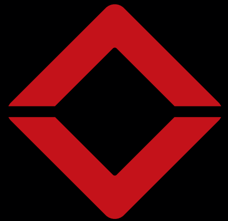


ADVANCED™ VACUUM
A Plasma-Therm Company

Vision 310 PECVD

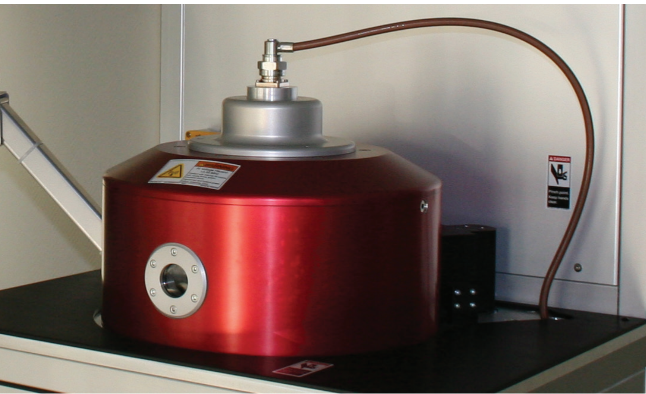
INNOVATION ◆ EXCELLENCE ◆ PARTNERSHIP

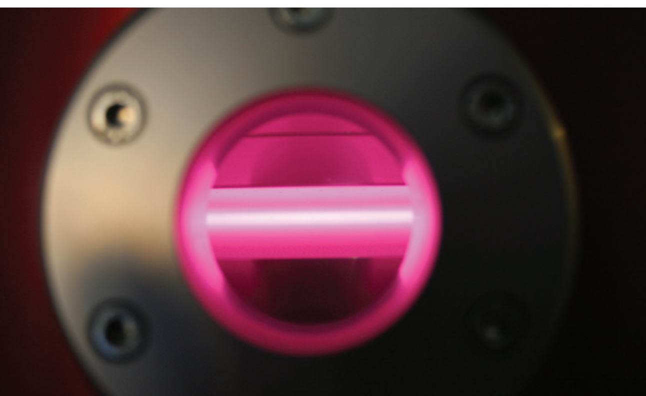
ENABLING SUSTAINABLE SUCCESS

Advanced-Vacuum.com

Vision 310 PECVD – Innovative Design and Construction

Vision systems provide a flexible, highly reliable, and economical platform for fundamental plasma deposition processing





Elegant design and construction has made the Vision highly valued by many prominent research institutions and Fortune 500 companies

- Field proven with reliable proprietary technology
- Simple, robust, and intuitive operation and maintenance
- Compact footprint (<0.6m^2) conserves valuable facility space
- Repeatable and uniform in-wafer and wafer-to-wafer performance
- Large (280mm) platen and easily accessible manual loading for standard and non-standard substrates

Vision PECVD configurations are fully characterized for a wide range of deposition processes:

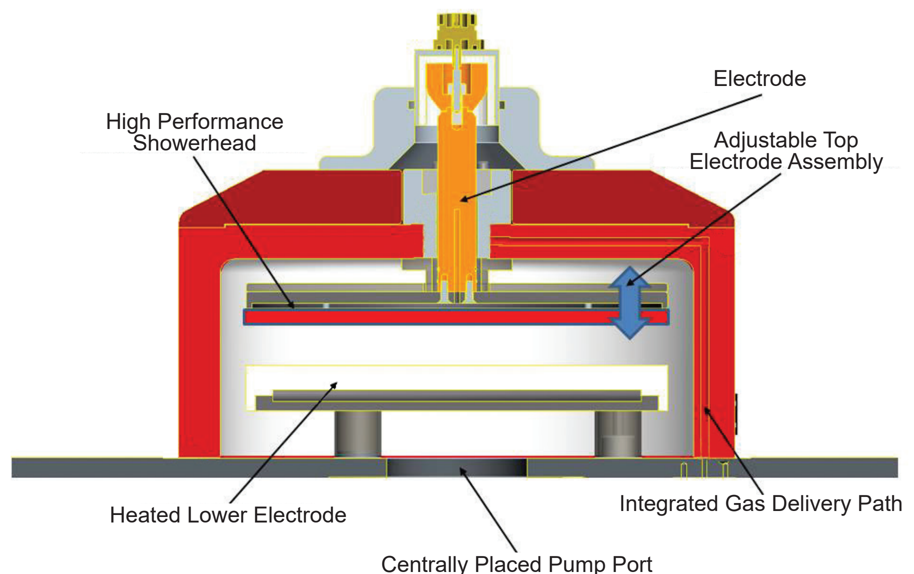
- a-Si:H
- SiO_2
- Si_3N_4 (stress control)
- SiON
- SiC

