

Vision 310 Mk II

Open load plasma enhanced chemical vapor deposition



The solution

Advanced Vacuum develop and supply frontline technologies plasma etch and deposition equipment. The systems developed and manufactured by Advanced Vacuum are crucial instruments in the advancement of technology as well as cost effective pilot production solutions for demanding processes.

The Vision 310 Mk II PECVD is an excellent choice for research, pilot or low volume production. Advanced Vacuum has built an excellent reputation for expertise and product quality in plasma enhanced chemical vapor deposition, and this pedigree has been incorporated into the Vision 310 Mk II PECVD system to provide a system capable of developing the future deposition technologies.



The Vision 310 Mk II PECVD system has been designed and built for users with the highest of demands. Every product and detail in the system has been carefully considered. The resulting system is a compact and extremely versatile system, operating with a easy to use human machine interface.

The components used in the systems (RF power supplies, vacuum pumps, mass flow controllers, vacuum gauges, valves etc.) are best of breed components, ensuring the highest performance and repeatable and reliable operation.

The Vision 310 Mk II PECVD system is fully characterized for a wide range of deposition processes including (but not limited to) :

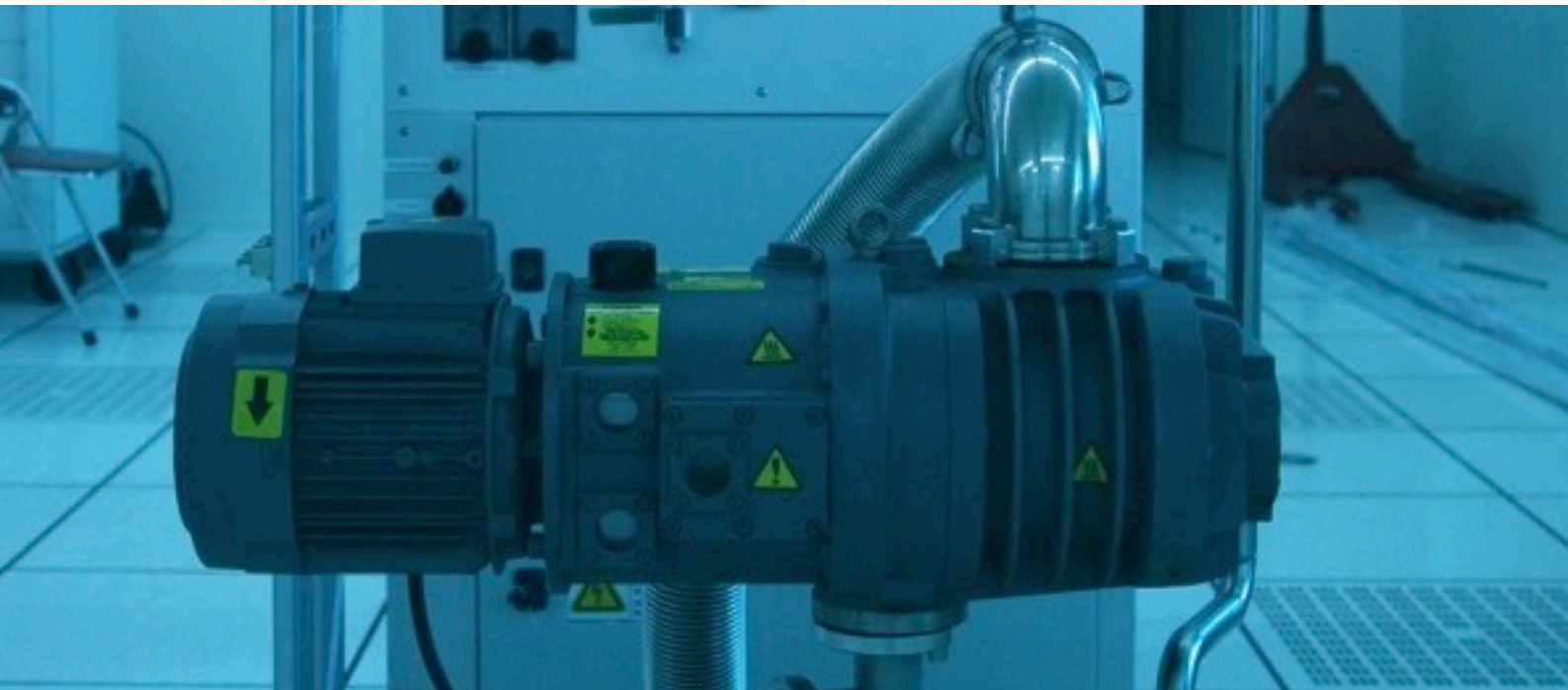
- SiO_2
- Si_3N_4
- SiON
- SiC
- Amorphous Si

Optimized

The high conductance pumping port, and close coupled pressure regulation valve (located centrally below the wafer plate) ensures high pump speeds and a broad operating pressure range. The symmetrical aluminum chamber and the short gas path provide an optimum operating environment for a wide range of processes. The substrate table is temperature controlled (30°C to 380°C) to ensure deposition uniformity and re-

platform operator and machine safety are our highest priority. We have used the highest quality components in combination with our intuitive human machine interface to ensure operator and machine safety at all times.

