

MaskEngineer

Parametric Mask Layout

Layout for the Design Professional

The basic concept of parametric mask layout is that structures are described using variables, or parameters. These variables can be either the properties of the element itself, or the relationship between the elements. Changing the parameters will change the properties of the elements. This way of describing a layout allows better control over complex designs.

MaskEngineer is essential in First Time Right design strategies

Describing relationships in a mathematical way reduces design time considerably. Re-use of designs becomes much easier. During the prototype stages variations in the design can be made simply within the software.

An example of how parametrization can be applied to a design problem: Suppose you have to design an office. You can describe it as "its dimensions are 4.2 meter * 4 meter, with a door in the middle" or you can say "the room is big enough for 2 persons", which could lead to a formula like "4.2 meter * (amount of employees * 2 meter)". The parametrized design would then take care of door placement. The main advantage of designing this way is that it remains valid for 3 or more employees.

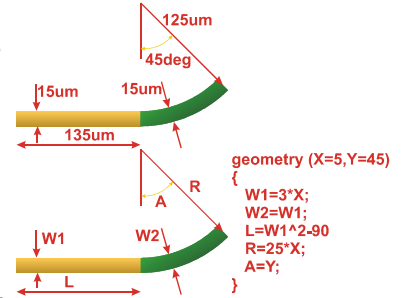


Illustration of the difference between physical (upper) and parametric layout (lower).

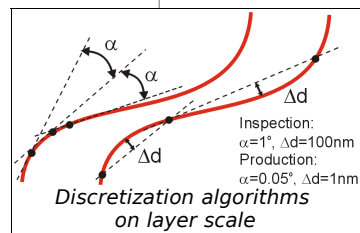
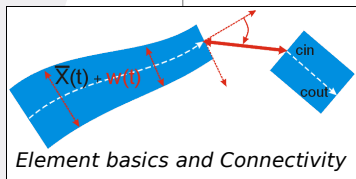
Features of MaskEngineer:

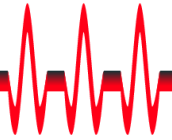
- Layout with a C-like script language
 - Element connectivity using ports
 - Geometric calculations
 - Position support
 - Iterations / conditional parts
- User definable element libraries
 - Unlimited port count
 - Unlimited parameters
- Hierarchy: re-use of earlier designs
- Extensive libraries for
 - Micro Fluidics
 - Micro Mechanics / MEMS / MOEMS
 - Micro Optics / Waveguide Technology
- Import and export to GDSII and CIF
- Boolean Operations
- Multi-platform Support (Windows / Unix)

Show	Fill	Colour	Name	Ord
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	mask	mask	0
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	springs	springs	1
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	electrodes	electrodes	2
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	bulk	bulk	3

```

1 #include combdrive.spt
2 int msk=mask::AddLayer("mask",1,RGB(255,0,0),true,true);
3 mask::CCreate("springs",filter,RGB(255,0,0),1,1);
4 mask::AddGrid(msk,0,001);
5 mask::CCreate("electrodes",filter,RGB(0,255,0),1,1);
6 mask::AddGrid(msk,0,001);
7 mask::CCreate("bulk",filter,RGB(0,0,255),1,1);
8 mask::AddGrid(msk,0,001);
9
10 layout curved_spring(SpringR=100,nSpring=5, SpringRadius=400, SpringWidth=10) {
11   m1::Circle(C->In@C : SpringR) mid;
12   m2::Circle(C->mid@C:SpringRadius-SpringWidth, SpringRadius);
13   double angle=360.0/(nSpring*1.0);
14   for (var i=0;<nSpring;i++) {
15     m3::Offset(CIn->mid@C : 0,0,angle*1) attach;
16     m3::BendPolar(CIn->attach@Cout@SpringR-0.5*SpringWidth,0,90) : wfb(SpringWidth),0.5*SpringRadius+0.5*SpringR-0.5
    
```





General Information

Mission

The Phoenix mission is to deliver integrated software solutions for Micro- and Nano-System Technology, from the cleanroom environment through to top level business processes.