Built for users with demanding and critical applications

- R&D – Fundamental semiconductor and material science research for thin film deposition
- Prototyping and Low Volume Production – economical solutions

Easy access for outstanding ease of service and maintenance

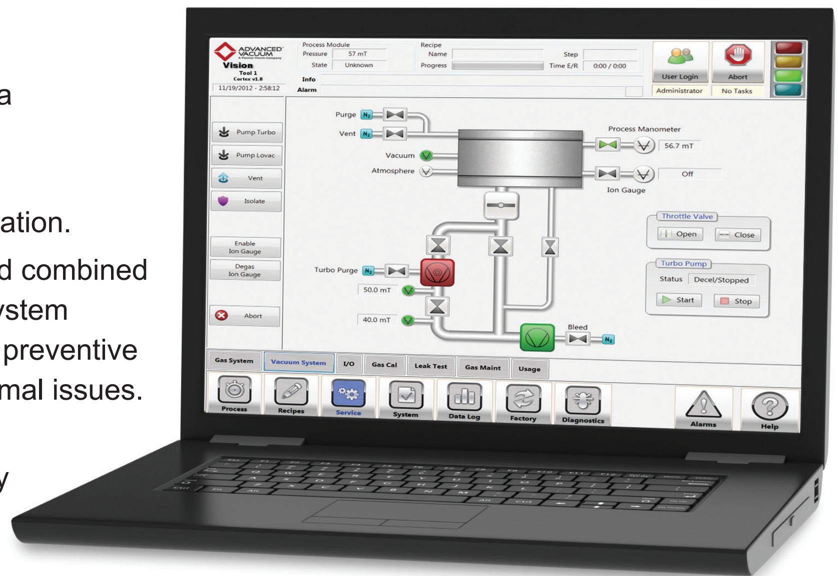
- Allows quick removal of chamber components for cleaning or swap
- Minimized maintenance intervals
  - Shorter clean cycles with small plasma volume
  - Low particulates
- Innovative showerhead design for highly uniform gas delivery
- Only un-doped depositions possible
- Stress control of Si_3N_4 achieved by using mixed-frequency deposition or low-damage He dilution
- N_2O/SF_6 etch back process (high rate when using low frequency)
- Showerhead-to-substrate distance is adjustable, accommodating non-standard substrates



Cross section of Vision 310 PECVD chamber

Productivity Enhancements

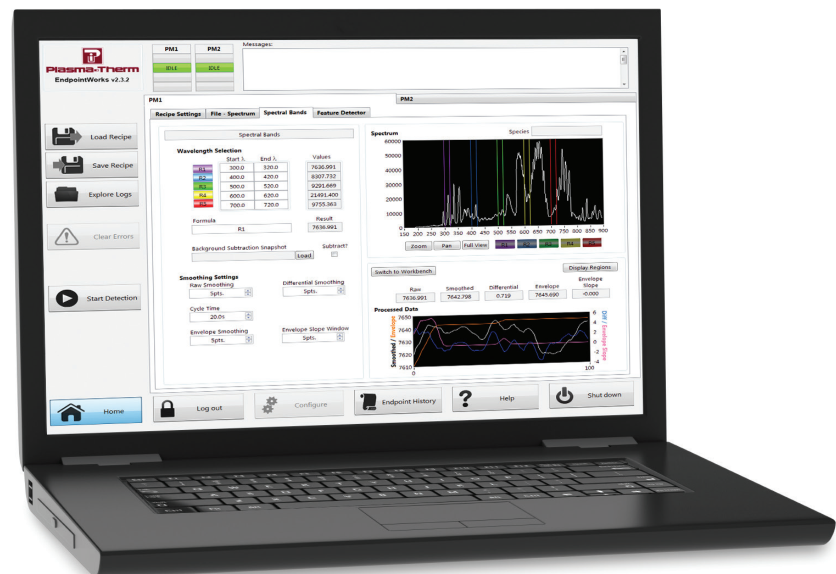
- **Process Library:** Vision systems come with a well-developed process library.
- **Data Logging:** Simplified data collection for sharing process monitoring and recipe information.
- **Factory Communication:** When enabled and combined with advanced self-diagnostic features, the system communicates status to the factory, assisting preventive maintenance scheduling and detecting abnormal issues.
- **Best-of-breed (Tier 1) OEM components:** Standard off-the-shelf for fast parts availability and efficient maintenance.



