KORVUS TECHNOLOGY

HEX

VERSATILE COATING SYSTEM FOR THIN FILM RESEARCH AND DEVELOPMENT

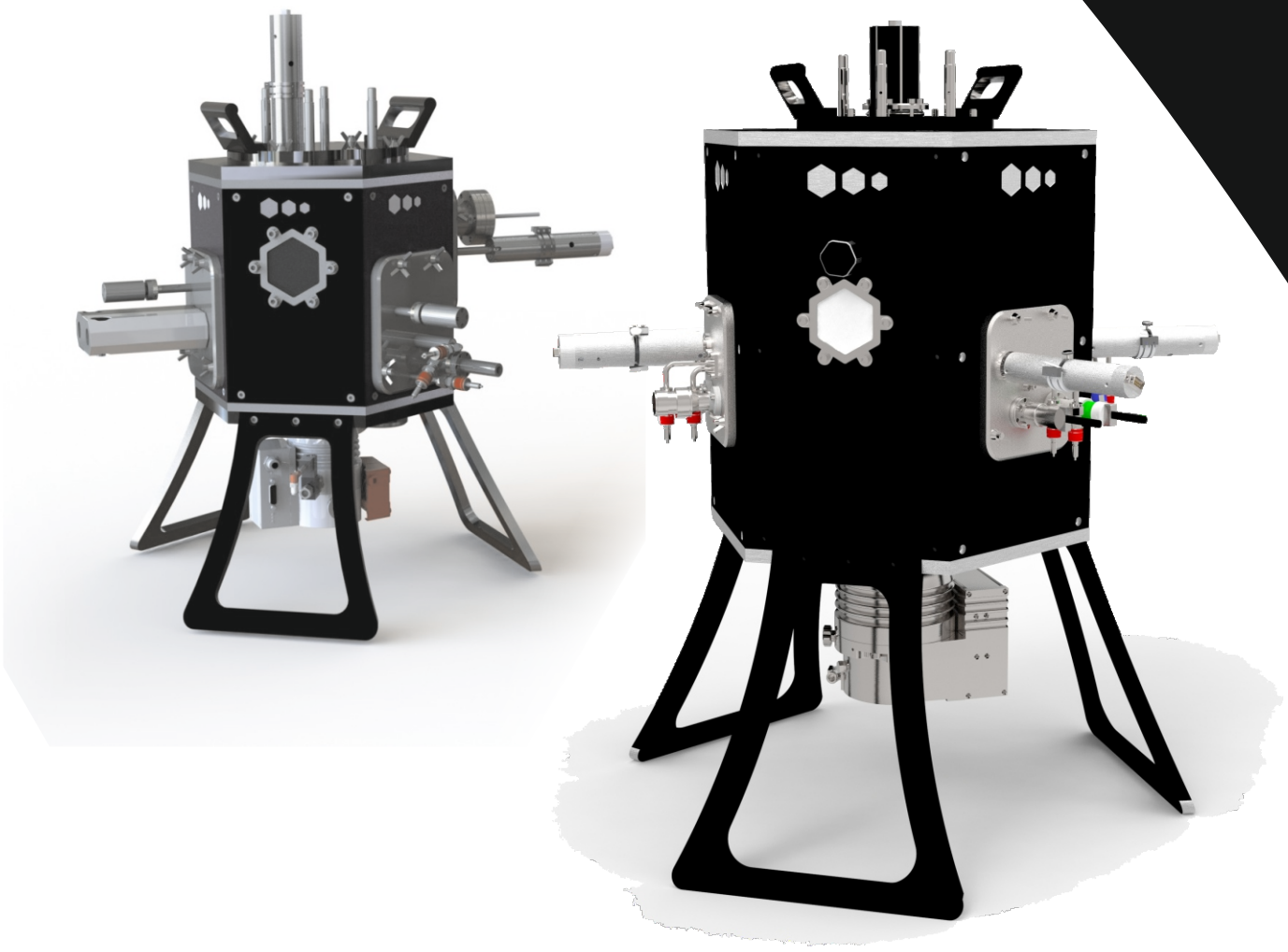
SPUTTERING

ORGANICS DEPOSITION

E-BEAM EVAPORATION

EDUCATION AND TRAINING

GLOVEBOX COMPATIBLE



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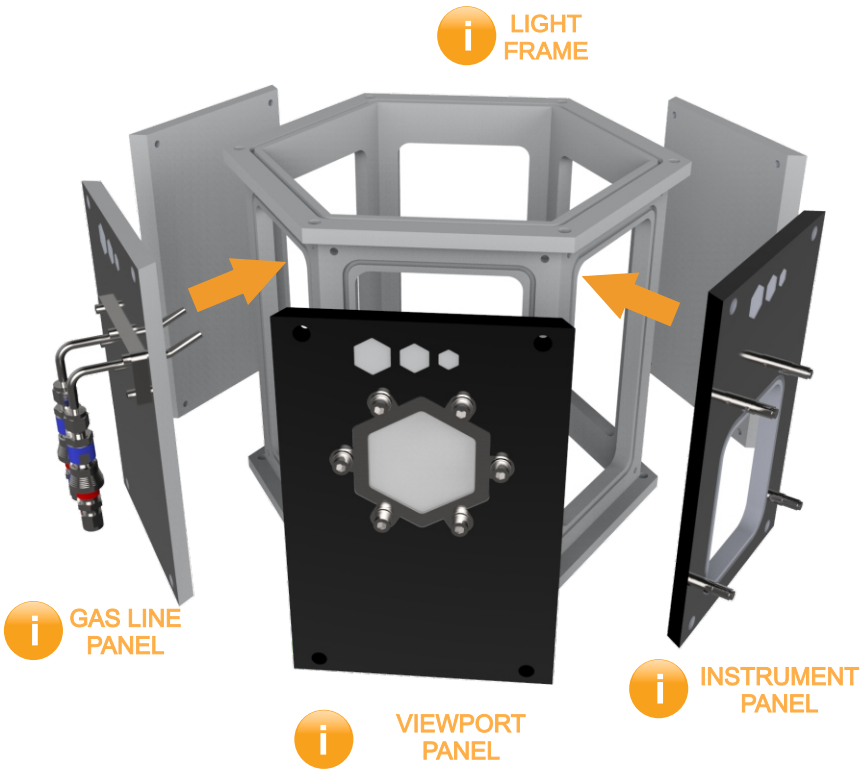
