ADVANCED™ VACUUM
A Plasma-Therm Company

Takachi ICP

INNOVATION ◆ EXCELLENCE ◆ PARTNERSHIP

ENABLING SUSTAINABLE SUCCESS

Advanced-Vacuum.com

Takachi ICP – The Most Reliable ICP Tool in the Lab

Advanced Vacuum provides an easily maintained platform for ICP plasma processing

Built for users with demanding and critical applications:

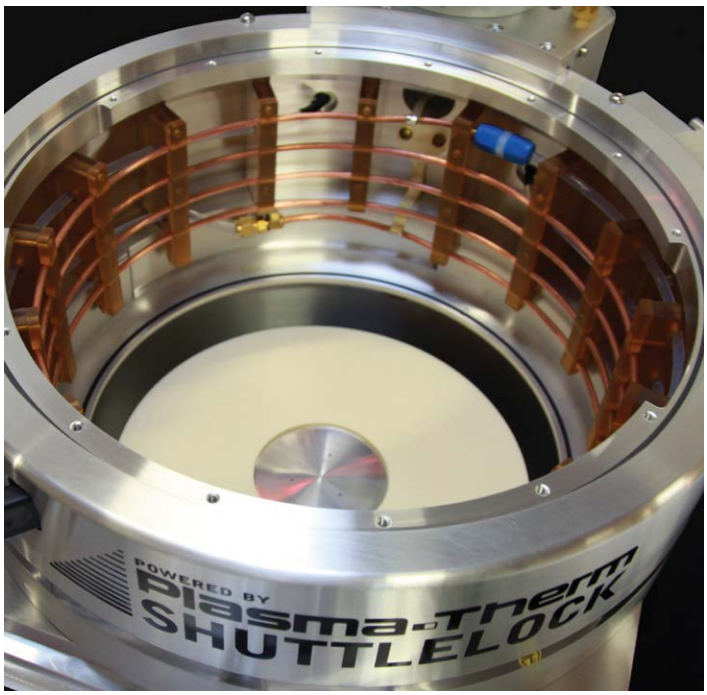
- R&D: Fundamental semiconductor and material science research (etching, surface modification)
- Failure Analysis/Yield Analysis: Critical quality assurance applications (delayering)
- Prototyping and Low Volume Production: Easily maintained, highly reliable with repeatable process results

Takachi ICP provides advanced etching solutions for a wide range of process applications:

- Metals (tungsten, titanium, inert metals, metal oxides)
- Dielectrics (oxides, nitrides)
- Polymers (resists, polyimides, BCB, SU-8)
- Semiconductors (silicon, germanium, and compound materials)

Reliability has made Takachi ICP a widely valued plasma tool at research institutions and R&D facilities.

- Incorporates Plasma-Therm's Shuttlelock® (SLR) reactor technology
- Push button control through unique load lock control panel
- Compact footprint (<1.0m^2) conserves valuable facility space
- Repeatable and uniform in-wafer and wafer-to-wafer performance
- Stable process environment with isolation load-lock
- Simple and fast wafer size changes: 2" (50mm) to 8" (200mm)
- Dependable handling: tested with 50,000+ cycles
- Wafer temperature regulation with backside helium
- Easy access construction for expedient service and maintenance
- Quick removal of chamber components for cleaning or swap
- Convenient access to ICP source for periodic open-chamber cleaning
- Strategically placed viewports for endpoint detection



ICP Source (with spool removed)

Productivity Enhancements

- **Process Library:** Takachi ICP systems come with a well-developed process library
- **Endpoint Detection:** OES endpoint technology optionally available
- **Data Logging:** Collection of all process review and analysis
- **Best-of-breed (Tier 1) OEM components:** Standard off-the-shelf for fast parts availability and efficient maintenance

User friendly Cortex® control system

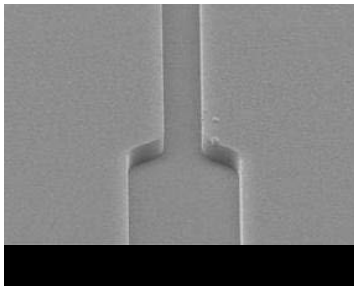
EndpointWorks® graphical user interface

Plasma-Therm's proven Shuttlelock® (SLR) technology now in a much smaller footprint with updated controls

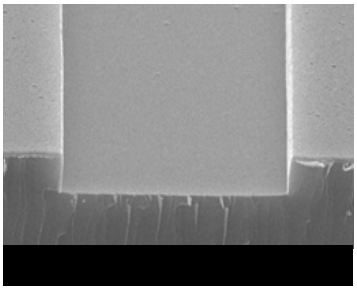
- Industrial PC-based, Cortex® control system
- DeviceNet digital communications
- Alarm history
- Multiple user access levels
- Real-time process data display
- Easy and safe maintenance screens

Advanced process control with integrated EndpointWorks® technology ensuring quality, reproducible results

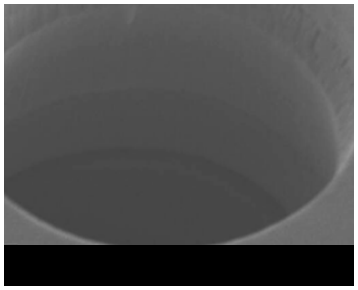
- Endpoint on multi-layer stacks
- Achieve target etch depths
- Run-to-run repeatability (< ± 2% variation w/Endpoint)
- Optical Emission Spectroscopy (OES)
- System-based inputs such as RF match positions, throttle valve position



