INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076.

Ref. PR No. 1000059062 **Rfx. No**. 6100003225

Item Description: Physical Vapor Deposition System (Set-Up) (QTY : 01 No.)

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
1	**Physical Vapor Deposition System (Set-up)**	The Physical Vapor Deposition system should be designed with suitable provisions for the integration of a hollow cathode source for RF sputtering, and should host two effusion cells for organic material evaporation. We will be able to provide the following. All specifications of the parts can be provided upon request.		
		a. Dry Scroll pump (20 m3/hr)-1 No		
		b. Turbomolecular pump (700 l/s)-1 No		
		c. Penning gauge - 1 No		
		d. Pirani gauges - 2 Nos		
		e. Julabo Chiller- 1No		
		f. Hollow Cathode		
		g. 600 W RF power supply with matching network.		
		h. The scope of the work is given below as per the specification.		
	1. VACUUM CHAMBER:			
		a. D-shaped, SS 304, water-cooled vacuum chamber.		

		b. Hinged front-opening door for easy substrate loading/unloading.		
		c. Thin stainless-steel liner to protect chamber walls from coating buildup-easily removable for maintenance.		
		d. Ports for: Turbo molecular pump, vacuum gauges, vent valve, roughing valve, isolation valve, and two QCMs.		
		e. Base plate: ports for thermal and hollow cathode sources, shutter mechanism, gas feedthroughs.		
		f. Top plate: port for substrate holder integration.		
		g. Feedthroughs for thermal and organic sources are provided.		
	2. VACUUM VALVES:			
		a. Liquid Nitrogen trap: Positioned at the vacuum b. chamber outlet, helping to trap residual gases and improve vacuum pumping speed.		
		c. An electro-pneumatically operated isolation gate valve is fitted between the chamber and the turbomolecular pump.		
		d. All other isolation valves (roughing, backing and vent valves) are provided.		
	3. ROTATABLE SUBSTRATE HOLDER WITH HEATER:			
		a. Substrate Holder & Fixture: Designed to hold 120 mm × 120 mm substrates (suitable for large-area coatings).		
		b. Rotary Drive Mechanism: Continuous 360° rotation for uniform films deposition Adjustable speed up to 20 rpm, ensuring optimized coating thickness uniformity.		

		c. Substrate Heating & Temperature Control:		
		i. Infrared (IR) Substrate Heater: Capable of heating from Room Temperature (RT) to 300°C.		
		ii. Temperature Measurement & Control: 'K' Type Thermocouple for accurate real-time iii. temperature monitoring. Eurotherm PID Controller for precise temperature regulation.		
		iv. Motorised Z Movement is provided to vary the source to substrate distance.		
		v. Provision is made for cooling the substrate.		
	4. THERMAL EVAPORATION SYSTEM:			
		a. Two sets of LT evaporation electrical feedthroughs for evaporation source holders with 200 amps current-carrying capacity, and these can be used with Filament / Basket / Boat as evaporation sources		
		b. Two 200-amp power supplies capable of delivering 200 amps at 10 volts and 100 amps at 20 volts are provided.		
		c. Output power is controlled by means of a thyristor controller.		
		d. An electro-pneumatically operated source shutter is provided for each source.		
	5. SYSTEM CONTROL:			
		a. Programmable Logic Controller (PLC) for Full Automation.		
		b. 15-inch or higher Industrial Touch PC for easy operation and visualization.		
		c. Windows 11 OS, Intel Core i5 processor, 16GB		

		d. DDR4 RAM, 1TB SSD for smooth operation.		
		e. Mounted on the front panel of the control console, providing easy access and reducing clutter.		
		f. Fully Automated, Software-Controlled System		
		g. Windows OS-based SCADA software with Graphical User Interface (GUI).		
		h. The system can be operated in the following modes :		
		i. AUTO mode with recipe programming for automatic deposition.		
		ii. Manual Mode with safety interlocks		
		iii. SERVICE Mode, i.e., without interlocks; multilevel password protected.		
		iv. Data logging in SQL database (open format for easy access and analysis).		
	6. Adherence to be required on the below against each point in Yes/No format			
		A. **Civil and Electrical Requirements:** The vendor shall confirm all civil and electrical requirements for the equipment in the technical documents.		
		B. **Inspection and Factory Acceptance Test (FAT):** The buyer shall be given the opportunity to inspect the equipment before dispatch. The seller shall arrange the inspection and obtain the Factory Acceptance Test (FAT) certification before shipment.		
		C. **Installation and Commissioning:** Installation and commissioning of the equipment at the designated site shall be within the seller's scope of work.		
		D. **Training and Documentation:** The seller shall provide comprehensive training to		

		IITB personnel on the operation and maintenance of the equipment. An Operation and Maintenance (O&M) manual shall also be supplied.		
		E. **Technical Support:** The seller shall address and resolve any technical issues within three (3) working days of notification.		
		F. **Warranty:** The equipment shall carry a warranty of one (1) year from the date of acceptance, following successful installation and commissioning. The warranty shall cover all manufacturing defects and faulty workmanship across the entire set-up.		
		G. **Delivery:** The equipment shall be delivered to the designated location within 30 days from the date of release of the Purchase Order.		