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PROBLEM SOLVED

High-Vacuum Desk Sputter Coater – DST1-170



DST1-170

High-Vacuum Single Magnetron Cathode Desk Sputter Coater

VacTechniche Ltd.

Address: Moondarra, Gorsethorn Way, Hastings TN35 4BQ

Tel: +44 (0)1424 814411

E-mail: sales@vactechniche.com

Web: www.vactechniche.com

For technical and applications advice including online order for spares and consumables parts please visit www.vactechniche.com

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.

High Vacuum Single Magnetron Cathode Desk Sputter Coater DST1-170

The high-vacuum magnetron desk sputter coater model DST1-170 is a compact coating system with the ability to coat metals (Oxidizing and non-oxidizing), suitable for short-term deposition periods. DST1-170 is able to deposit uniform thin films with fine-grain sizes in a fast cycle time.



The DST1-170 is configured as a sputter coater suitable for scanning electron microscope (SEM) sample preparation. A wide range of noble and oxidizing metals could be deposited by DST1-170 such as gold (Au), platinum/palladium (Pt/Pd) alloy, silver (Ag), chromium (Cr), tungsten (W), iridium (Ir), etc. This high vacuum coater offers high quality uniform films with fine grain sizes which are suitable for specimens that require high resolution and high quality characterization such as FE-SEM, EDS/WDS, TEM, and EBSD.

The DST1-170 with a 2'' magnetron cathode, 80 W switching DC power supply, could be used for research and different thin film applications.

DST1 can be equipped with a water-cooled cathode which make it suitable for long time deposition.

The maximum size of substrates in this model could be 4 inches.

Features

Hardware:

- **High vacuum level with built-in turbo pump 90 L/s (Leybold)**
- **Two-stage rotary vane backing pump (Diaphragm and scroll pump)**
- **Full range vacuum gauge**
- **80 W switching DC power supply**
- **Quartz crystal thickness monitor with precision of 1 nm and resolution of 1 Å**
- **One 2-inch magnetron cathode**
- **Electronic leak valve for Argon gas**
- **Sample rotation, height, and tilt adjustable**
- **Planetary rotating sample holder**
- **Electronic shutter**
- **Easy-to-change specimen stages (Rotation stage as standard)**
- **Two-year warranty**
- **CE standard conformity**

Automation:

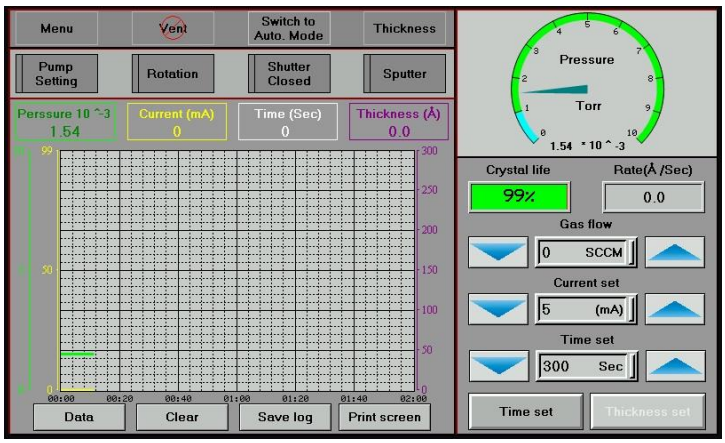
- **Intuitive touch screen to control the coating process and rapid data input**
- **User friendly software, updatable via network**
- **Precise control over coating rate to achieve finer grain structures**
- **Semi-Full automatic coating process (Optional)**
- **Repeatable and programmable sputtering process in the automatic mode**
- **Manual or automatic timed and thickness deposition**
- **Able to record and plot coating parameters graphs**
- **Storing coating recipes for repeatable depositions**

Clean Vacuum

The vacuum chamber is made of SST and Cylindrical Pyrex. The DST1-170 is fitted with an internally mounted 90 L/s turbo molecular 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

DST1-170 is equipped with a 7" colored touch-screen panel and full automatic control using a user-friendly software to control and adjust the deposition process data. The vacuum and coating sequence information can be observed as digital data or curves on the touch screen. The last 300 coatings information is saved on the history page.



Sample Holder Stages

The DST1-170 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).



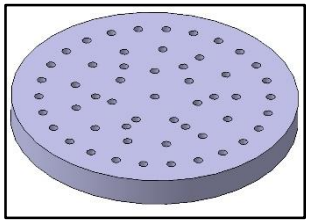
Standard Sample Stage

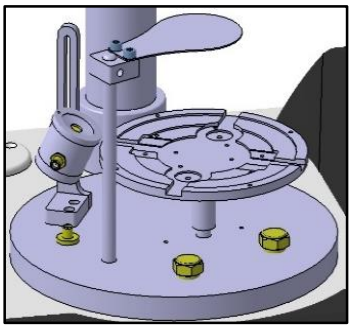


Rotary Planetary Sample Stage

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 metals for SEM, FE-SEM, and TEM sample preparation**
- **Nano and microelectronic**
- **Solar cell applications**
- **Optical components coating**
- **Thin film sensors**
- **Able to perform GLAD sputtering**
- **Glow discharge plasma treatment for TEM grids or surface modifications (Optional)**

Specifications

- **Automatic control of the deposition power independent of pressure**
- **Automatic control of the cathode's temperature to protect the life time of the magnets**
- **Rapid data input through colorful touch screen panel**
- **Real-time plots of coating parameters**
- **Max. power consumption: 1.5 kW**

Options and Accessories

- **Quartz crystal sensor**
- **Planetary sample rotation stage**
- **Spare glass chamber**
- **Sputtering targets**
- **Glow discharge plasma treatment**
- **Sealing gaskets**

Detailed Features

Dimensions	420 × 620 × 480 mm (H × W × D)
Weight	36 Kg (without backing pump)
Vacuum Chamber Dimension	Borosilicate Glass, 170 mm Dia× 50 mm Height SST 90 mm Height
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
Target Dimension	1 Disc, Diameter ranging 50-56 mm, Thickness 0.1~3 mm (The preferred thickness is less than 1 mm, for ferromagnetic targets should be less than 0.5 mm). ✓ A silver target is installed on the cathode when delivered.
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 and can locate 1 Cathode on it.
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 pump (optional), Scroll or diaphragm pump can be used either.
Pressure Gauge	Leybold (Ionivac model); Full Range
Final Vacuum (Torr)	$<2\times10^{-6}$
Sputtering Vacuum Range (Torr)	2×10^{-3} - 5×10^{-2}
Process	
Sputtering	Continuous Sputtering, Time, and Thickness dependent
Glow Discharge Plasma (Optional)	• TEM grid plasma treatment • Enhancing surface hydrophilicity
Service and other Information	
Gas	Argon as process gas with %99.999 purity
Shutter	1 piece
Control of Argon supply	Electronic valve
Electrical Inlet	110-220 V, 50/60 HZ *

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