

Ci Cluster Tool

Data Sheet

Overview

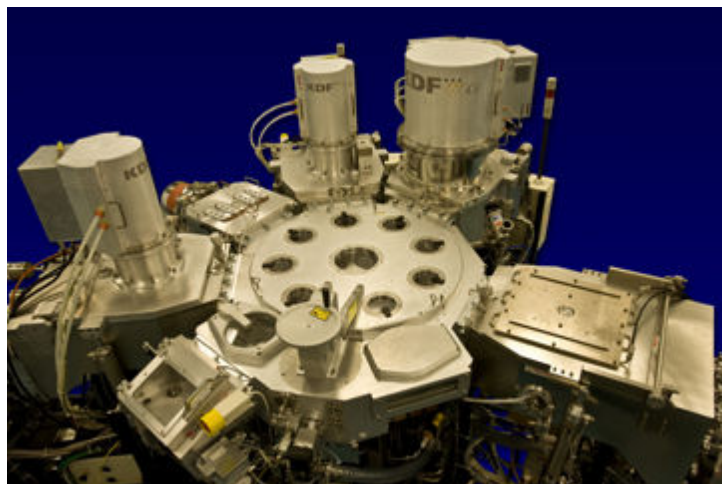
The Ci Cluster Intelligence platform is a modular cluster tool designed for compound semiconductor, DWDM component, MEMS, MOEMS, sensor, nanotechnology, and advanced packaging applications using substrates up to 200 mm. Available in four-sided and eight-sided configurations, the system uses Brooks Marathon Series vacuum handling and can be configured with the process modules required for the application.

Details

The Ci platform supports configurable sputter, tri-sputter, degas, etch, load, and unload modules around a central wafer handler. Systems can be populated according to process requirements, with module options for high-rate sputtering, substrate heating, reactive gas delivery, etch processing, automated pumping and venting, and cassette-to-process wafer transfer. Custom wafer carriers are available when required, and systems can be configured for 4", 6", or 8" wafers as ordered.

Key features

- Four-sided or eight-sided cluster tool configurations
- Central wafer handler architecture with load and unload center configurations
- Brooks Marathon Series vacuum handling
- Configurable sputter, tri-sputter, degas, and etch process modules
- Substrate handling for wafer sizes up to 200 mm
- 4", 6", or 8" wafer configuration as ordered
- Optional custom wafer carriers for application-specific processing



System hardware & controls

Shared platform hardware and controls may include:

- Stainless-steel chamber assemblies with quick-change shields
- Stainless-steel rough, regen, and foreline valves
- Nupro vent valves
- Water-cooled chamber top plates
- MKS pendulum throttling gate valves
- MKS mass flow controllers
- MKS manometers and combo gauges
- CTI cryogenic pumping
- Automated chamber recovery, auto pump, and auto vent
- Rockwell PLC controls with integrated brick PC
- KDF cryo temperature readouts with setpoints
- 24 VDC water on/off valving with safety water leak detection
- EtherNet/IP run air manifold
- System and personnel safety interlocks, where applicable



Available Ci modules

Ci S Sputter Module

- 12" rotating circular magnetron cathode
- RF or DC operation
- Advanced Energy 10 kW DC power supply
- Upstream or downstream gas capability
- Automatic shutter for pre-sputter mode or target clean
- MKS single-gas MFC, 200 sccm
- MKS 627 100 mt manometer
- Plasma viewport assembly
- Backside lift pin pedestal design for wafer entry and extraction

Ci S Tri-Sput Module

- Three 3" sputter guns
- Dedicated RF 600 W power supply for each gun
- Multi-source sputtering capability within the Ci cluster platform
- Upstream or downstream gas capability
- Automatic shutter for pre-sputter mode or target clean
- MKS single-gas MFC, 200 sccm
- MKS 627 100 mt manometer
- Plasma viewport assembly
- Backside edge lift pin pedestal design for wafer entry and extraction

Ci D Degas Module

- Compact aluminum chamber design
- Manual lift top plate with gas-assist cylinders
- Heated PBN/PG backside heater element
- Substrate heating up to 1000°C
- PLC-based PID heater control with PWM phase control
- MKS 999 RS485 combo gauge
- CTI 8F cryopump
- Stainless-steel gate valve
- Backside edge lift pin pedestal design for wafer entry and extraction

Ci E Etch Module

- KDF BMC band magnetron etch cathode
- High-rate, low-damage ion bombardment of the substrate
- Advanced Energy 3 kW RF power supply
- Osaka mag-lev turbo pump with dedicated dry pump backup
- Three-channel MKS gas flow control
- MKS pendulum throttling gate valve
- CTI inline water pump before the turbo
- Water-cooled chamber top plate and counter magnet assembly
- Automatic top plate hoist
- Backside edge lift pin pedestal design for wafer entry and extraction

Module options

	Ci S Sputter	Ci S Tri-Sput	Ci E Etch
MKS second and third gas channels	✓	✓	
AE Pinnacle Plus DC Power supply **	✓	✓	
AE Dressler 3kW RF option (replaces DC supply)	✓		
Heated platen anode pedestal for temperatures up to 1000 degrees C	✓	✓	✓
Rotating anode 0 to 60 rpm	✓	✓	✓
CTI Onboards Cryo pumps	✓	✓	
RF bias operation	✓	✓	
Al shield kits for Ti W dep	✓	✓	