TF 600

Thin Film Deposition System

ADVANCED
Technologies

The TF 600 coater is designed for enhanced levels of process capability. A choice of accessories, deposition techniques, work holder, load lock and pumping options allows the system to be configured to your exact needs. The chamber allow for glove-box integration with either horizontally sliding or vertically sliding access door. Control options include PLC based control of vacuum cycle in combination with deposition controller based process cycle, or a IPC-based system which provides complete automation with advanced functions such as recipe control and data logging.

SPECIFICATIONS

Sl. No.	Specification Category	Technical Details (As per Compliance Requirements)
1	**Vacuum Chamber**	▪ SS-304L, box-type, D-shaped chamber ▪ ~ 600 mm (W) × 600 mm (D) × 500 mm (H) ▪ Hinged full-opening front door ▪ Viewport with manual shutter ▪ Removable SS chamber liners ▪ Ports for TMP, gauges, vent, roughing, etc. ▪ Base plate with feedthroughs for EB gun, thermal sources, shutter, heater & gas feedthrough
2	**Vacuum Pumping System**	▪ TMP: 720 l/s or higher (Leybold/Edwards/equivalent) ▪ Dry scroll pump: 20 m^3/hr (Leybold/Edwards/equivalent) ▪ 8" electro-pneumatic gate valve ▪ Electro-pneumatic roughing & backing valves ▪ Vent + fine needle valve ▪ SS vacuum plumbing with bellows ▪ 2× Active Pirani (atm to 1×10^{-3} mbar) ▪ 1× Active Inverted Magnetron (1×10^{-2} to 1×10^{-8} mbar) ▪ Ultimate vacuum: 5×10^{-7} mbar; $< 5 \times 10^{-6}$ mbar within 2 hrs.
3	**Thermal Evaporation Sources**	▪ Two LT evaporation feedthroughs & source holders (electrolytic copper, 200 A) ▪ Compatible with filament/basket/boat ▪ Two power supplies: 200 A @ 10 V, 100 A @ 20 V ▪ Electro-pneumatic source shutter for each source
4	**Electron Beam Source**	▪ Make: Telemark/Edwards ▪ 4-crucible EB source: 7 cc pockets ▪ 270° beam deflection ▪ X-Y sweep coils, water cooling ▪ Quick-release emitter ▪ EB feedthrough kit (HV ceramics + water feedthroughs) ▪ Water flow switch (interlock) ▪ X-Y sweep controller (position, amplitude, freq., sinus/tri/square) ▪ Motorized turret indexer with controller ▪ Electro-pneumatic source shutter
5	**EB Gun Power Supply**	▪ Make: Telemark/ Edwards ▪ 6 kW max power ▪ 600 mA @ 10 kV ▪ HV adjustable –4 to –10 kV ▪ <50 μs response ▪ Filament: 40 A max @10 VAC ▪ Process control: 0–10 V DC
6	**HT / Ion Cleaning Gadget**	▪ Bar-type ion bombardment for substrate cleaning ▪ 5000 V DC open-circuit, 3500 V @ 50 mA ▪ Solid-state bridge rectifier + thyristor controller
7	**Rotatable Substrate Holder with Heater**	▪ Holds 6” diameter substrates ▪ Continuous rotation: 0–20 rpm ▪ Heating: RT to 500°C ▪ ‘K’-type thermocouple ▪ PID temperature controller ▪ Electro-pneumatic substrate shutter
8	**Deposition Controller**	▪ In-situ thickness & rate monitor (Inficon/Telemark/equiv.) ▪ 2 oscillators and 2 front-load sensors
9	**System Control (Automation)**	▪ PLC-based automation for vacuum & deposition cycles ▪ 10” HMI touch screen ▪ Auto-evacuation cycle ▪ Display: valve status, pump status, vacuum ▪ Substrate rotation control ▪ Water-flow interlock and Failure alarms ▪ Trend monitoring and user administration

