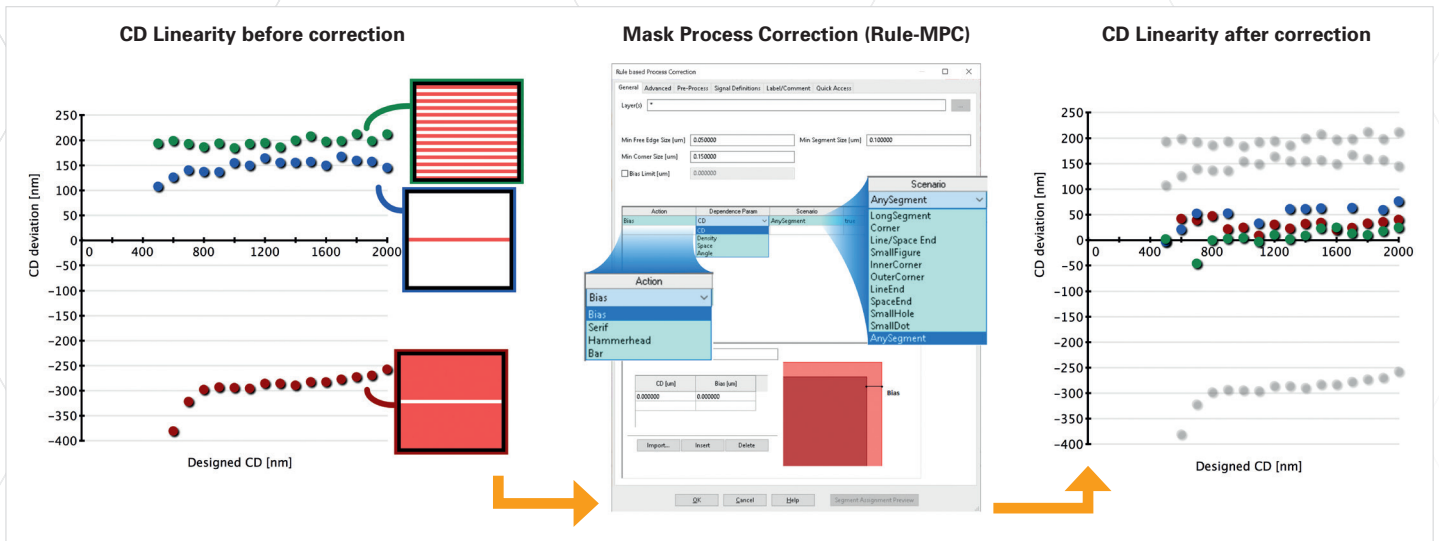
Fracturing is optimized especially for non-Manhattan/curved layouts resulting in minimal shape count that leads to highest throughput and improved quality.

Data volume is minimized for masks with highly repetitive structures, such as flat panel displays, by the utilization of a superior hierarchy engine. Optimal hierarchy enables efficient correction on cell level.

Resolution, CD uniformity & linearity for laser and e-beam mask writer systems is improved through a comprehensive Rule and Model Based MPC to correct for tool and process effects.

- Support for all major layout formats
- Support for major e-beam and laser mask exposure systems
- Superior fracturing of complex curved layouts
- Library of comprehensive layout processing functions optimized for hierarchical processing
- Integrated layout editor
- Built-in VIEWER for immediate inspection, verification, and measurement of patterns
- Rule Mask Process Correction (**Rule-MPC**) by rule based biasing
- Model Mask Process Correction (**Model-MPC**) for laser and e-beam mask processes
- Verification, DRC and simulation features





Layout Import/Export

- All major layout formats, without size limitation (GDSII, CIF, DXF, LTX, OASIS, OASIS-Mask, ODB++, BMP, DWG, ...)
- Supports the major mask exposure machine formats (MEBES, Micronic, Heidelberg Instruments, NuFlare, JEOL, Advantest, ...)

