

## TFDS-680 - Thin Film Deposition System with load-locks.



The model **TFDS-680** of series 462 thin film deposition systems is designed for research, development and low scale production.

The stainless steel box type vacuum chamber dimensions 450 mm W, 610 mm H, 425 mm D. The system is provided with two load-lock systems: top load lock system, permits to load and unload sample into the substrate holder, and bottom load system permits insert sample into the process chamber and coat it from short distance. Both load-lock systems are comprised of four basic components including a sample staging chamber, gate valve, sample transporter and quick-access door.

### Pumping system

Fully dry pumping system consist of scroll pump and turbo-molecular pump as roughing station for vacuum chamber and load-locks and high vacuum cryogenic Ultimate pressure less than  $7 \times 10^{-8}$  Torr Pump down Time  $4 \times 10^{-7}$  Torr in 40 min

### Evaporation sources

Two sources are provided:

- A 6-pockets 7cc crucibles electron beam gun with 6 kW power supply and programmable sweep
- One pair of thermal evaporation electrodes is mounted permissible current intensity with water-cooling is 400 A

The pneumatically operated [shutters](#) for both sources are provided.

### Substrate holder

Substrate holder is designed as stainless steel hermetical reservoir with possibility to filling by liquid nitrogen. Flange of LN<sub>2</sub> cooled sample holder is mounted on rotatable axis stages and provides 360° positioning with greater precision, control and ease of use. Rotatable stage is constructed with worm gear drive mechanism which offers substantial mechanical advantage over non-gear designs, a feature which allows effortless manual operation, even under a full vacuum load.



### LN<sub>2</sub> trap

Mounted into the vacuum chamber LN<sub>2</sub> trap is intended to prevent the sample against contaminant when its temperature is low (when the reservoir is filling by liquid nitrogen. Temperature of LN<sub>2</sub> trap bottom is continuously measured by T-type thermocouple.

### Thickness film monitor

The deposition controller 880 is the heart of the system being responsible for deposition process parameters control. The microprocessor controlled quartz thickness monitor and process controller is fully interfaced with the main PLC and PC. Double crystal thickness monitor head with pneumatically operated shutter is provided.

### Source and substrates viewing

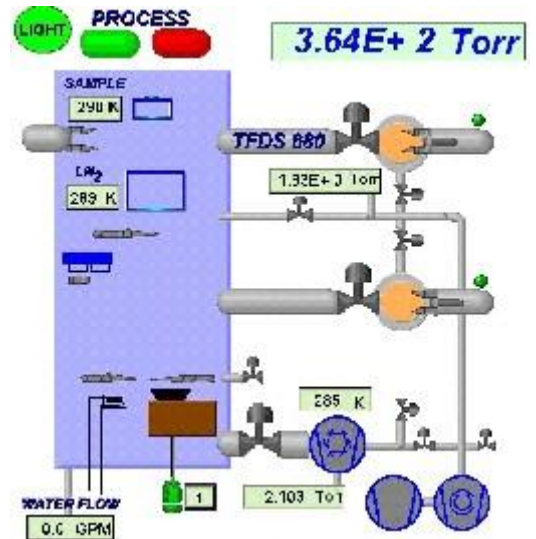
The viewing port is designed to enable direct observation of the substrate holder and indirect viewing of the source crucible, using two adjustable mirrors. The low voltage quartz lamp helps to observe devices inside the vacuum chamber

## Shielding

A set of stainless steel shielding liners is use to protect the chamber walls against coating. The shielding can be easily removed for cleaning out side the chamber.

## System Operation

The automatic control provided by PC with VST software [OMNICONVAC II](#) provides automation of each process step. The system permits operation in MANUAL mode, AUTOMATIC mode, SERVICE mode and different levels of login. All process relevant parameters can be logged before, during and after the process. They can by save and displayed in a graphic diagram and exports as Excel files.



**The system will be built to customer satisfaction. Client prior to manufacturing should approve the design of the system. Our engineers should work closely with the client to achieve best fit to specific client needs.**