

PRO 500 / 650 / 800 / 950 / 1100 Hochvakuum-

Application

The PRO500/1100 high vacuum PVD coating system is PROVAC's solution for flexible evaporation techniques in the fields of semiconductor, precision optics and ophthalmic industry.

Integration of the most sophisticated and time-tested instruments and components by industrial leaders allows the production of thin film coatings on various materials using a wide range of coating materials.

Advanced yet simplified software designed to satisfy the most demanding process engineer, and yet still provide a very user friendly interface for the beginning technician.

Complete process automation, remote control, trending, data analysis and recovery. The system is best suited for laboratory and pilot production of single and multilayer, metallic and dielectric coatings.

Design

The versatile, fully automatic evaporation (i.e. PVD or PVD-IAD) cubic batch coating system with a calotte diameter of 500/1100 mm can be equipped according to the customer application with all requested accessories as heaters, substrate holders, evaporation and ion sources, etc.

The basic system consists of a water heated/cooled chamber and door including rotary drive, water battery on frame and power rack. The fully automatic PC control ensures an operator friendly control. The system can be equipped with either cryo, turbo molecular high vacuum pump and a standard or dry fore vacuum pump set including vacuum pressure monitoring.

Performance

To perform precise metallization lift-off, an evaporation system with a long throw distance, high repeatability, and uniformity is essential.

The PROVAC PRO 500 is a very cost effective evaporator ideal for special R&D and pilot production projects.

The PRO500 has excellent repeatability able to coat a metal layer with a uniformity of $< \pm 1\%$ on a 4" substrate, with a coating angle between 87° and 90° over the substrate, within the dome. This angle is absolutely necessary to produce structures with a line width of $< 0.5 \mu\text{m}$.

Basic Configuration for PRO 500

- Vacuum chamber internal dimensions H = 1120 mm, W = 534 mm; with partly welded round pipes for water cooling/heating; High quality stainless steel 1.4301; Inner surfaces sand blasted
- Aluminium profile frame for vacuum chamber
- Front door including 2 inspection windows with changeable glass with partly welded round pipes for water cooling/heating
- Polarisation filter
- Chevron
- Effective calotte diameter D = 500 mm, Single dome for 2, 3, 4, 5, 6 inch wafers
- Front wall painted in RAL 7025, clean room compatible
- Cryopump SUMITOMO CP-8
- VAT Valve Serie 140 DN200
- Pre vacuum pump system type: PFEIFFER DUO 20M
- Vacuum valves, vacuum conducts
- Vacuum switch
- Distribution box vacuum
- Pressure (Vacuum) monitoring system, consisting of: Compact Pirani Gauge TPR 280 Compact Full Range Cold Ionisation Gauge PKR 251 Water battery for water cooling including maintenance free water flow sensors

- Rotary drive PD250 with maintenance free Ferro fluidics feed through,
- Double bearings for optimized operating characteristics,
- Maintenance free AC-motor, Rotation speed 0 - 30 rpm,
- Rotation also possible when chamber door open
- Protective coating shields for internal of vacuum chamber, all protective shields are made by high quality stainless steel 1.4301
- Calotte support
- Holder for distribution mask
- Distribution shaper
- Film thickness measurement set, 6-fold quartz crystal holder QSP 650, Measurement unit SQM 242, 4 inputs for 4 independent quartz crystal signals allows simultaneous measurement
- Accessories

Electric basic system with:

- PROVAC process control
- Control rack, Industrial-PC, Keyboard, Mouse
- 17" LC TFT display monitor mounted in control rack
- PC extension for remote diagnosis
- Power distributor
- UPS battery back up for PC and return signals, including option for controlled shut-down of complete system during power fails, thunderstorms etc.

e-beam source EV 1-8

- GENIUS PRO w/GRC+ SMC (evaporation / sweep / drive – controller)
- Filament Power Supply 3.2
- Glass protection cylinder
- High power feed through
- Magnet power feed through
- Tool kit
- Single pocket crucible 8scm
- Crucible cover
- CARRERA 3 kW high voltage power supply

Typical Applications

Electronic

- III-V/ Compound
- Lift-off metallization
- SAW and BAW
- Power device metallization
- MEMS
- Insulator layers
- Pure metal layers
- TCO's Transparent conductive coatings

Optics

- Precision optics
- Fibre optics
- Metal mirrors
- Dielectric mirrors
- Dichromic mirrors
- Broadband AR coatings (IR)
- Heat protection filters
- Beam splitters