VacTechniche
PROBLEM SOLVED

Desk Turbo-Pumped Carbon Coater – DCT



DCT

High-Vacuum Carbon Coater

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Disclaimer

The components and packages described in this document are mutually compatible and guaranteed to meet or exceed the published performance specifications. No performance guarantees, however, can be given in circumstances where these component packages are used in conjunction with equipment supplied by companies other than VacTechniche Ltd.

Turbo Pumped Desk Carbon Coater DCT

DCT is a turbo-pumped carbon coater that is ideal for FE-SEM, EDS/WDS, TEM, EBSD and thin film applications. This high-vacuum coater offers high quality uniform carbon films with fine grain sizes which are suitable for specimens that require high-resolution and high-quality characterization.



Features

Hardware:

- **High vacuum level with built-in turbo pump 90 L/s (Leybold)**
- **Two-stage rotary vane backing pump (Diaphragm or scroll pump)**
- **500 W switching DC power supply for carbon fiber deposition**
- **1.2 kW high-current DC power supply for carbon rod deposition (Optional)**
- **Quartz crystal thickness monitor with precision of 1 nm and resolution of 1 Å**
- **Automatic venting valve**
- **Sample rotation, height, and tilt adjustable**
- **Planetary sample holder (Optional)**

- **Electronic shutter**
- **Easy-to-change specimen stages (Rotation stage as standard)**
- **Two-year warranty**
- **CE conformity**

Automation:

- **Intuitive touch screen to control the coating process and rapid data input**
- **User friendly software, updatable via network**
- **Semi-full automatic coating process (Optional)**
- **Repeatable and programmable coating process in the automatic mode**
- **Pulsed or flash carbon fiber coating modes**
- **Pulsed or ramped carbon rod coating modes**
- **Automatic carbon fiber/rod deposition according to the set thickness value**
- **Records and plots coating parameters graphs**
- **Storing coating recipes for repeatable depositions**

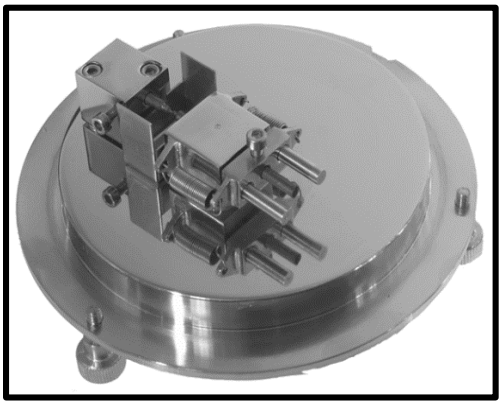
Pulsed Carbon Fiber Evaporation

The desk vacuum carbon coater is able to perform pulsed carbon fiber evaporation. Short pulses provide more controlled deposition and significantly reduces the number of debris associated with traditional carbon deposition.



Carbon Rod Evaporation (Optional)

The desk high vacuum carbon coater could be equipped with carbon rod head (Optional). For this case an external 0-100 A high current power supply should be used instead of the internal high current power supply which is designed for carbon fiber evaporation.

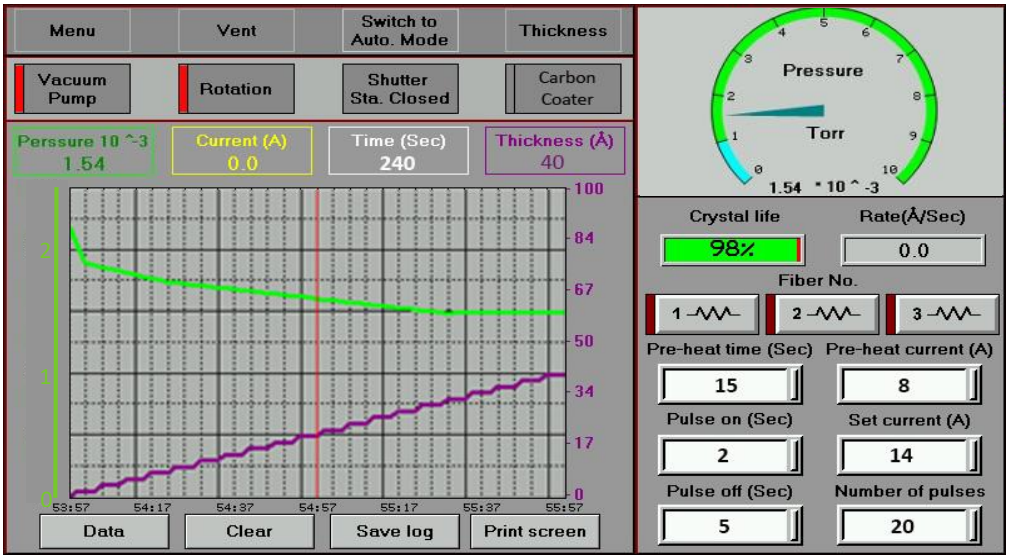


Clean Vacuum

The vacuum chamber is made from Cylindrical Pyrex and Stainless Steel. The DCT is fitted to a 90 L/s turbomolecular pump, that can be backed by a 6 m^3/h two stage rotary vane pump (optionally supplied by the manufacturer), or a scroll or diaphragm pump (based on the customer choice). It introduces clean vacuum without oil contamination which normally exists with ordinary diffusion pump.

