ISO 9001:2015

HYDRO PNEO VAC TECHNOLOGIES

VACUUM PEOPLE

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PRODUCTS

- ROTARY VANE VACUUM PUMP
- DIFFUSION PUMP
- VACUUMCOATING UNIT/THERMAL EVAPORATION SYSTEM
- RF&DC SPUTTERING UNIT
- E-BEAM EVAPORATION UNIT
- DESK SPUTTER COATER
- PULSE LASER DEPOSATION SYSTEM (PLD)
- GLOVE BOXES
- VACUUM ARC MELTING
- VACUUM FURNCES/OVENS
- CHEMICAL VAPOUR DEPOSTION (CVD)
- PLASMA SYSTEMS
- PROBE STATION
- GAS SENSING SYSTEM
- VACUUM CHAMBERS
- VACUUM MEASURING INSTRUMENTS
- VACUUM VALVES
- VACUUM COMPONENTS & HARDWARE
- EVAPORATION SOURCES
- SPUTTERING TARGETS
- DEPOSITION MATERIALS

VACUUM PUMPS

DIFFUSION PUMP

ROTARY VANE VACUUM PUMP

ROTARY VANE VACUUM PUMP

Features:

- Direct drive
- Air cooled
- Less oil charge
- Compact and rugged
- Light weight
- Gas ballast
- Less noise and vibration
- Built in anti suck back

Displacement (LPM)	100	150	250	500	1000
M3/hr	6	9	15	30	60
RPM	1440	1440	1440	1440	1440
Motor (HP)	0.33	0.33	0.50	1.0	2.0
Oil Capacity (litres)	0.8	1.0	1.1	2.2	4.2
Inlet Port	KF 25	KF 25	KF 25	KF 40	KF 40
Ultimate Vacuum (m.bar)	1×10^{-3}	1×10^{-3}	1×10^{-3}	1×10^{-3}	1×10^{-3}

Model: HPVT 50/ HPVT 100/ HPVT 150/ HPVT 250/ HPVT 350/ HPVT 500 / HPVT 1000

DIFFUSION PUMP

Diffusion Pump

- The HYDRO PNEO VAC TECHNOLOGIES (HPVT) Oil Diffusion/Diffstack pumps are being manufactured in an extensive range to suit the varied needs of both industrial and laboratory users.
- These pumps are available with Different Pumping Speed .

Pump Model	Pumping Speed (LIT/SEC)
OD - 65	120
OD - 80	240
OD -114D	280
OD – 150D	700
OD – 250D	3000
OD -350	6000

HIGH VACUUM PUMPING SYSTEMS

High Vacuum Pumping System

- Vacuum Pumping systems are the most reliable and cost-effective means for producing high vacuum. The vacuum pumping systems are trolley mounted for easy movement and has capable of achieving an ultimate vacuum of10 $-^{6}$ m.bar with Liquid nitrogen trap.
- HPVT offers many choices of vacuum pumping system, with different pumping speeds for various application, ranges from HPVT-65D, HPVT-75D, HPVT-114D, HPVT- 150D, HPVT-225F , HPVT-300F and Custom built suitable for the most of the vacuum applications.

Vacuum Tube Sealing

PHYSICAL VAPOUR DEPOSITION(PVD) SYSTEM

- **PHYSICAL VAPOUR DEPOSITION SYSTEM(PVD)**
  - HPVT offers Vacuum **PVD SYSTEMS** for Laboratory, R&D sectors and Industrial Purpose. Essentially there are Different types of PVD
- **VACUUM COATING UNIT/THIN FILM COATING UNIT.**
- **RF & DC SPUTTERING UNIT**
- **E BEAM EVAPORATION SYSTEM**
- **ORGANIC COATING UNIT**
- **SPUTTER COATER (SEM COATER)**
- **PULSE LASER DEPOSATION (PLD)**