Company profile

Phoenix develops software for MST to provide the bridge between the design team and the real cleanroom environment. Phoenix software facilitates communication from design to production and back again. Re-usability, validation, and quality improvement of information, from research to volume production, are the key factors for efficient MST product development. Phoenix software integrates the production and design process to further reduce the design/production cycle. The products are directly related to issues in the MST field, offering customers considerable reduction in the operational costs, and in 'time to market'. Phoenix introduces unique software tools that facilitate First Time Right design (FTR) for all the major application areas.

Application areas:

- Micro Fluidics
- Micro Mechanics / MEMS / MOEMS
- Micro Optics / Planar Waveguide Technology
- RF Micro Electronics

Users:

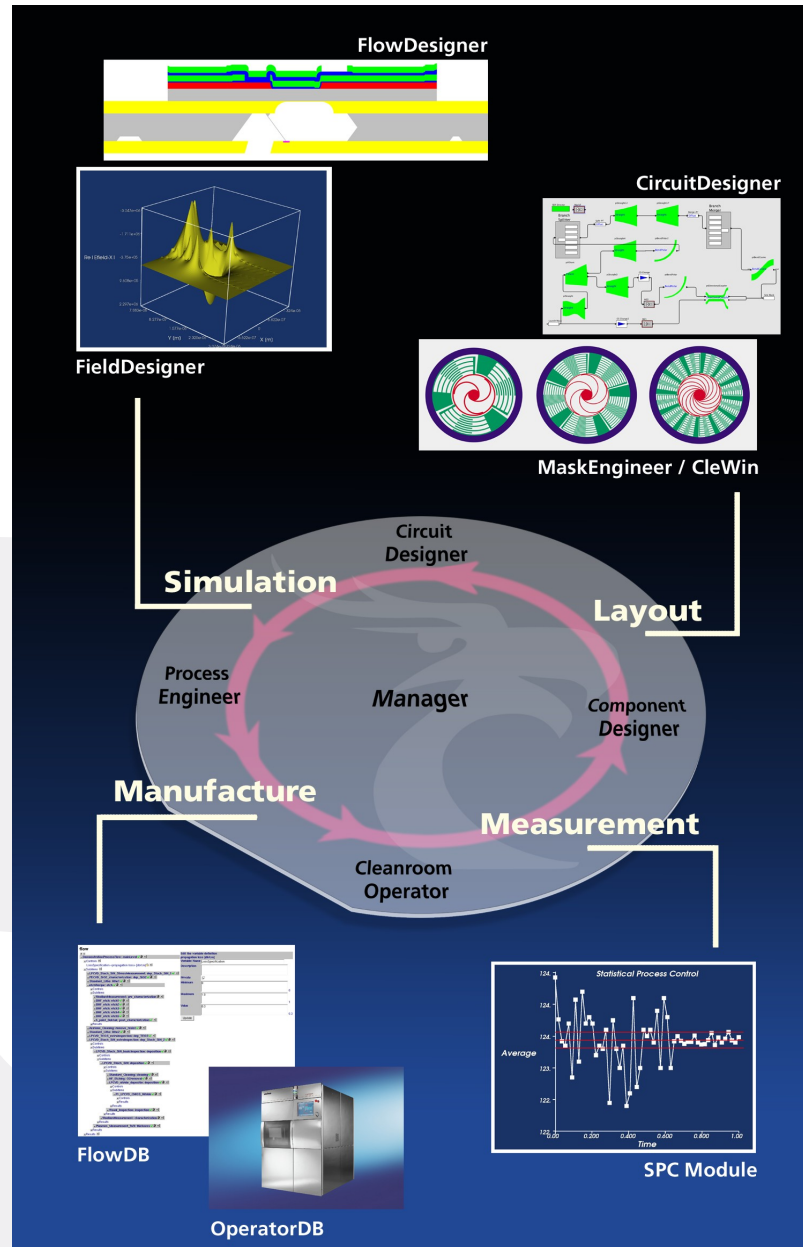
- Small to Medium Sized Production Facilities
- Design Houses
- Contract Research Fabrication Facilities
- University Cleanrooms

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