Intrinsically safe software and hardware interlocks ensure that the highest demands regarding safety are met.



producibility of the process. All these parameters ensures that the Vision 310 Mk II PECVD system provides world leading performance.

Incorporating proprietary technology from our mother company, Plasma-Therm further enhances the performance of the system, and adds analytical tools that were previously only available on larger production type equipment (in-situ deposition speed analysis).

During the development and continuous improvements incorporated into the

Versatile

The Vision 310 Mk II PECVD system is a very flexible and versatile system.

The system software has been designed with the future in mind. You don't have to be a computer expert to understand and operate the Vision 310 Mk II PECVD system. All our Vision plasma systems are based on the same human machine interface, which is configurable to reflect the system it is installed on. This ensures

All logged data adheres to the strict standard ANSI-ISA 88 which ensures traceability throughout the lifetime of the system. The systems operate with an open SQL database, making it possible to develop internal queries to extract data for production control and/or tool performance control.



that the software delivered is robust and reliable, and decreases training time for operators and users due to the commonality between products.

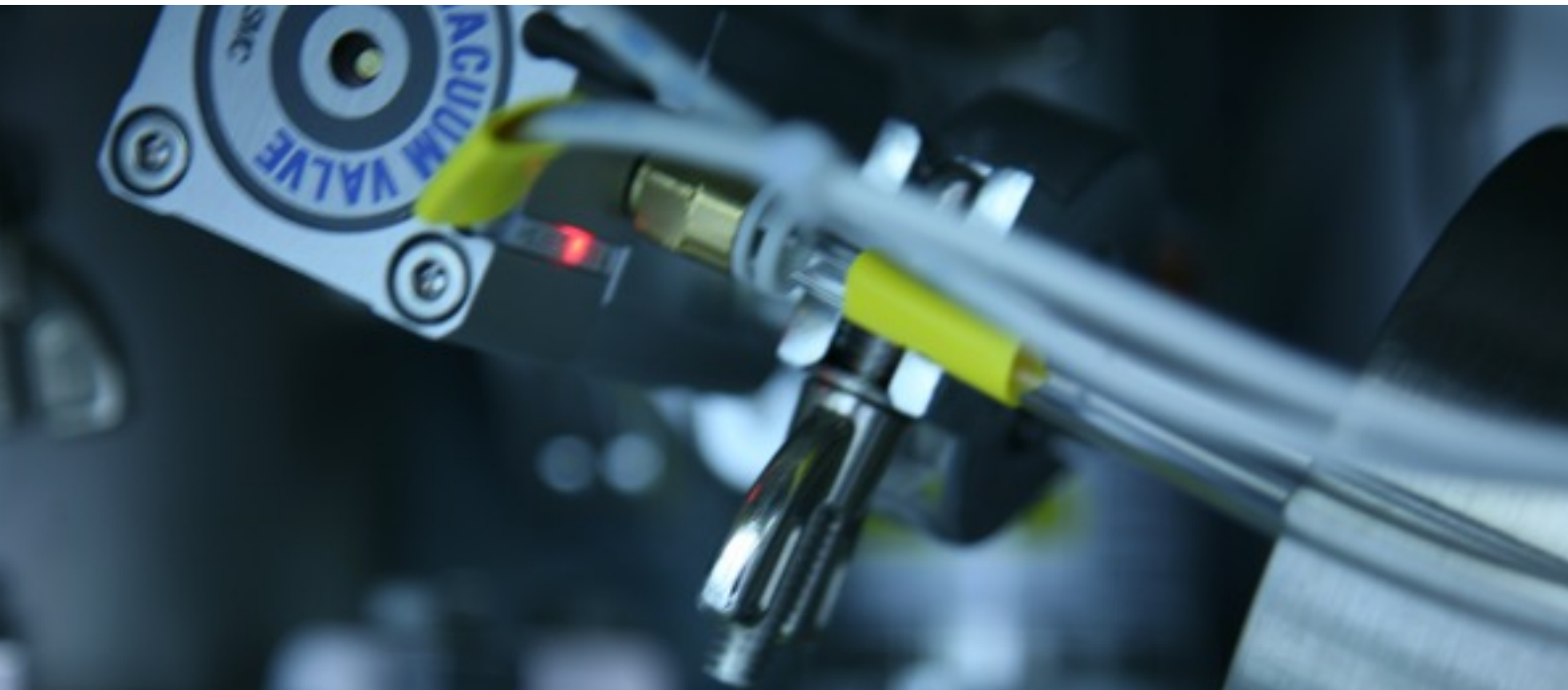
Our human machine interface operate under Windows XP and it provides a level of automation and user friendliness that exceeds any requirement of today. The system offers virtually unlimited process recipe storage and logging capabilities. The system is of course networkable, making it possible to monitor or run from a remote position within our outside of your organization.