Layout and Boolean Operations

- Healing, Overlap removal (full pattern or by layer)
- Biasing, Sizing (x/y, x-, y-, layer specific)
- Tone reversal (NOT)
- Boolean operations: AND, OR, XOR, P-XOR, MINUS
- Extract layer, datatype, cell, region
- Merge layouts
- Transformation: Scale, Shift, Rotation, Mirror
- Grid, database unit adjustment
- Mapping, adjusting layer names and datatypes

Hierarchical Processing

- Preserves cell hierarchy
- Optimizes and repairs hierarchy
- Enables cell based correction
- Minimizes data volume
- Minimizes processing time

Advanced Fracturing

- Optimized for arbitrary shapes
- Curved fracturing
- Minimizing shape count
- Optimizing quality and throughput

VIEWER

- Integrated detachable global viewer
- Multi-view of process steps
- View of hierarchy
- Feature measurements

Mask Process Correction

- Rule-MPC for resolution, linearity (CD, space, density or angle dependent Biasing) and feature fidelity (e.g. corner by serifs) enhancement
- Model-MPC for laser and e-beam exposure including exposure, resist and etching processes

Feature & Cell Based Corrections

- Filter out circles, rings, rectangles, and arbitrary shapes by size, diameter, area, height/width ratio, angle and dose
- Flexible combination of condition and rules
- Filtered shapes can be assigned to new layers for subsequent processing and correction, and merged back to layout
- Extraction of hierarchical cells for correction using Rule-MPC, layout operation or using Layout Editor
- Cell operations: automatic replace specific cells by others, replace specific geometries by bounding box/ other cell, remove cell duplicates, hierarchy generation

Integrated Layout Editor

- Edit layout or parts within flow
- Fully hierarchical GDS editor supporting manual cell based correction

Verification/Simulation

- Verification, cross format comparison
- DRC (width, space, area, vertex distance, ...)
- Laser and e-beam exposure simulation

Use Concept & Automation

- **VisualFLOW™** user interface for fast data flow creation by simple drag & drop to connect functional modules, providing increased productivity and efficiency
- Parametrized loops with IF and SELECT operations
- Script module for starting command line script
- **VisualFLOW™** library concept to manage standard data flows and processes
- Automation through Python scripting

Flexible licensing and platform support

- USB license key for dongle and network
- Flexible installation on off-the-shelf PCs
- Scalable for multi-threading and parallel processing on a computer cluster
- Windows 10 64bit, Linux 64 (Red Hat 6+)

Maintenance and Support

- Global support organization with regional engineers for trainings and application support
- Technical support hotline (E-mail, Skype, Phone)
- Fast and flexible implementation of user feature requests, enhancements and performance tuning

GenISys products share highly dedicated support, have flexible licensing and are available on various operating systems.

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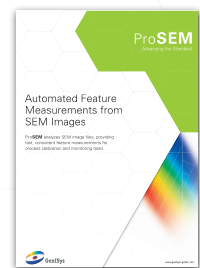
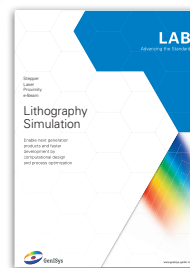
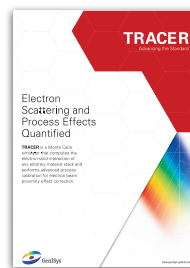
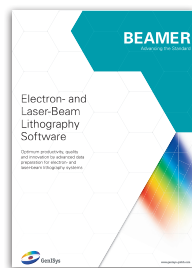


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Based in Munich (Germany), with offices in Yokohama (Japan), and California (USA), **GenISys** develops, markets and supports flexible, high-performance software solutions for the optimization of micro- and nano-fabrication processes. Addressing the market for lithography and inspection, **GenISys** combines deep technical expertise in layout data processing, process modeling, correction and optimization with high caliber software engineering and a focus on ease of use.

GenISys products give researchers, manufacturers, and system suppliers unparalleled efficiency, ease of use and optimal value in research, development, and production of future nano-patterning technologies.

As a company focused on customer service, **GenISys** delivers fast, highly dedicated support for the application and development of the functionality needed to meet demanding customer requirements.