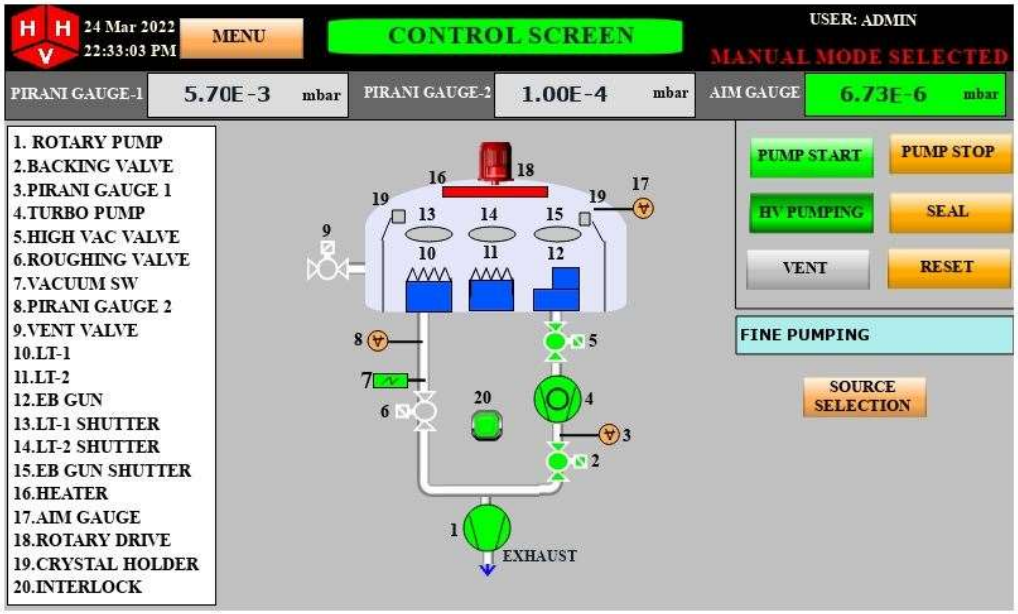
10	**Water Chiller**	▪ 1 TR capacity ▪ PID control ▪ Closed-loop system (Daichi/equivalent)
11	**Air Compressor**	▪ Suitable capacity compressor
12	**Spares & Consumables**	▪ O-rings & gaskets (1 set) ▪ DTM crystals – 10 nos ▪ Quartz crystals – 10 nos ▪ Mo boats – 5 nos ▪ W filaments – 5 nos ▪ Mo crucibles – 4 nos ▪ Graphite crucibles – 4 nos

CHAMBER CONFIGURATION

THERMAL & ELECTRON BEAM SOURCE

ROTARY WORK HOLDER

CONTROL OPTION



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USER: ADMIN
MANUAL MODE SELECTED

PIRANI GAUGE-1 5.70E-3 mbar
PIRANI GAUGE-2 1.00E-4 mbar
AIM GAUGE 6.73E-6 mbar

1. ROTARY PUMP
2.BACKING VALVE
3.PIRANI GAUGE 1
4.TURBO PUMP
5.HIGH VAC VALVE
6.ROUGHING VALVE
7.VACUUM SW
8.PIRANI GAUGE 2
9.VENT VALVE
10.LT-1
11.LT-2
12.EB GUN
13.LT-1 SHUTTER
14.LT-2 SHUTTER
15.EB GUN SHUTTER
16.HEATER
17.AIM GAUGE
18.ROTARY DRIVE
19.CRYSTAL HOLDER
20.INTERLOCK

FINE PUMPING

FEATURES

- Wide range of processes in a single system package
- Ion beam process for optical coating applications
- Customizable chamber height to suit user requirements
- Accommodates range of work holders
- Fully interlocked for operator safety
- Compact unit minimizing footprint

APPLICATIONS

- Semiconductors
- Optical coatings
- Metal coatings
- Organic Electronics
- Hard coatings
- Solar cells

RESULTS

Range of Optical and Electronic Thin Film Coatings produced using TF Series Coaters

Uniformity of ± 5 % as standard. Custom designed configurations to get better than ± 3 %.

HHV ADVANCED Technologies

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