The **Hex** range of deposition systems are **highly flexible** and **versatile**, offering users almost limitless ability to re-configure and upgrade

ADAPTABLE CHAMBER DESIGN



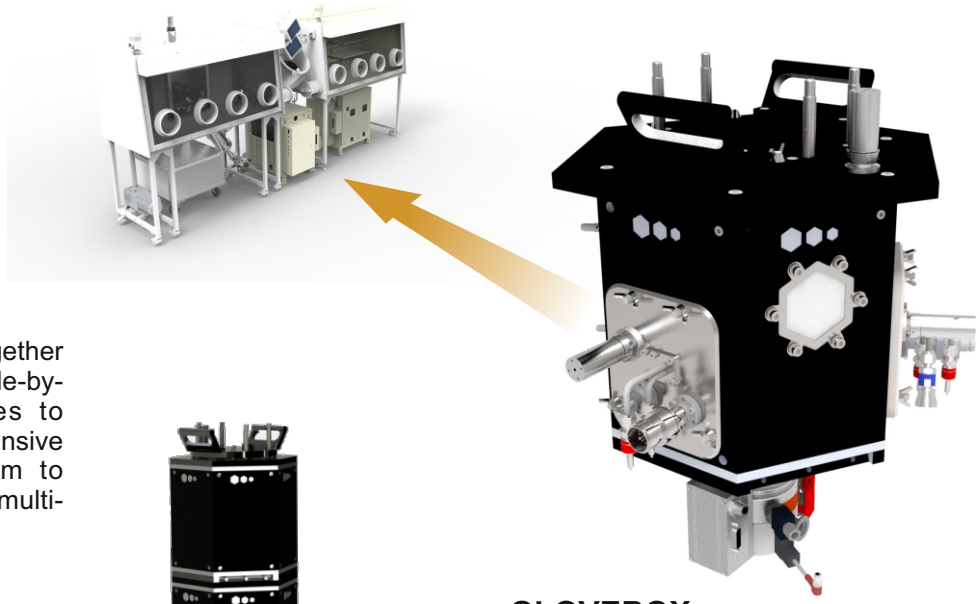
The vacuum chamber consists of a frame with six side faces and a top/bottom face, machined from a single piece of aluminium, which makes the system lightweight and weld free, whilst providing a rigid structure.