Dual PVD System

VACUUM COATING UNIT

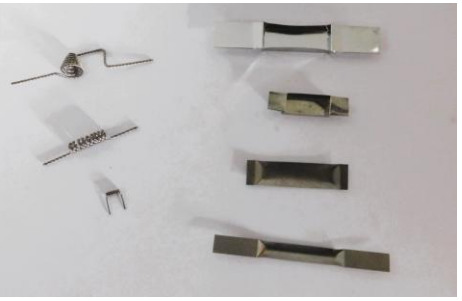
Vacuum Coating Unit

- HPVT VACUUM COATING UNIT can perform a large number of industrial and laboratory applications like preparation of thin films for optical and electronic applications, preparation of specimens for Electron Microscope, Semiconductor, solar cells etc.
- The Basic unit consists of a cabinet with vacuum pumping system together with all the electrical components necessary for the coating process.
- HPVT offers Different Size of Vacuum Thin film Coating unit **Model 12A4,15F6,19F9 & 24F10**

Thermal Evaporation

24F10 Evaporation Unit

Flash Evaporation Unit



Evaporation Source

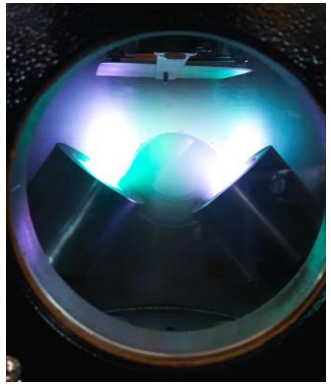
SPUTTERING SYSTEM

Sputter Cathodes

Sputtering Targets

- Sputtering is a widely used and highly versatile vacuum coating system used for the deposition of a variety of coating materials. Sputtering deposition systems use high energy particles as a way of transferring kinetic energy to a target in order to remove material for deposition. For sputtering, the energized particles are present as a glow diffuse plasma

- HPVT manufactures Different Size cathodes from 1” to 4”.
- Our cathodes are flexi mount with Confocal arrangement.
- Magnetrons have capability of accommodating 1-6mm thick targets.



RF & DC Sputtering System

E BEAM EVAPORATION SYSTEM

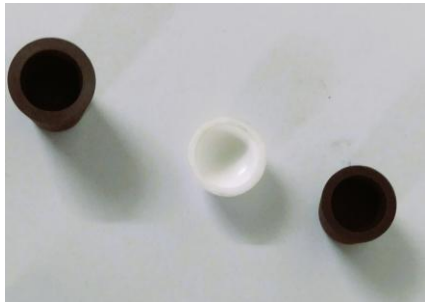
E beam Evaporation

- E-beam evaporation is a process similar to thermal evaporation i.e. a source material is heated above its boiling/sublimation temperature and evaporated to form a film on the surfaces that is stroke by the evaporated atoms.
- The electron beam only heats the source material and not the entire crucible, a lower degree of contamination from the crucible will be present than in the case of thermal evaporation.
- Advantage of e-beam evaporation over thermal evaporation is the possibility to add a larger amount of energy into the source material. This yields a higher density film with an increased adhesion to the substrate.

HPVT Offers Two types of Power Source

- 3kW with single and Three Source
- 6kW with single and Three Source

EB Gun

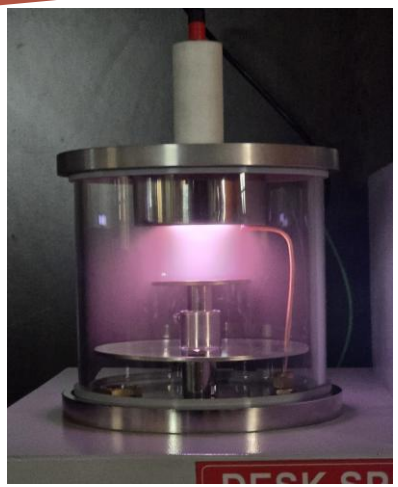


Evaporation Crucibles

SPUTTER COATER

Desk Sputter Coater

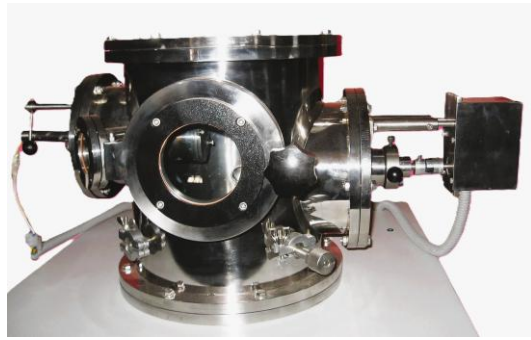
A Desk sputter coater 150A for SEM is a sample preparation instrument that deposits a thin, conductive metal film (like gold, silver, platinum, or palladium) onto non-conductive specimens to prevent charging, improve image quality, and protect against the electron beam



