**High Uniformity Metal Etch Solution**

**BOE Thermal Oxide Etch**
- 1.4% Uniformity
- 0.7% Uniformity

**NIR Concentration Control**
- HF concentration (%)
  - 1 week trend

**WIW, WTW & LTL Uniformity < 0.5 %**
- Si Etch Rate (um/min)

**Precision Etch**
- Consistent Results — < 1% WIW, WTW, LTL Uniformity

**Superior Control**
- Concentration Controls — Etch Rate Stability, NIR Based Monitoring

**Uniformity**
- Etch Control Through Advanced Hardware, Process Understanding & Software Execution

**Lower Cost, High Performance Etch**

*Etch Control through Advanced Hardware, Process Understanding & Software Execution*

Pattern metal machining through superior immersion system design utilizing integrated wafer rotation and precise micro bubble agitation for superior wetting and uniform etching of noble metal layer patterns, Si, SiO₂ and III-V materials.

**Consistent Etch Performance**
- Via closed loop process control
- Advanced tank designs and flow controls
- Integrated wafer rotation
- Rapid robot transfer to rinse in less than five seconds

**Etch Stability Concentration Control**
- Hyper accurate concentration Controls (ABB, Horiba, CI Semi)
- Hyper accurate spiking Capability (chemical & DI)
- Automatic compensation for losses due to consumption and evaporation

**Higher Throughput**
- Than single water or spray tools

**Lower Chemical Usage**
- Savings vary by application

**Proven Superior Etch Uniformity**
- 150mm–200mm
- Nobel Metal
  - Wafer to wafer < 2%
  - Within wafer < 2%
  - Lot to lot < 2%
  - Tank to tank < 1%
  - Si, Cu, CuAs, SiO₂ < 1%
  - Wafer to wafer < 1%
  - Within wafer < 1%

**Applications**
- III-V materials
- Metal pattern etch (2–5 um features)
- Nobel metals
- Cu and TiW etch
- Si etch
- SiO₂ etch

**No Contamination**
- Particle neutral at 0.12 µ
- Integrated Marangoni dryer
**Small Footprint**

- > 50% SMALLER Footprint

**State of the Art Single Wafer**

Immersion Tools Generally Have Much Smaller Footprints Than Comparable WPH Single Wafer Tools

**Increased Reliability**

- MTBF < 1500 hr (Semi E10)
- Avg MTTR < 1 hr
- Higher uptime > 95%
- Reduced scrap
- No complex wafer handling

**MEI Solves Key Issues with Spray Au Pattern Etch**

- Poor wafer to wafer uniformity
- Poor within wafer uniformity
- Rapid chemical depletion
- Short tank life and high chemical usage
- Low throughput per square foot
- Smooth metal coating with pretreatment step
- Etch residue removal

**MEI Platform Advantages**

- High performance, shared control system, shared facilities, smaller footprint

**Software Flexibility**

- User programmable configuration
- Recipes, speeds, chem control

**Automation**

- Rapid transfer from etch to rinse
- Agitation flexibility

**Reliability**

- Field proven designs

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**TruEtch**

**Etch Control Through Advanced Hardware, Process Understanding and Software Execution**

**IDX**

**Flexware**

**Process Control Software**

by MEI

**Superior Process Control**

- SECS/GEM compliant
- Recipe editor
- Advanced process controls
- Unlimited user/permission levels
- Easy-to-use, touch-screen interface
- Error logging and data graphing
- User programmable configuration
- Recipes, speeds, chem control
- Barcode reader compatibility
- Remote access compatible
- I/O monitor displays status

**Analog Control**

Analog sensing enables software to control:

- In-tank blending
- Blending ratio creation
- Control DI water inject
- Control temperature
- Recirculation flow
- Spiking volume

**MEI’s Award Winning Service and Support**

MEI Global Field Service Team

- Final test and verification
- Standard one year parts and labor warranty
- Two year optional warranty
- Full field service support, on-site warranty coverage
- On-site training provided