Innovation

Advanced Vacuum has a long experience of performing service and field upgrades of plasma etch and deposition equipment. This experience has been transferred into the Vision 300 platform.

The Vision system platform is based on robust field bus technology. The field bus we currently use is the DeviceNet field bus. The field bus means that we communicate digitally rather than analog

component. For example, through some components on the field bus we can monitor the voltages within the system, as well as ambient temperatures. This allows our tool management software (ToolMail) to alert us if any key parameters are going out of compliance, ensuring that we can react proactively to a problem.



with most components on the system. This ensures repeatability and most importantly accuracy. It also makes the system aware of the components installed, and as such the system can detect a new mass flow controller, or a new RF generator. Another important aspect is also that the amount of cabling inside the system is heavily reduced.

The field bus concept also allows us to develop innovative software and hardware solutions, taking full advantage of the built in features of each

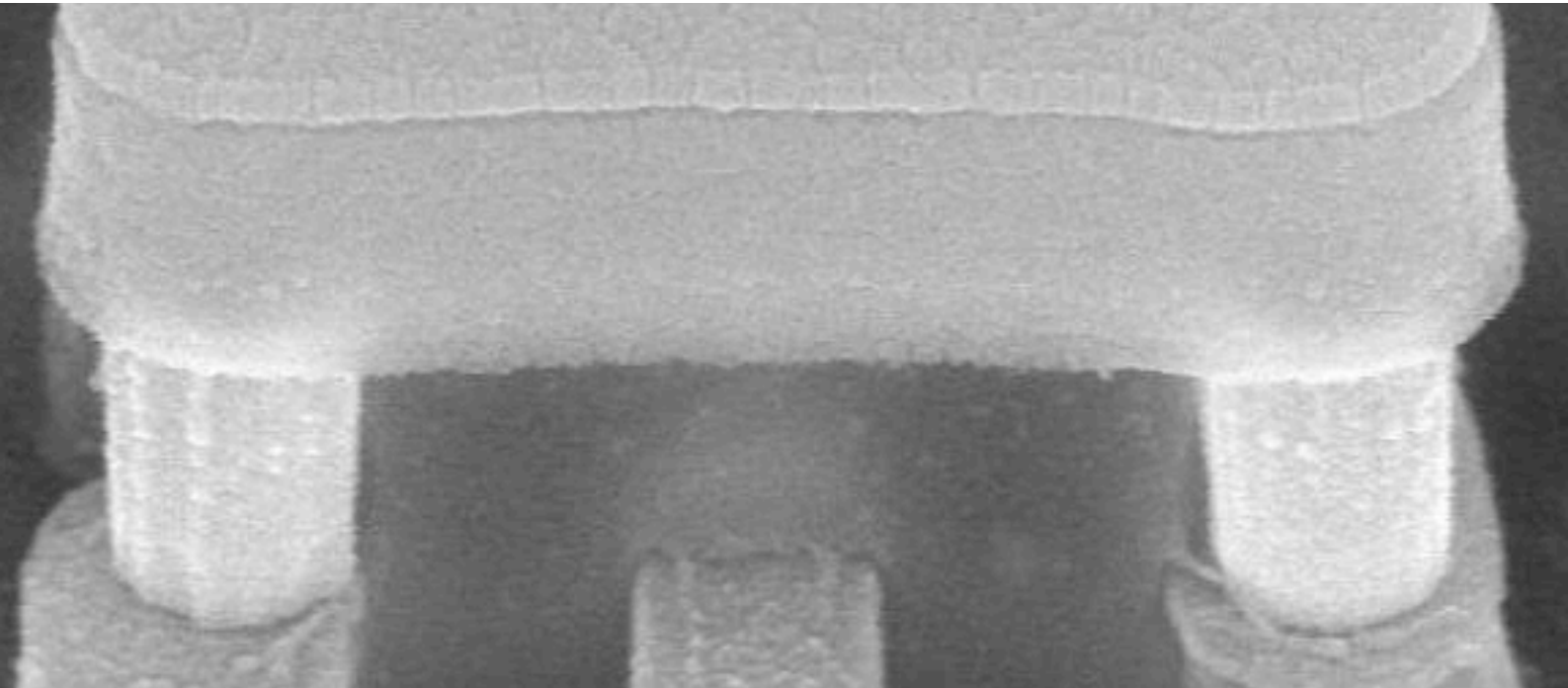
Applications and support

Our plasma technologies addresses a large number of applications, both old and new requirements.