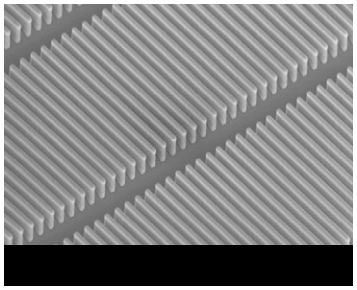
SiO_2



Si_3N_4



SiC

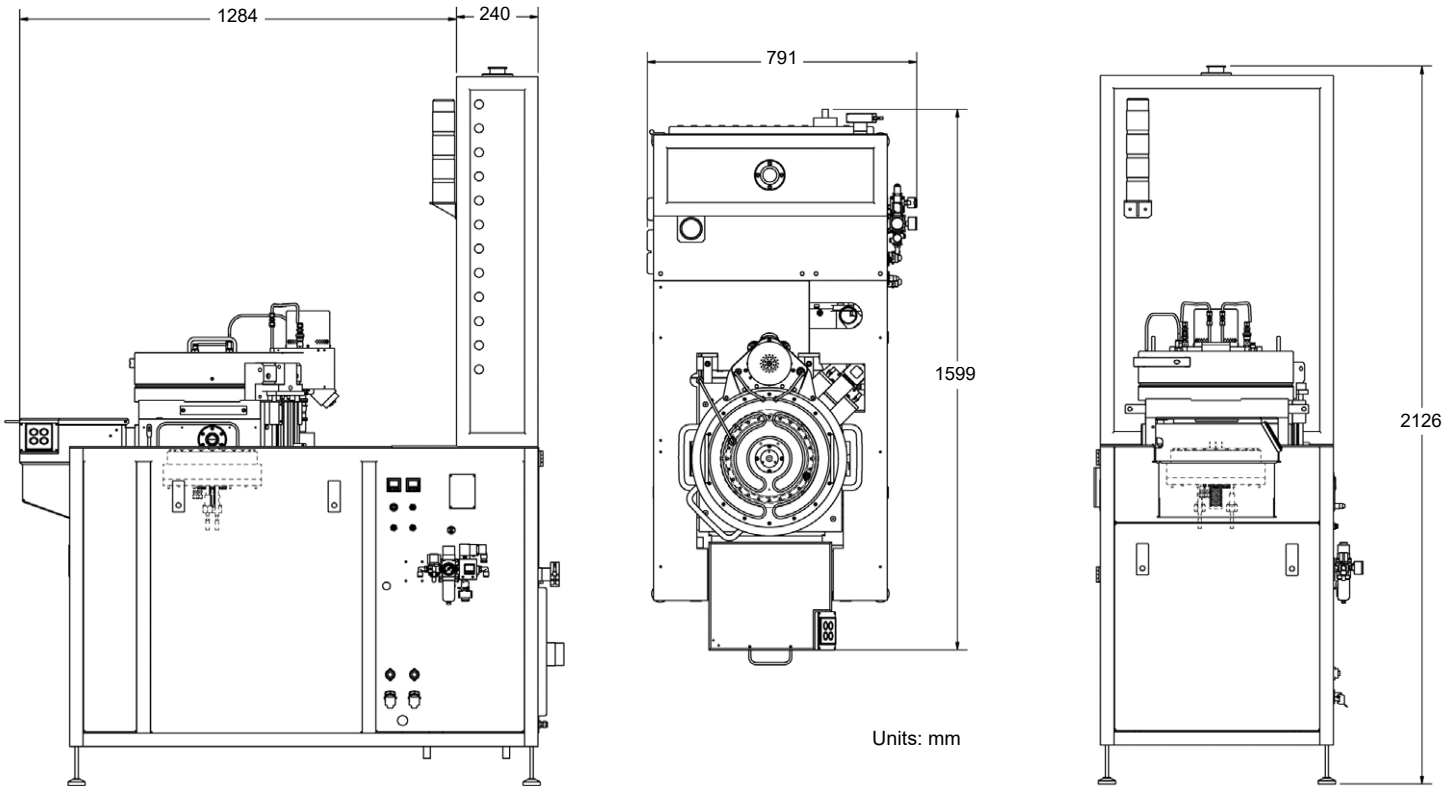


InP

Takachi ICP System Specifications

ICP Source Inner Diameter	12.6” (320mm)
ICP Source RF Package	1kW, 2MHz (2kW, 2MHz optional)
Standard Electrode Size	10” (254mm)
Lower Electrode Temperature Ranges	+5˚C to +40˚C, -150˚C to +350˚C (LN_2) -10˚C to +60˚C, -20˚C to +170˚C, -40˚C to +170˚C, -20˚C to +250˚C, and -40˚C to +250˚C
Lower Electrode Material	Monel with interchangable aluminum feature plate
Lower Electrode RF Package	300W, 13.56MHz (600W, 13.56MHz and 600W, 40MHz optional)
Vacuum Train	1300 l/s, heated turbo pump with mag-lev bearings optional
Chamber Base Pressure	≤3.0 x 10e-6 Torr
Pressure Control	Automatic, 0 to 100 mTorr
Gas Enclosure	10 channel capable (12 channel optional) 4 channels with Digital MFCs included (additional channels optional)
Control System	Industrial PC-based architecture with Cortex® system software
Power Requirements	50A @ 208VAC, 3Ø, 50/60Hz or 40A @ 400VAC, 3Ø, 50/60Hz optional
Dimensions Height	206.0 cm with gas box mounted on system
Depth	138.7 cm
Width	68.5 cm
Install Configuration	Ballroom (Bulkhead optional)
Additional Options	Optical Emission Spectroscopy (OES) endpoint detection Laser (reflectance, interferometry) endpoint detection Independent load-lock pumping Heated chamber walls, Heated vacuum foreline Electrostatic chuck (ESC) Cryogenic etching
Wafer Loading	2”/50mm - 8”/200mm single wafer

System frame base footprint



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