PULSED LASER DEPOSITION (PLD)

PLD System

Pulsed laser deposition (PLD) is a thin film deposition (specifically a physical vapor deposition, PVD) technique where a high-power pulsed laser beam is focused inside a vacuum chamber to strike a target of the material that is to be deposited. This material is vaporized from the target (in a plasma plume) which deposits it as a thin film on a substrate (such as a silicon wafer facing the target). This process can occur in high vacuum Chamber or in the presence of a background gas, such as oxygen which is commonly used when depositing oxides to fully oxygenate the deposited films



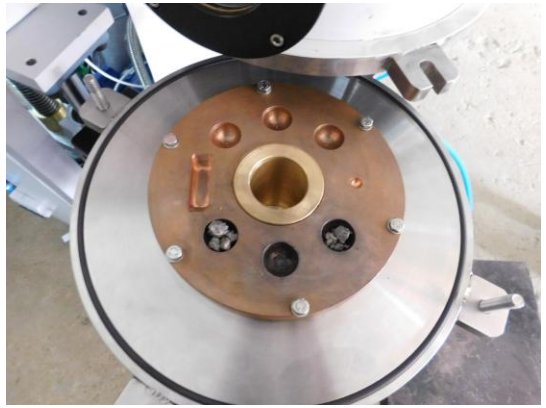
Target Holder

GLOVE BOXES

- HYDRO PNEO VAC TECHNOLOGIES (HPVT) are in manufacture of the glove boxes for varied applications for use in atomic research, nuclear, R & D, biological, micro electronics, Educational institutions etc.
- Glove boxes are used to handle the diverse range of chemical, Oxygen sensitive, Prophetic, Hazardous and Nuclear materials.
- HPVT manufactures different types of Glove boxes with Purifications
  - Two Port
  - Three Port
  - Four Port
  - Five port
  - PVD Glove Boxes

VACUUM ARC MELTING

Vacuum arc melting (**VAR**) is a secondary melting process for production of metal ingots with elevated chemical and mechanical homogeneity for highly demanding applications. The VAR process has revolutionized the specialty traditional metallurgical techniques industry, and has made possible incredibly controlled materials used in the biomedical, aviation, and aerospace fields



VACUUM FURNACES AND OVENS

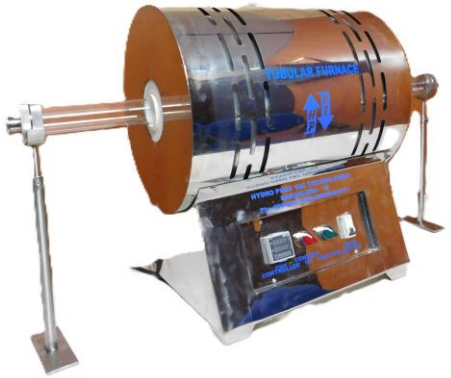
Vacuum Furnace

A vacuum furnace is a sealed chamber used to heat materials in a controlled, oxygen-free environment, typically for heat treatment, brazing, and sintering. By creating a vacuum, it prevents oxidation and contamination, allows for precise temperature control, and can achieve high temperatures with high consistency and low contamination. Inert gases like nitrogen or argon are often used to purge the chamber and assist in the cooling process

Dual Vacuum Tubular Furnace

Vacuum Oven

CHEMICAL VAPOUR DEPOSTION (CVD)



Single Zone CVD

- **CHEMICAL VAPOR DEPOSITION UNIT**

  CVD will be mainly used for CNT & graphene growth. Our CVD furnace can achieve temperature upto 1200 (Quartz Tube) and 1400 (High Alumina)degree

- **HPVT Offers different types of CVD Furnace**
  1. **Single Zone**
  2. **Two Zone**
  3. **Three Zone**
  4. **Split Furnace**
- **Tube materials**
  1. **Quartz**
  2. **Alumina**

