# Semcon® Fountain

## Advanced Electroplating Tool

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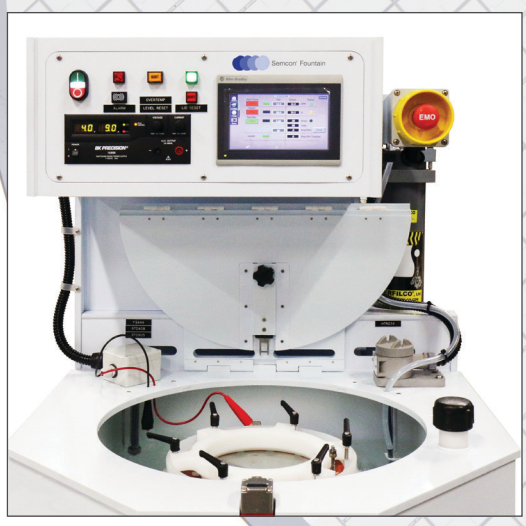
## Patented New Semiconductor Electroplating Tool for R&D and Low Volume Applications

The Semcon Fountain is the latest development in the highly successful Semcon series of wafer plating tools by Technic. Expanding on the popularity of the Semcon 1000 single wafer processing for R&D and small scale production, the Semcon Fountain offers more options and features with a patented chamber design and solution sparger that more closely resembles a full-scale production environment. The Semcon Fountain's unique design also orients the wafer in the more favorable horizontal position, mimicking most of the semiconductor mass production electroplating tools. The Semcon Fountain is capable of processing wafers up to 300 mm with specially designed wafer mounts.

Through the use of interchangeable wafer plating cups, fabricated to specific wafer sizes. Optimum plating results can be achieved by configuring the process for each application by adjusting the sparger, solution flow, shielding, and more. Each, diameter specific, wafer cup allows for maximum flexibility at a low cost by being able to run different wafer sizes using one plating cell.

The Semcon Fountain is ideal when setting up an electroplating process for the first time or when introducing a new metal plating bath to an already existing electroplating process.




## Features

- Can be used for several different applications on a variety of substrates including Si, GaAs, InP and others.
- The horizontal orientation of the wafer allows for ease of transition to a mass production fountain tool.
- Custom plating cups specific to wafer diameter results in optimized plating performance.
- Rotating sparger provides an ideal solution flow across a stabilized wafer.
- Self-contained with all components required for an electroplating system.
- Centralized controls and a touch screen PLC to store plating recipes.

## Benefits

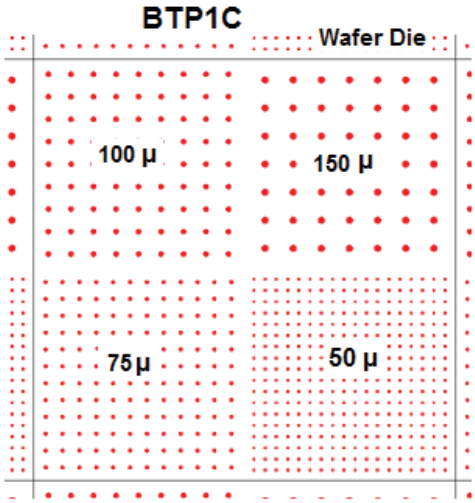
- Superior WID and WIW improves development and processing cost by reducing the amount of metal required per wafer. This is extremely beneficial when plating gold or other precious metals.
- Reduced cost of R&D by providing a versatile tool that can be used to develop and test process parameters that can be transferred to mass production tool.
- A self-contained, modular tool allowing for low-cost incremental expansion of plating capabilities from a single metal application to multiple metal stacks.
- Technic supplies a wide range of electroplating chemistries for the quick development of optimum process parameters.