Cortex® graphical user interface

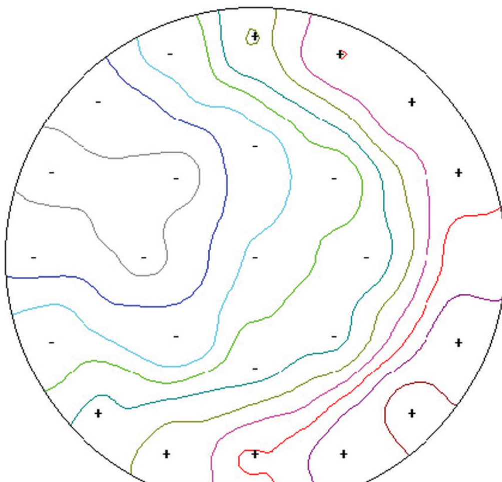
Proven open load system installed worldwide at leading universities and facilities

- User-friendly graphical control system
- Digital communication using DeviceNet
- Data logging and recipe management through open SQL Server environment
- Alarm history, on-the-fly recipe control
- Real-time process data display
- Easy and safe override maintenance screens
- Multiple user access levels



Endpoint system available for in-situ chamber clean (OES) using EndpointWorks®

Deposition uniformity



Nanospec / AFT - Contour Map

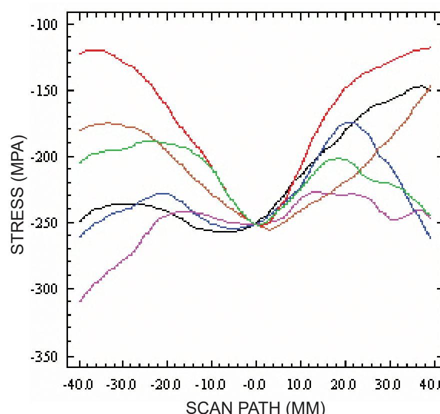
Program: SiO_2 on Si 25pt
200mm - 3mm edge exclusion

STATISTICS	
No of Data:	25
Min:	3733.8
Max:	3827.0
Range:	93.2
Mean:	3774.86
SD:	28.87
3SD:	86.62
% 3SD:	2.29%
%Range:	1.23%
%MinMax:	1.23%

Mixed-frequency stress control capability

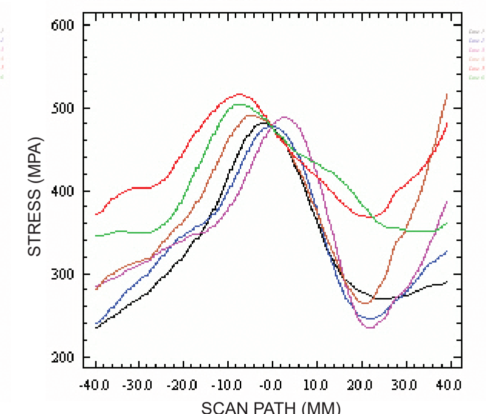
Tensile

LOCAL STRESS ALONG THE SCAN PATH
Wafer ID: Si_3N_4 - whole wafer scan
Wafer 4, Scan 2, laser:780, cassette: 101712R



Compressive

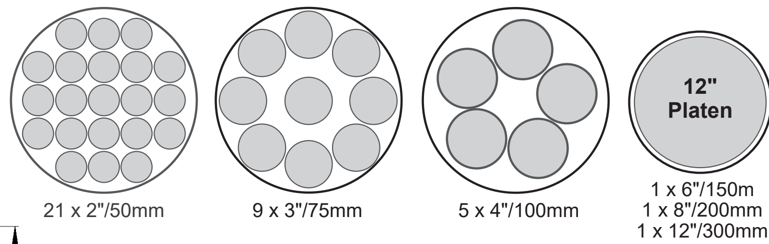
LOCAL STRESS ALONG THE SCAN PATH
Wafer ID: Si_3N_4 - whole wafer scan
Wafer 5, Scan 2, laser:780, cassette: 101712R