Quartz & Alumina Crucibles

Two Zone CVD

PLASMA SYSTEM

Plasma Polymerization

- **HPVT Plasma System** can perform a large number of industrial and Scientific applications like preparation of Surface treatment cleaning, etching, and coating.
- **HPVT Manufacture variety of Plasma System**

1. **Low Pressure Plasma System**
2. **Dielectric Barrier Discharge Reactor System (DBD)**
3. **Plasma Surface Treatment**
4. **RF /DC Plasma etching System**

Low Pressure Plasma

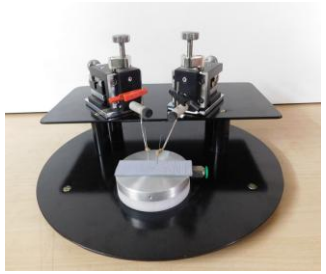
RF/DC Plasma Etching

DBD Reactor System

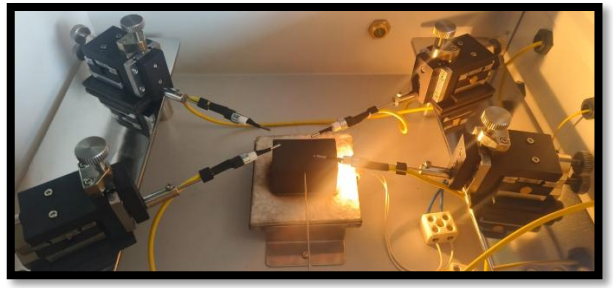
Plasma Cleaner

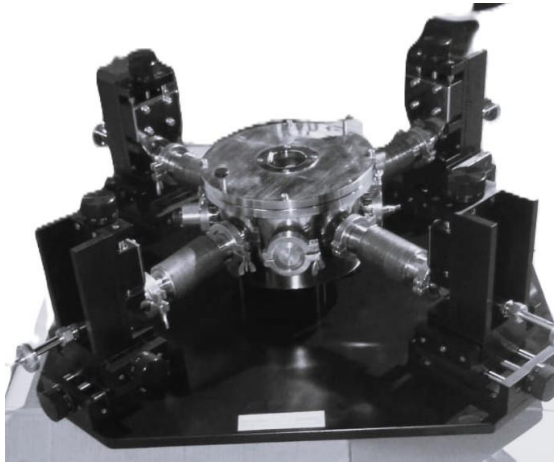
PROBE STATION

Probe station is used to physically acquire signals from the internal nodes of a semiconductor device. The probe station utilizes manipulators which allow the precise positioning of thin needles on the surface of a semiconductor device. If the device is being electrically stimulated, the signal is acquired by the probe and is displayed on an oscilloscope or SMU.



- **HPVT Offers different types of Probe Station**
  1. High and Low Temperature probe station
  2. Hall Effect Probe Station



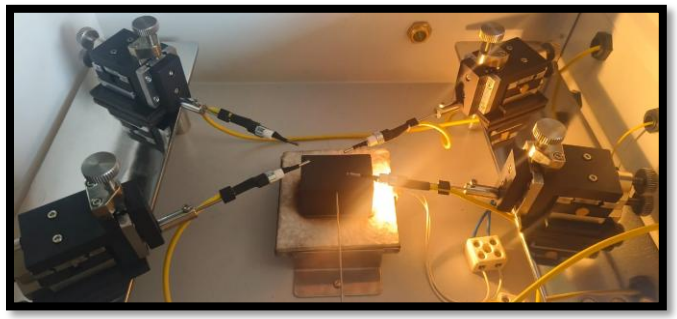


High & Low Temperature Probe Station

GAS SENSING SYSTEM

High Temperature Gas Sensing System

Gas Sensing systems designed for measuring **I-V (current-voltage) characterization** of gas sensors and other gas-sensitive devices, such as Resistive Plate Chambers (RPCs). Its primary function is to ensure a homogeneous and stable mixture of gases at a precisely controlled concentration, pressure, and temperature before the mixture reaches the sensor or device under test.