The frame supports 8 interchangeable panels (six side and top/bottom), which can be rapidly and simply swapped or replaced to achieve a new system configuration.

Depending on the type of the panel, it may serve as:

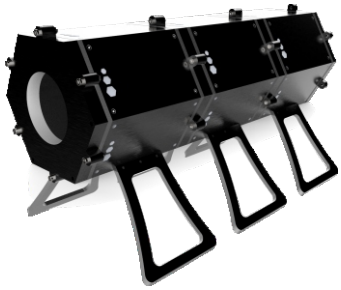
- Chamber wall (blank panel)
- Viewport (viewport panel)
- Deposition source (source panel)
- Gas injection panel
- Load-lock panel

The panels can be mounted onto the frame in a matter of minutes, which saves a considerable amount of time whilst performing maintenance procedures or reconfiguring the system.



MULTI-CHAMBER CONFIGURATIONS

Frames can be stacked together vertically, horizontally or side-by-side with adapter plates to enable simple and inexpensive expansion of the system to accommodate in-line or multi-zone applications.



GLOVEBOX INTEGRATION

Replacement of the standard top plate allows the system to be integrated into any standard glovebox. The large handles and sample-stage mounting posts are particularly suited to allow easy operation with gloves.

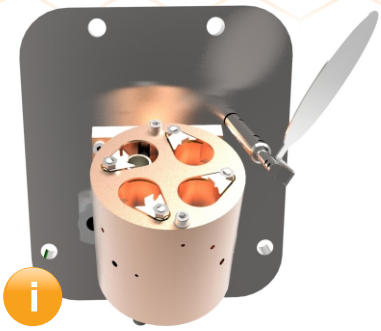
RELIABLE DEPOSITION SOURCES

MAGNETRON SPUTTERING SOURCES

Designed for 2" diameter targets, the sputter sources are equipped with SmCo magnets and accept targets with thickness ranging from 0.5 to 6mm of non-magnetic materials and up to 1mm for magnetic materials.

The typical target usage is around 43% for non-magnetic materials.

The sources can be used with DC, RF, pulsed DC or HIPIMS power supplies.

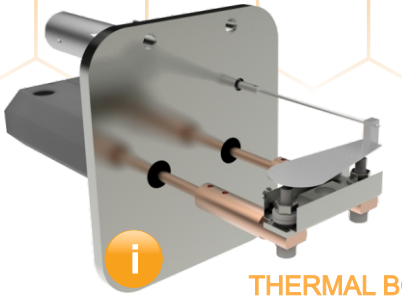


E-BEAM EVAPORATORS

Our high-accuracy (sub-monolayer) mini E-beam evaporators are ideal for ultra-thin film deposition with reliable process control.

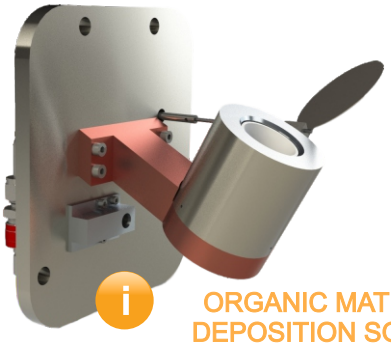
The range consists of a single-pocket and a four-pocket source. The control electronics allows up to four sources/pockets to be operated simultaneously.

Material can be evaporated from rods or material held in a crucible.



THERMAL BOAT SOURCE

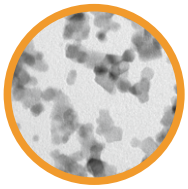
The single thermal boat source allows for the integration of a range of thermal boats for the deposition of both metals and organics/polymers



ORGANIC MATERIAL DEPOSITION SOURCE

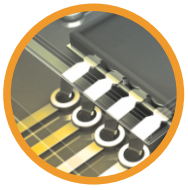
The ORCA organic deposition source is designed to operate between 50 and 600°C to allow sensitive organic materials to be evaporated with precise control

The unique design and flexibility makes it a powerful platform for a range of exciting applications:



