

Request for Proposal
 for
ANNUAL MAINTENANCE CONTRACT
 For
FOR THE 2.5m VACUUM COATING PLANT
HANLE, IAO
INDIAN INSTITUTE OF ASTROPHYSICS.

Introduction

The Vacuum Coating Plant was specially designed for Optical coating of Large Area Substrates like Astronomical mirrors and other reflectors upto a size of 2M in diameter. The plant can also be used to produce thin film coatings of various substrates. The entire vacuum deposition process is carried out in a clean environment. Thin films are coated on clean metallic substrates by thermal evaporation or/and electron beam deposition under high vacuum. The coating plant at IAO, Hanle is mainly used to coat aluminum Thin film coating on glass substrates. The 2.5M vacuum Coating Plant has the facility for evaporation, ion cleaning, substrate rotation, Thinfilm thickness monitoring unit.

General Description:

The coating chamber of the coating plant has a 2600mm dia. and height of 2100 mm fabricated out of non-magnetic stainless steel with top dished end door which will achieve vacuum sealing with the chamber flange by means of Viton "O" rings. The system is provided with necessary chamber gadgetries like Electron beam Gun, LT evaporation Grid Source, Deposition Controller, Ion Bombardment Gadgetry, Substrate Holder with rotation mechanism and shutter mechanism to achieve required coating thickness and thickness uniformity.

To achieve high vacuum in the chamber, the system have, high speed Diffusion pumps, Rotary Roots combination pumps, High vacuum valves, Roughing and backing valves, vacuum measuring gauges. All the sub-systems are integrated with necessary piping and are operated automatically to achieve high vacuum at the shortest time.

The necessary instrumentation like programmable Logic Controller, vacuum measuring gauges, Deposition Controller, gun controls, ion bombardment controls are integrated in a control console in order to operate the system automatically with manual override facility. The system has been provided with "Supervisory Control and Data Acquisition (SCADA) software for man machine interface to communicate PLC with PC having Intel premium processor with printer to operate the total system automatically from PC with keyboard switches.

The coating plant is operated on 415V AC, 50Hz, three phase power supply and all the electrical controls are integrated in a control console.

Site Environment

The 2.5M vacuum coating plant is located at Indian Astronomical Observatory, Hanle, which about 4500M altitude above MSL. The average temperature during July to October is 8 to 15 degrees.

Scope of Work

General Maintenance of the 2.5M vacuum Coating Plant at Hanle. The following works need to attended for the smooth running the coating plant.

- a. Checking and servicing of the Rotary and Diffusion pump for efficient running.
- b. The checking of the electronic console panel and ensure smooth functioning without any snags.
- c. The control instruments in the control panel and checking of its performance during running of the plant.
- d. Checking and servicing of the all the safety interlocks and safety devices
- e. Checking of the air compressor, with filter, regulator and lubricator for the trouble free operation of pneumatic valves.
- f. Servicing of the pressure switches.
- g. Servicing of the Electron Beam (EB) gun and its accessories.
- h. Checking of the refrigeration units and its allied components like cooling water lines for the appropriate cooling of the system.
- i. Checking of the chamber gadgetries like substrate holder with rotating mechanism and the glow discharge cleaning system.
- j. Servicing (recalibration, if required) of the Pirani and Penning gauges for accurate measurement of the vacuum.
- k. Servicing of the thickness monitoring unit and its demonstration during the operation of the plant.
- l. Demonstration of the vacuum coating using thermal evaporation and with EB gun.
- m. Demonstration of the coating plant both in manual mode and auto mode.

Further Information

Since environment at site is very cold, the maintenance work can be carried out during July - October months.

Local hospitality will be provided at the Hanle.

The vendor has to make his own arrangements to reach Leh. Accommodation will be provided at Leh Guest House and transport will be arranged to the site.

The maintenance personnel should be available at the time of the actual coating of the mirror at the 2.5M vacuum coating plant, to attend to the technical snags if arises. The maintenance work should be scheduled beforehand. For any further information in this regard, the vendors may contact Dr.J.P.Lancelot of Photonics Division at Indian Institute of Astrophysics.