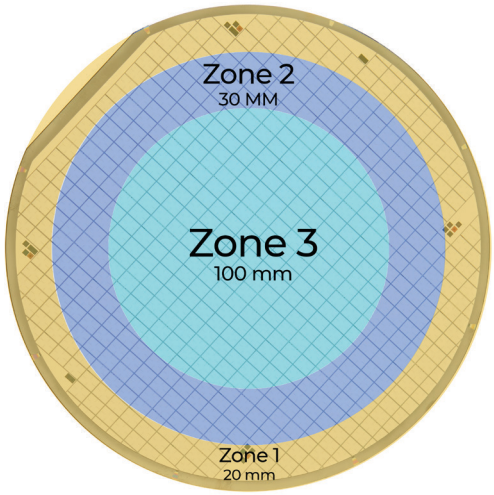
# Semcon® Fountain

## Copper Plating Data

Wafer Size: 200 mm
CD: 100 ASF
Features sizes: 50 and 150 $\mu$m pillars
Target thickness: 50 microns

The pattern on the wafer is composed of dies, which contain round features with 50, 75, 100 & 150 $\mu$m diameters. 50 and 150 micron features were used for comparison data to show extreme conditions. The image to the right shows the layout of the die.




| Zone 1 | |
|---|---|
| 150 µm | 50 µm |
| 54.0 | 51.4 |
| 54.0 | 50.9 |
| 53.7 | 51.4 |
| 53.3 | 51.3 |
| 55.2 | 52.2 |
| 53.3 | 52.1 |
| 53.8 | 52.1 |
| 50.5 | 47.3 |
| 54.6 | 52.4 |
| 54.2 | 51.5 |
| 53.1 | 50.9 |
| avg. 53.6 | 51.2 |
| max 55.2 | 52.4 |
| min 50.5 | 47.3 |
| COP, % 4.4 | 5.0 |

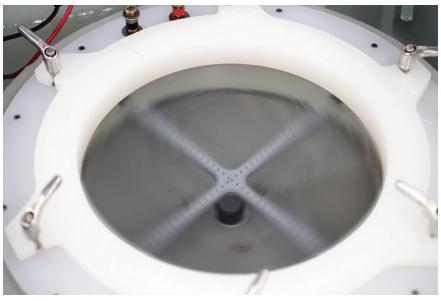
| Zone 2 | |
|---|---|
| 150 µm | 50 µm |
| 53.0 | 51.3 |
| 53.1 | 51.0 |
| 53.4 | 50.9 |
| 52.4 | 50.6 |
| 53.9 | 51.3 |
| 52.3 | 51.3 |
| 53.1 | 51.6 |
| 51.0 | 49.1 |
| 51.8 | 50.6 |
| 52.2 | 50.3 |
| 52.7 | 50.2 |
| avg. 52.6 | 50.7 |
| max 53.9 | 51.6 |
| min 51.0 | 49.1 |
| COP, % 2.8 | 2.5 |

| Zone 3 | |
|---|---|
| 150 µm | 50 µm |
| 52.1 | 52.0 |
| 52.6 | 50.8 |
| 53.2 | 51.4 |
| 51.6 | 50.4 |
| 50.3 | 49.6 |
| 52.0 | 50.5 |
| 50.2 | 50.0 |
| 51.7 | 51.0 |
| 50.4 | 50.4 |
| 52.1 | 51.8 |
| 52.1 | 51.0 |
| avg. 51.7 | 50.9 |
| max 53.2 | 52.0 |
| min 50.2 | 49.6 |
| COP, % 2.9 | 2.6 |

Additional optimization of the coplanarity across the wafer may be achieved through cathodic shielding, adjustments to the electroplating operating parameters and other methods.

## SEMCON® Fountain Specifications

| | |
|---|---|
| Wafer Size Capability | 100, 150, 200 and 300 mm wafer cups available |
| Plating Cell Construction | Plating Cell: Polypropylene and CPVC<br>Hardware: Stainless Steel and Titanium<br>Gasket: Silicon |
| Filtration | Pump: Polypropylene and CPVC wetted parts<br>10” DOE filter element (1 – 10 micron, customer replaceable)<br>15 GPM constant flow, closed loop flow control, central PLC process control |
| Heating | PTFE coated electric immersion, 2 hours heating from ambient to 60°C. (70°C max. temp.)<br>Centralized PLC process control and digital display<br>Optional hot water heating available |
| DC Power Supply | 18 VDC, 20 Amp CC/CV Switch mode |
| Anodes | Insoluble platinum-clad mesh anodes or Titanium mesh support for soluble anodes |
| Rinse Station | Optional |
| DI Water Consumption | 2 GPM (maximum) at 30 PSI for optional rinse station |
| Ventilation (Exhaust) | 6” connection, 500 CFM at 2” water column |
| Power | 208 VAC, single phase, 60 hz, 15 amperes |
| Overall Size | 43” L x 30” W x 64” H |
| Bath Volume | 60 liters |



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