SAMPLE PREPARATION FOR SURFACE ANALYSIS, SEM,TEM, AFM/SPM AND ELECTRON SPECTROSCOPY

RESEARCH AND DEVELOPMENT OF NEW COATINGS

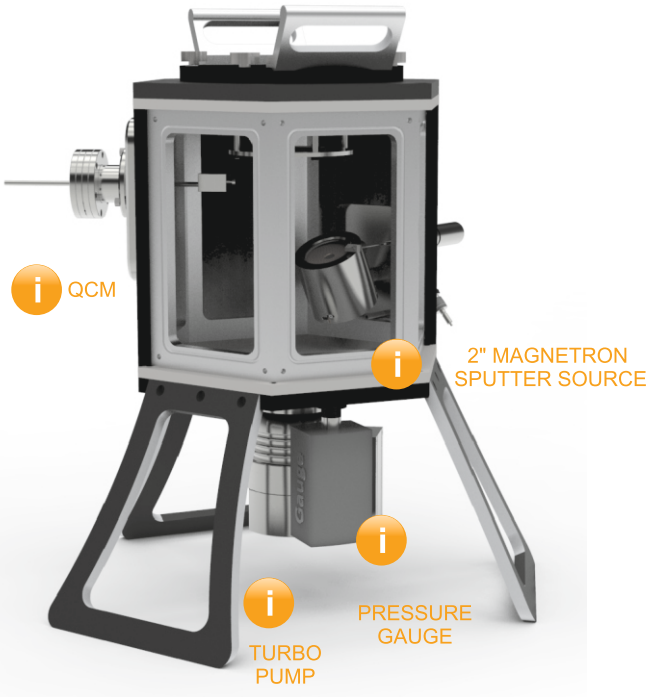


ELECTRICAL CONTACTS FOR SOLAR CELLS AND SEMICONDUCTOR APPLICATIONS

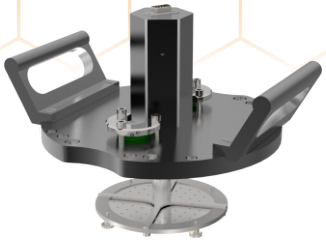
ITO COATINGS

SPUTTER DEPOSITION

TEACHING AND TRAINING



EASY ACCESS SUBSTRATE STAGE

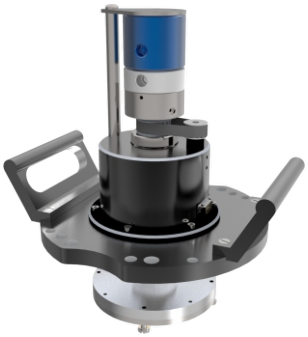


ROTATING STAGE

Sample size: 4" (Hex), 6" (Hex-L)
Rotation speed: 0, 2-30 rpm
Optional RF or DC bias

ROTATING/HEATING STAGE

Sample size: 4" (Hex), 6" (Hex-L)
Rotation speed: 0, 2-30 rpm
Temperature: 100-500°C



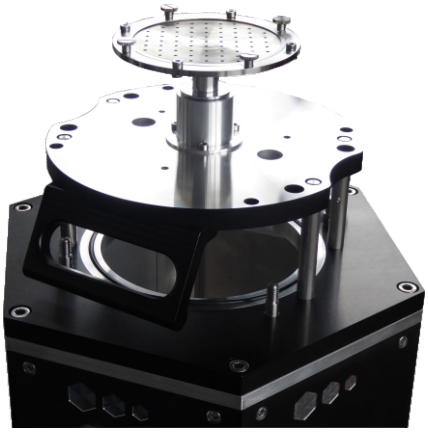
ROTATING/COOLING STAGE

Sample size: 4" (Hex), 6" (Hex-L)
Rotation speed: 0, 10-20 rpm
Water cooled

EFFICIENT SAMPLE EXCHANGE

The sample stage is fitted with two ergonomic handles for easy transfer to and from the chamber.

In order to change the sample, the stage may be lifted from the chamber, turned over and conveniently placed on the top lid using the sample stage guide rods. This arrangement provides a stable platform for rapid sample loading as well as inspection of the deposited film.



COMPACT DESIGN

Innovate collapsing sample shutters and compact component design allows the Hex-L and Hex to accommodate large samples but still occupy a small system footprint.