Gas Mixing & Sensing System

VACUUM MEASURING INSTRUMENTS

PIRANI GAUGE

- Measuring range (vacuum level): 999 to10^{-3} mbar
- Sensor : Single/Two
- Sensor port : KF-10
- Main supply: 230 V. 5 Amps, 50 Hz
- Cable length: 2 meters

PENNING GAUGE

- Measuring range (vacuum level): 10^{-3} to 10^{-6} mbar
- Sensor: one
- Sensor port: KF-25
- Main supply: 230 V. 5 Amps, 50 Hz
- Cable length: 2 meters

THICKNESS MONITOR

- Rate Display: 3 Digit LED
- Auto Ranging from 0.00 to 999 Ant/sec
- Thickness Display :4-digit LED display,
- Crystal Frequency: 6MHz
- Film Density: 0.800 to 99.99gm/cubic sec
- Size: 220 widths x 230 depth x Height 93

VACUUM VALVES

RIGHT ANGLE VALVE

1. RIGHT ANGLE VALVE

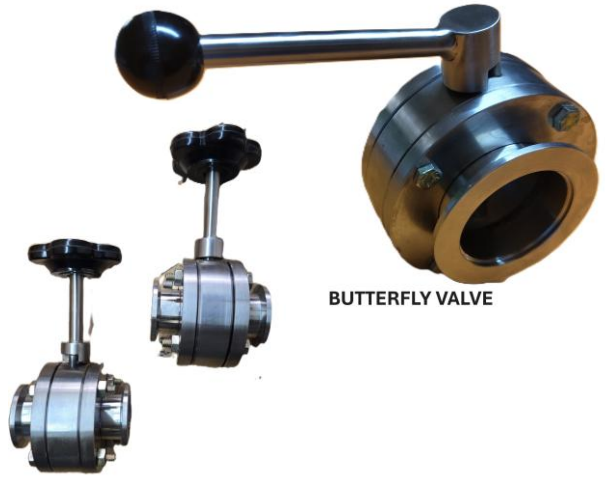
- Size: 1” to 12”
- Operation: Manual/Pneumatic

2. BUTTERFLY VALVE

- Size: 1” to 6”
- Operation: Manual/Pneumatic

3. GATE VALVE

- Size: 2” to 10”
- Operation: Manual/Pneumatic/Motorized



BUTTERFLY VALVE

BELLOW SEALED RIGHT ANGLE VALVE

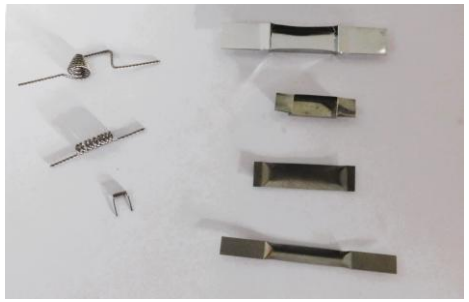
VACUUM GATE VALVE

NEEDLE VALVE

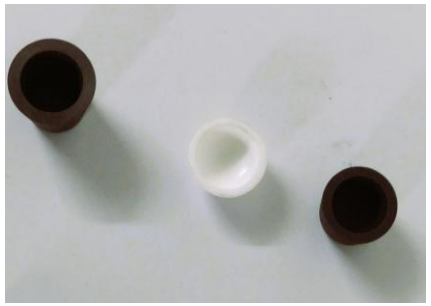
VENT VALVE

ACCESSORIES

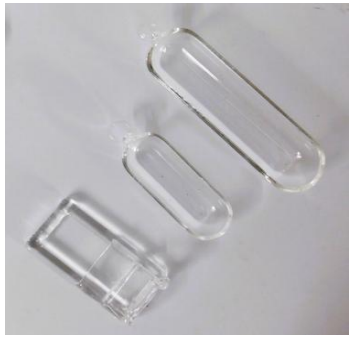
Sputtering Targets



Evaporation Source



E-beam Crucibles



Quartz Crucibles

Alumina Crucibles

Fore line Trap

Substrate Heater & Power Supply

Moisture Trap

Quartz Crystal

Diaphragm Pump

OUR CLIENTS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IIT Indore
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WITH COURAGE AND FAITH


TDPS


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Enriching Lives


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TITAN


MERCK