Touch Screen Control

Desk carbon coater is equipped with a 7" colored touch screen with full automatic control utilizing a user-friendly software to control and adjust the deposition process data. The vacuum and coating sequence information can be monitored as digital data or curves on the touch screen. The last 300 coatings information is saved on the history page and can be transferred to PC by a USB port on the device.



Sample Holder Stages

The device can be equipped with different sample stage configurations depending on the user requirements. The standard sample stage is rotatable with adjustable height and angle and can be changed easily. The rotary planetary sample stage is a good choice for uniform coating of porous specimens (Optional).



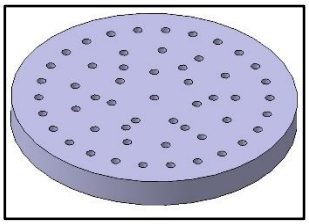
Standard Sample Stage

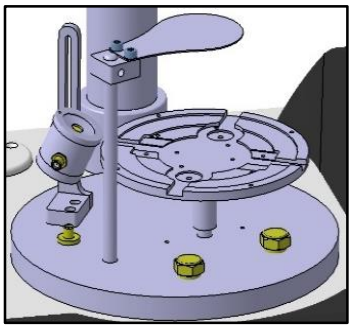


Rotary Planetary Sample Stage

Newly Designed Sample Holder

A new 4-inch rotating sample holder with an optional gear offset is designed for the system to increase the deposition area and the number of coating stubs in a run.





Applications

- **Fine grain structural deposition of carbon for SEM, FE-SEM, EDX, and TEM sample preparation**
- **Conductive layers**
- **TEM grid plasma treatment for improved hydrophilicity (Optional)**

Specifications

- **Max. consuming power: 2 kW**
- **Automatically controlled pressure-independent coating**
- **Fine control of vacuum pressure with automatic leak valve**
- **Real-time plots of coating parameters**
- **Modular design**

Options and Accessories

- **Head and power supply for carbon rod evaporation**
- **High voltage power supply for glow discharge plasma treatment**
- **Quartz crystal sensor**
- **Planetary sample rotation**
- **Spare cylindrical vacuum glass chamber**
- **Carbon fiber thread**
- **Sealing gaskets**

Detailed Features

Dimensions	470 × 620 × 480 mm (H × W × D)
Weight	36 Kg
Vacuum Chamber Dimension	Borosilicate Glass chamber, 170 mm Dia× 140 mm Height (50 mm High SST + 90 mm High Pyrex)
Display Screen	7” Diagonal (16:9) 800×480 High Color- Graphic TFT- LCD
Data Transfer	USB Port – For Transferring the data and graph to PC
Carbon fiber	Carbon fiber thread diameter: 0.8 mm (Thicker fiber is not recommended)
Carbon rod	Carbon rod diameter: 3.2 mm
Sample Holder Dimension	Standard holder with 60 mm Dia., can contain: • 23×9.6 mm stubs or • 14×12.7 mm stubs or • 5×19 mm stubs Sample holder with 100mm Dia. with Offset gear box can contain 40×12.7 mm stubs (optional)
Chamber’s Lid	Made of Aluminum/SST with triple carbon fiber (thread) holder or/and a rod holder
Thickness Sensor	
Specification	Crystal thickness gauge with sensor, Silver coated crystal quartz, oscillator
Resolution	±1 Angstrom
Accuracy	±1 nanometer
Vacuum Equipment	
Turbo Molecular Pump	Pumping Speed of 90 L/s, (Leybold)
Backing Pump	Two-stage rotary vane/diaphragm pump/scroll pump
Pressure Gauge	Leybold (Ionivac model); Full Range

Final Vacuum	$<2\times10^{-6}$ Torr
Process	
Carbon Coating	Pulsed and Flash mode carbon fiber coating
	Pulsed or Ramped mode carbon rod coating
Glow Discharge Plasma (Optional)	• TEM grid plasma treatment • Enhancing surface hydrophilicity
Service and other Information	
Gas	Argon or Nitrogen to purge the chamber (Optional)
Electric Power Supply	HC: 24V, 20A (Carbon fiber evaporation) HC: 12V, 100A (Carbon rod evaporation)
Control of Argon supply	Electronic leak valve
Shutter	1 piece
Electrical Inlet	Inlet: 220-240V, 50/60Hz; or 110V, 50/60Hz *

*** Single-phase AC power with appropriate earth connection is required.**