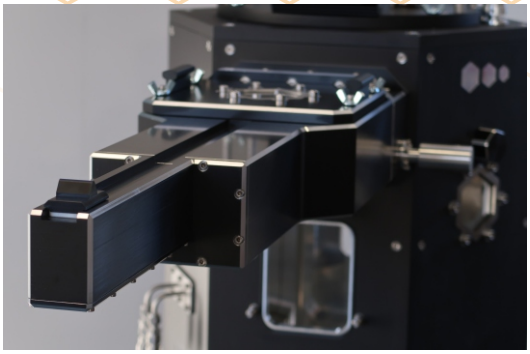
The Hex-L system is supplied as standard with a mounting frame, while the Hex system can be located on the electronics rack, saving valuable lab space. Both systems can also be bench-mounted as an alternative.

HEX-L ON FRAME

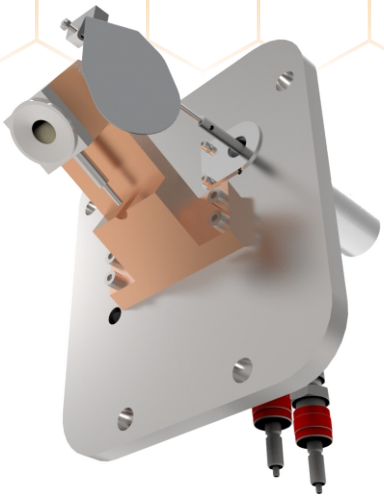
HEX ON ELECTRONICS RACK

ACCESSORIES

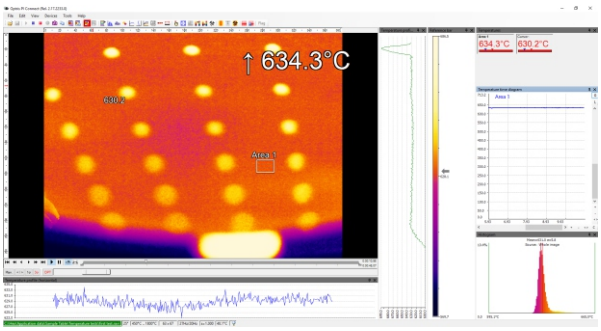
LOAD-LOCK SAMPLE TRANSFER



For applications demanding the highest purity or low operating pressures, a load-lock sample transfer system may be employed. This allows the main deposition chamber to remain under vacuum at all times with sample insertion and removal taking place via a separate sample entry chamber and gate valve. The Korvus load-lock is available for the HEX-L systems and allows 6" samples to be transferred.



ANALYSIS OPTIONS



In-situ analysis options may be added to the system including thermal imaging (seen above), spectroscopic plasma monitoring and ellipsometry.

The unique architecture of the Hex system also allows users to modify panels to their own design and thereby allowing them to retrofit their own or third-party characterisation techniques.

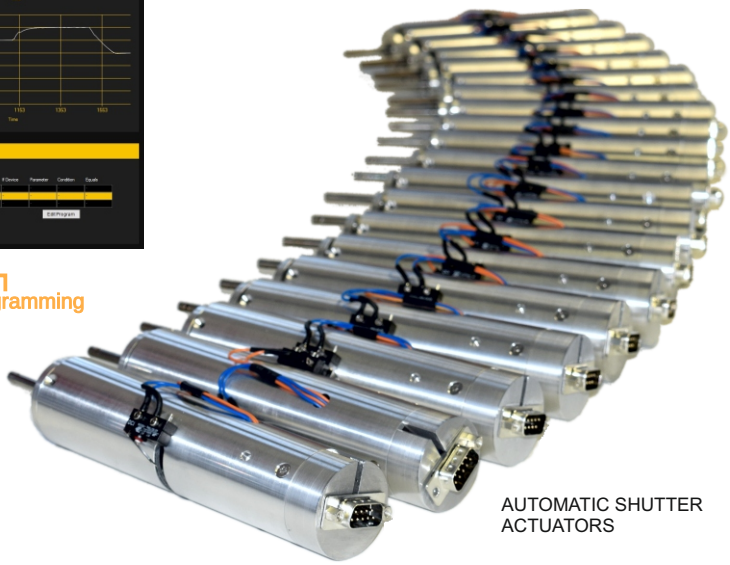
THIN FILM THICKNESS MONITOR

Film deposition rate and thickness can be determined with the use of a quartz-crystal-monitor (QCM) which uses the change in resonant oscillation frequency of a thin quartz crystal to determine the mass and hence the thickness of a film of material deposited on the surface. In the Hex systems the QCM is mounted on a cooled copper base to minimise temperature-related changes to the frequency.