Historically our systems have been installed at a large number of academic institutions world wide. In addition to this our systems are being used all over the world in corporate R&D functions as well as in government research laboratories.

The areas of application is wide. Ranging

Being a part of the Plasma-Therm group gives us access to a long history of manufacturing reliable production machines and the in-depth experience in meeting customers precise process specifications. Processes developed on the Vision platform are transferable to the Plasma-Therm production platform of tools making them the ideal research and development systems as well as pilot production units.



from research and development relating to renewable energy to pilot production of LEDs.

Some key areas of application are

- Failure analysis (production)
- Yield analysis (production)
- NEMS/MEMS technologies
- Compound semiconductors
- Advanced packaging
- Optoelectronics/photronics research

Through a world wide network of Plasma-Therm service centers and agents throughout Europe, Asia and the US our equipment is supported. This means access to trained service engineers locally, as well as consignment stocks. This ensures access to service assistance in your normal working hours and rapid response to spares requirements.

Plasma source

Plasma coupling	Capacitive
Excitation frequency	13.56 MHz
Maximum power	300W
Options	Remote plasma

Substrate table

Max substrate size	280mm
Material	Aluminum
Cooling	Indirect air cooling

Pressure control

Range	0-1 torr
Control	Automatic

Gas cabinet

Gaslines	5 as standard (up to 10)
MFC	Digital, metal sealed
Safety interlocks	Software and hardware
Installation	Onboard or remote
Isolation valves	Upstream and downstream
Flush capability	Standard on toxic/flammable

Vacuum system

Roots package	250 m ³ /h standard
Pumping line	ISO 63
Backing pump	40 m ³ /h standard

Control system

Control system	PLC
Fieldbus	DeviceNet
Control computer	Industrial PC
Control OS	Windows XP/Windows 7

Physical dimension

Height (gasbox onboard)	1172 mm (2147mm)
Depth	930 mm
Width	730mm

Wafer capacity

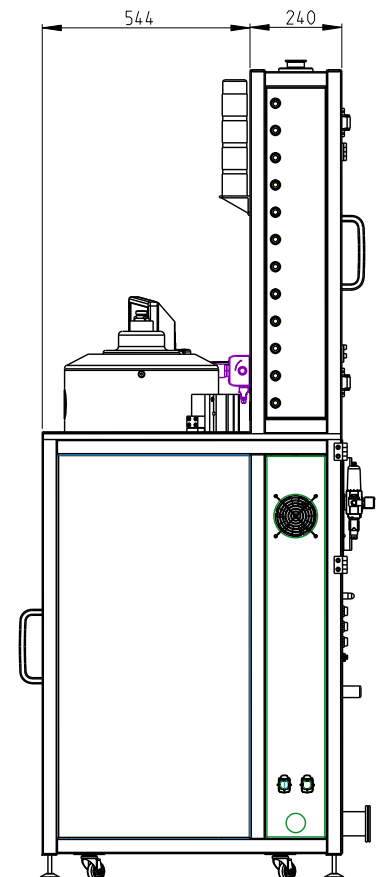
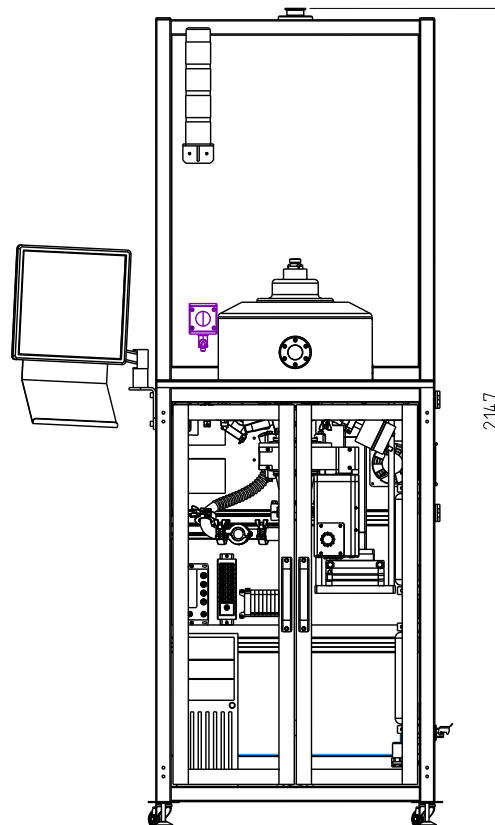
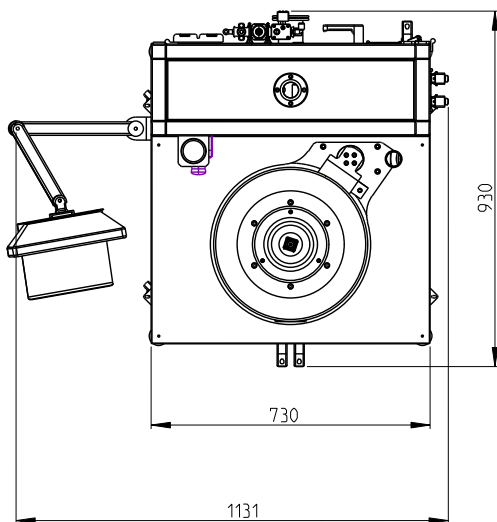
Singel wafer or batch	21x2", 8x3", 5x100mm, 3x125mm, 1x150mm, 1x200mm
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Utilities

