IntelliSuite V8.8 New Features

IntelliSuite
— Industry-leading MEMS Software
IntelliSuite V8.8 New Features

Blueprint

Control the roundness/sharpness of entity corners

Merge entities by layer

Auto De-Embed

Split entities using a single line

Reduce the entity’s vertex number using a specified tolerance

Create a polar/matrix array of objects
IntelliSuite V8.8 New Features

Blueprint

From BMP, PNG, JPG ... to VEC, GDSII, DXF

Generate new layers using existing layers

**BOOLEAN**

**SELECT**

**AREA**

**DENSIITY**
IntelliSuite V8.8 New Features

Modeling and Meshing

**AutoRemesh**

New meshing features enable users to automatically remesh their models in 3DBuilder for enhanced connectivity. The original mesh information is maintained while any non-connected parts are remeshed using user-specified mesh size criteria.

**64-bit Hexpresso**

The new 64-bit version of Hexpresso is able to allocate more memory during mesh calculation. This enables users to use the Hexpresso engine with larger, more complex models.

**Refine Mesh without vertices**

New features allow users to easily define an adaptive mesh region without having any vertices present in the original layout. Once the user specifies their desired mesh size (smaller than global mesh size), the chosen region will have a refined mesh.

**MeshManip**

**Modeling**

**Meshing**

Side-wall angle mesh
IntelliSuite V8.8 New Features

Process Simulation

High index surface etch

(KOH, 40 wt%, 71°C, 50min)

Surface View
Display the fabricated structure more smoothly

Layer Extraction
View the final structure layers separately

Wagon Wheel Analyzer II

Courtesy of J. Liang, F. Kohsaka, T. Matsuo, and T. Ueda.

Courtesy of C. Liu.
IntelliSense DEEP-RIE calibration tool

The aspect ratio dependence of the etch rate (ARDE) is a complex though common phenomenon in Deep RIE that can often cause some undesirable results in MEMS device fabrication. The etch rate can be limited by the transport in and out of trenches (in the z-direction). It is necessary to accurately predict the relationship between etching depth and the width of the feature in a layout so the device can be manufactured successfully and can meet its performance requirements. IntelliSense now provides a special calibration tool that can help customers to calibrate the simulator for their own devices and conditions. After calibration, users can perform precise etch simulations and view more accurate etch results while taking ARDE into account. This creates more avenues for design variety while maintaining qualified performance.
**IntelliSuite V8.8 New Features**

**Device Simulation**

**Magnetostriction Analysis**
Magnetostriction causes ferromagnetic materials to alter their shape or dimensions during magnetization. With new IntelliSuite features, users are now able to perform static, frequency, and dynamic analyses while considering the magnetostrictive effects. This example shows the analysis of a magnetostrictive micro-switch which is actuated by an applied magnetic field.

**Magnetostrictive micro-switch**

**Advanced Electromagnetic Analysis**

The gap between simulated result and measured result under high-frequency condition is mainly caused by the difference between 3D annotated model and real manufacture structure.
IntelliSuite V8.8 New Features

Parametric Analysis

Electrostatic Analysis for Comb Drive

Parametric Analysis flow for Comb Drive

Generate various FEM models according to parametric layer heights and loads

Edit parametric VB script for layout

Generate layouts according to parametric settings

View FEM results (X-displacement)

Frequency Analysis for Microvalve

Parametric Analysis flow for Micro-Valve

Generate various FEM models according to parametric layer heights and loads

Edit parametric VB script for layout

Generate layouts according to parametric settings

View FEM results (1st order frequency)
IntelliSuite V8.8 New Features

System Simulation

Noise Analysis Capability

Magnitude vs Frequency

Macro-Model of Microphone used for Noise analysis

SYNPLE TO VHDL

Pressure sensor in SYNPLE

VHDL Code

New Elements

New Magnetostrictive Elements

Microphone Element
Design, develop and fabricate for blue-chip companies and start-ups worldwide

Prototype and transfer MEMS-based components into production
TOTAL MEMS SOLUTIONS

IntelliSense
600 West Cummings Park Suite 2000
Woburn, MA 01801 USA
Tel : +1 781.933.8098
Fax : +1 781.933.8099
www.intellisense.com
sales@intellisense.com