AUTOMATED SYSTEM

The Niobium automation software package allows the user full PC control over the HEX deposition system and components. The full data-set can be written to a log-file, charting of multiple parameters is possible and sophisticated process programming is enabled via step-based procedures including ramping and conditional options.

NIOBIUM SYSTEM CONTROL SOFTWARE



AUTOMATIC SHUTTER ACTUATORS

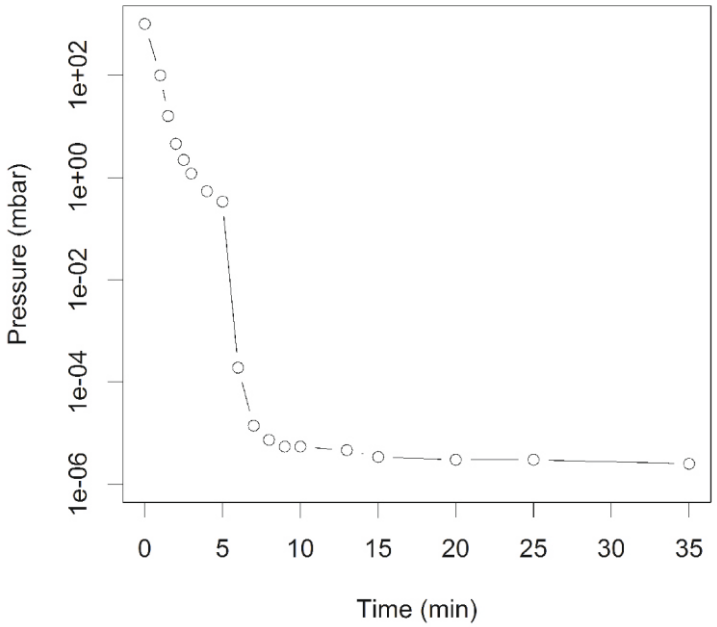
RAPID PUMP DOWN

The Hex system is shipped as standard with an 80ls^{-1} turbo pump (optional 300ls^{-1}) while the Hex-L standard is a 300 ls^{-1} turbo (optional 700 ls^{-1}). Both are backed by oil-free pumps and pressure is measured by a full-range gauge.

The low-volume of the systems allows rapid pumpdown, with operational pressure for typical applications being reached in less than 10 minutes.

The system base pressure with standard pumps is 5 x 10^{-6} mbar and 9 x 10^{-7}mbar with the Hex and Hex-L respectively, although with careful system maintenance, lower pressures are commonly reached.

HEX pump down curve with 300ls-1 turbo pump



SPECIFICATIONS

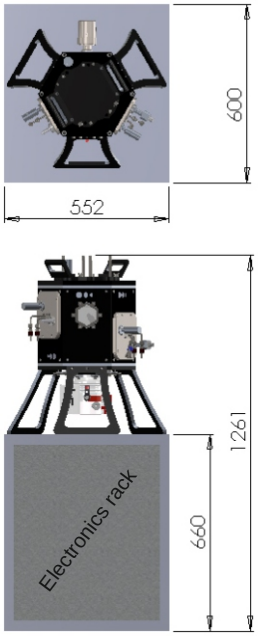
(FOR FULL SPECIFICATIONS PLEASE REQUEST OUR SEPARATE SYSTEM DATASHEETS)

	HEX	HEX-I
Maximum Sample Size	4" (100mm) diameter	6" (150mm) diameter
Standard Turbo Pump	80 ls^{-1}	300 ls^{-1}
Optional Turbo Upgrades	300 ls^{-1}	700 ls^{-1}
Number of Side Panels	6	6
Maximum Deposition sources	3 (plus QCM)	6

Ultilities

Power: 220V single phase, 16A socket
Water: 0.5l/min, 15psi
6mm OD tube inlet to system
Gas: Ar (sputtering), N (venting, optional)
6mm OD tube inlet to MFC

HEX ON ELECTRONICS RACK



HEX-L ON FRAME WITH ELECTRONICS RACK
(shown with optional load-lock mounted)