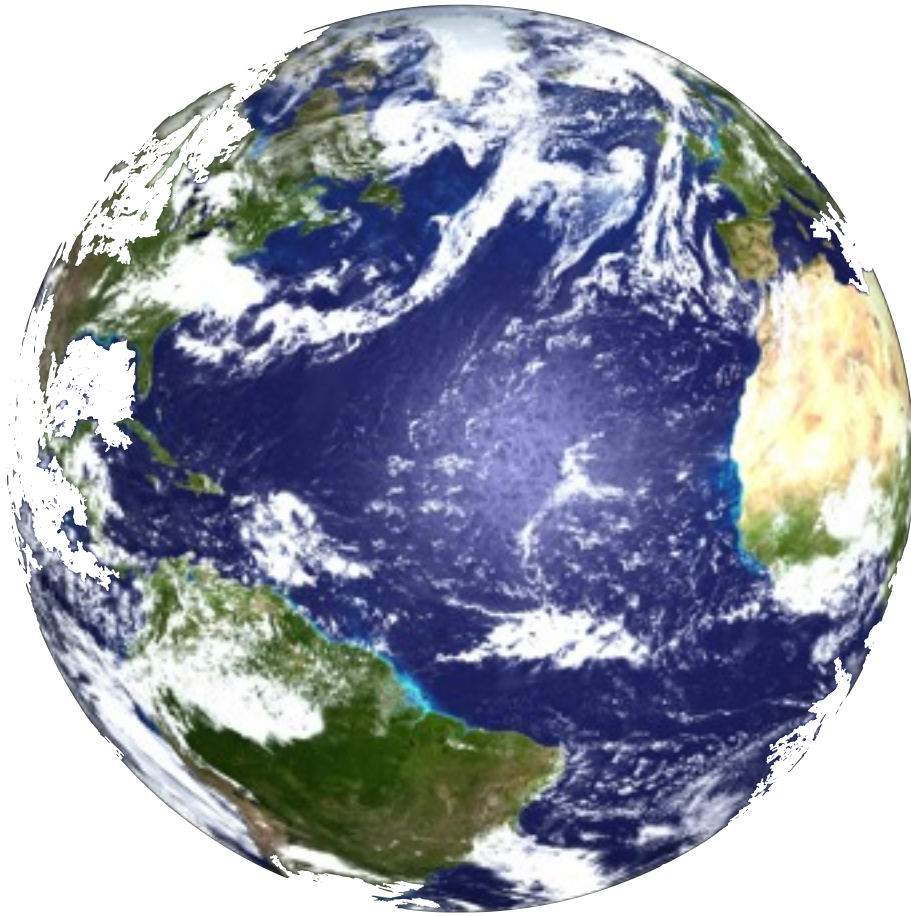
Electrical (208V)	32A@200/208V 3phase
Electrical (400V)	25A@380/415V 3phase
Cooling water	Not required
Air pressure	6 bar minimum
Air flow	2 l/m

Options

Mixed frequency stress control option (Si₃N₄) 550W LF
Chamber wall heater (particle reduction)
End point detection (optical emission spectroscopy)
Dry backing pump
Additional gas lines (up to 10 gas lines total)



Locally Globally



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