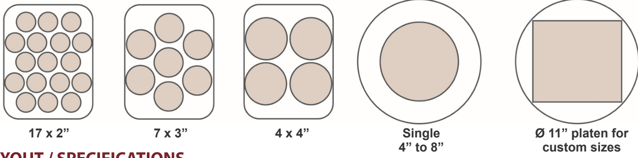
FLEXIBLE SUBSTRATE LOADING CONFIGURATIONS

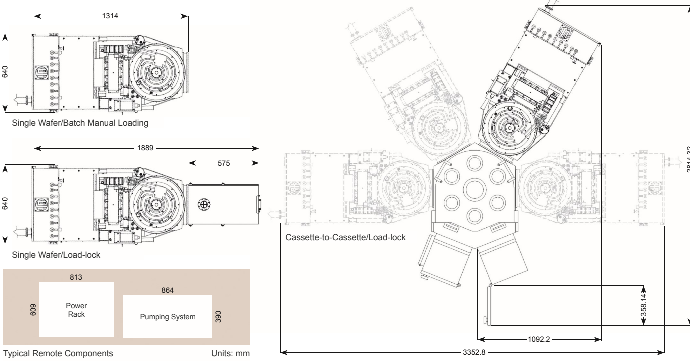


LAYOUT / SPECIFICATIONS

Processing Temperatures	80°C to 350°C
Electrode Size	11” (279mm) diameter
Loading	Manual, load lock or cassette
Control System	ControlWorks™ based (with data logging)
Pumping	Roots blower
Gas Lines	Up to 8 channels

Endpoint Detection	Optical Emission Interferometry (OEI) Optical Emission Spectroscopy (OES)
RF Power Supply	Dual range 60/600W 13.56 MHz Optional 2kW 13.56 MHz 2kW 2MHz ICP (only with HDP-CVD)
Power Requirements	200-230V, 50/60 Hz
Certifications	CE, SEMI-2, S8

FLEXIBLE HANDLER CONFIGURATIONS



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VERSALINE leverages modularity and flexibility from R&D through production with upgradability

VERSALINE® PECVD

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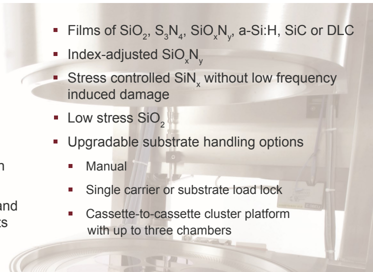
VERSALINE Sets Performance and Flexibility Standards for Rapidly Changing Specialty Markets from R&D through High Volume Production

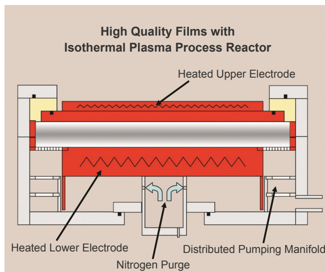
A wide variety of dielectric films can be deposited both parallel-plate and high-density plasma deposition systems. Film thickness, composition and stress control, as well as excellent uniformity are easily managed through a wide range of process chemistries and parameters.

- Maximized productivity and low cost of ownership
  - High uptime (>90%)
  - Fast deposition rates
  - Fast chamber clean rates (etch-back)
  - Large batch sizes
- Flexible batch or single wafer processing on 279 mm (11") electrode
- Easy handling of non-standard substrates and carriers is ideal for R&D and special projects
- Small footprint minimizes cleanroom costs



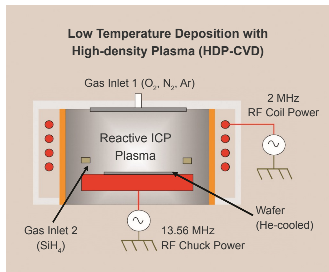
- Films of SiO_2, S_3N_4, SiO_xN_y, a-Si:H, SiC or DLC
- Index-adjusted SiO_xN_y
- Stress controlled SiN_x without low frequency induced damage
- Low stress SiO_2
- Upgradable substrate handling options
  - Manual
  - Single carrier or substrate load lock
  - Cassette-to-cassette cluster platform with up to three chambers

High Quality Films with Isothermal Plasma Process Reactor



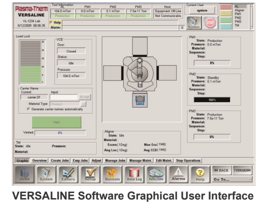
- Low maintenance
  - Shorter clean cycles with small plasma volume
  - Low particulates with better film adhesion to chamber walls and showerhead
  - Cleaner internal chamber components using nitrogen purge
  - Faster chamber cleans with optional 2kW RF Supply
- Enhanced uniformity with distributed gas

Low Temperature Deposition with High-density Plasma (HDP-CVD)



- Efficient independent control of ion flux and ion energy
- Minimize ion damage
- Efficient trench fill capability
- Enhanced step coverage
- Improved film density at T≤150°C

- Demonstrated robust software on installed production systems
  - User friendly ControlWorks™- based software
  - Comprehensive data logging
  - Automated clean programming
  - Real-time process data display
  - Fully integrated with endpoint system
  - Factory automation compatible (SECS/GEM)
  - Edit recipes during runs
  - Multiple user access levels
  - Alarm history

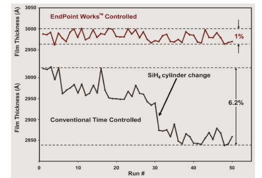


VERSALINE Software Graphical User Interface

EndPointWorks™ Graphical User Interface

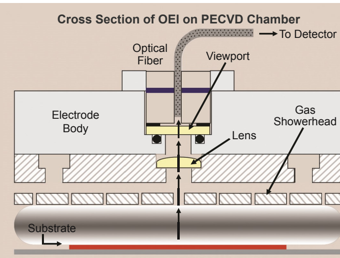
- Advanced process control using Plasma-Therm unique EndpointWorks™
  - Real time deposition rate monitoring
  - ± 1% repeatability with real time thickness monitor
  - Optimized plasma clean processes
- Highly uniform within wafer and wafer-to-wafer films
  - ± 2.5% film thickness uniformity within wafer
  - ± 2.5% film thickness uniformity wafer-to-wafer

- Process control of target film thickness
  - Optical Emission Interferometry endpoint (OEI)
  - Film thickness reproducibility demonstrated to compensate variability of production environment
  - Data shows film thickness consistency even with source gas cylinder change



Run-to-Run Repeatability

Cross Section of OEI on PECVD Chamber



- Patented OEI endpoint system
  - No alignment needed
  - No laser to adjust
  - Higher resolution of thin-films than laser
  - Dual purpose: OEI and OES

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