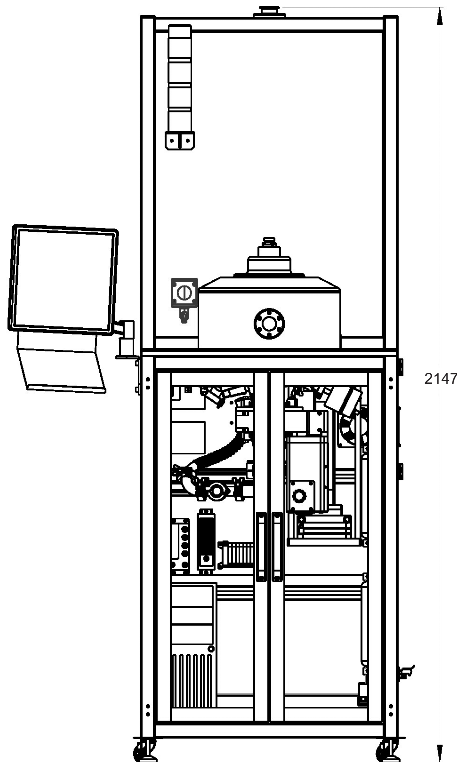


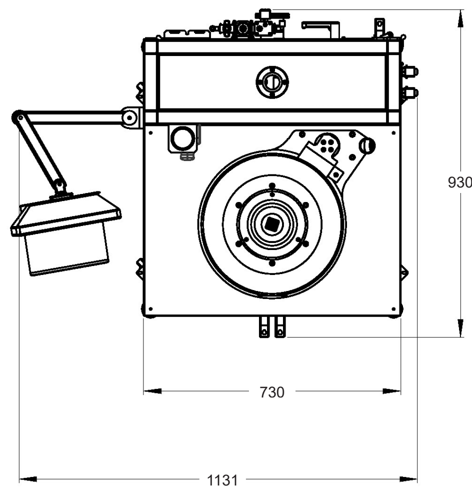
Vision 310 PECVD Specifications

Electrode Size	12" (305mm) diameter
Electrode Temperature	≤380°C
Electrode Material	Aluminum
Upper Electrode RF Power	Capacitive, 300W power supply, 13.56 MHz
Vacuum Pumping	10,000 L/m Dry Backing Pump Package
Base Pressure	≤10 m Torr
Pressure Control	Automatic, 0 – 1 Torr
Gas Lines	5 channels standard with Digital MFCS, up to 10 or 12 channels total
Control System	Industrial PC-based architecture with Cortex® system software
Power Requirements	40A @ 200/208 V, 60 Hz, 3 phase 35A @ 380/400 V, 50 Hz, 3 phase
Dimensions Height Depth Width	117.2 cm (214.7 cm with gas box mounted on system) 93.4 cm 73.0 cm
Options	Mixed-frequency stress control option for SiNx (500W 100-460 KHz) Endpoint: Optical Emission Spectroscopy (OES) Dry backing pump Additional gas lines (up to 12 total) Chamber wall heater Industrial communication SECS/GEM

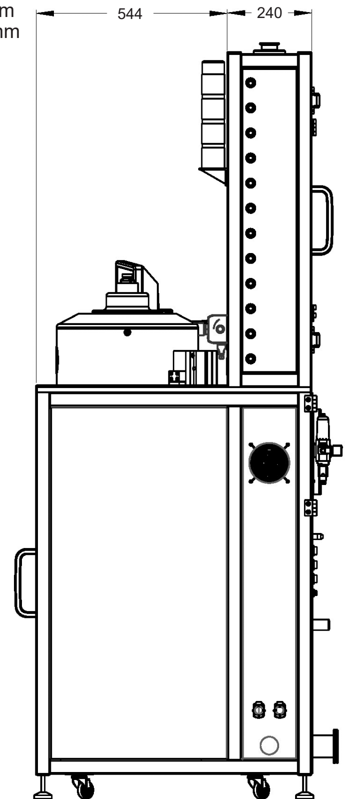
Flexible Substrate Loading Configurations







Units: mm



AV-310_2019-0627

ADVANCED VACUUM™
A Plasma-Therm Company

10050 16th Street North ◆ St. Petersburg, FL 33716 USA
+1(727)577-4999 ◆ sales@plasmatherm.com