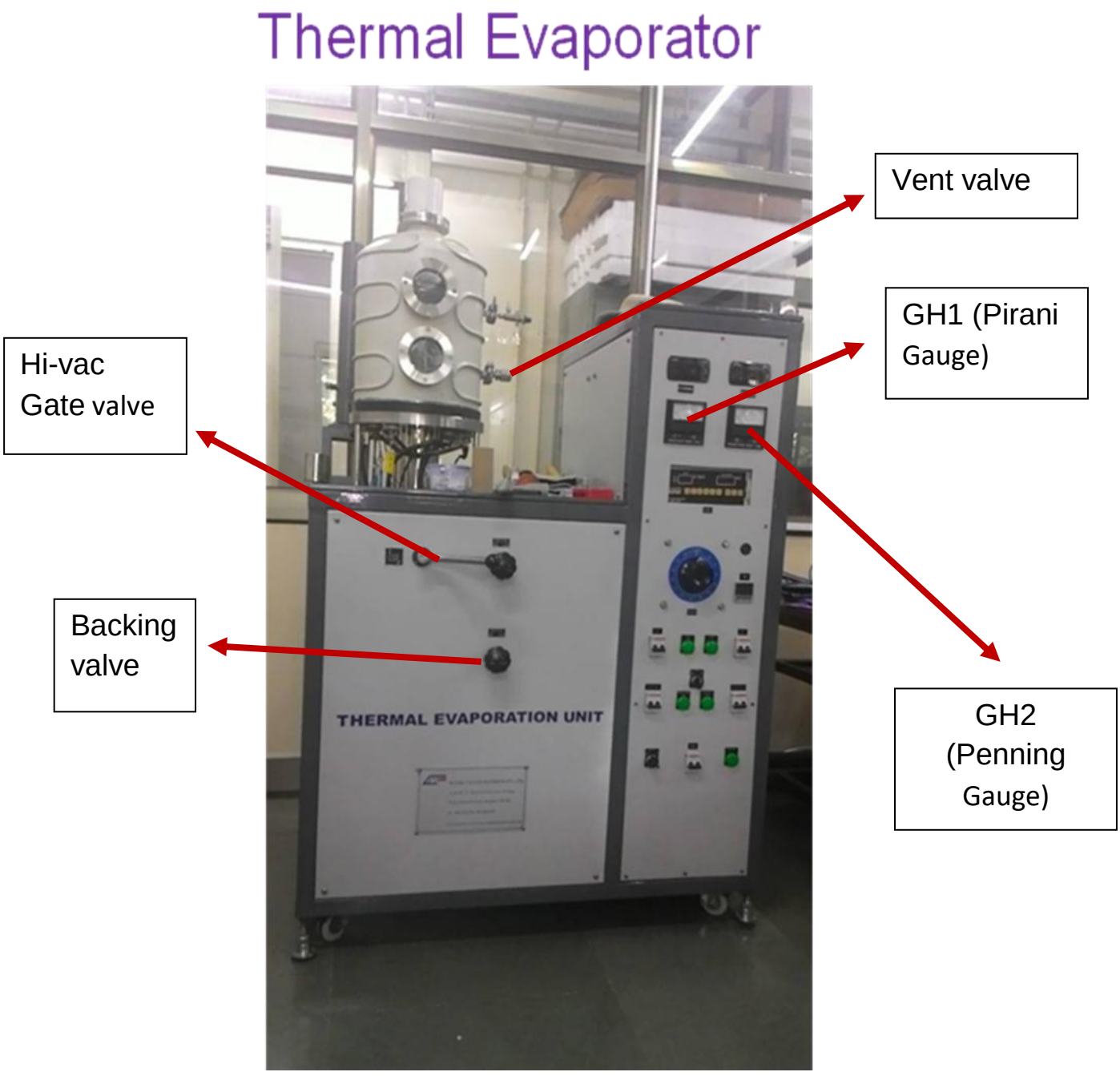
SOP of Thermal Evaporator System



- GH1 is at mouth of rotary pump .
- If backing valve is open measures also pressure at the backing of diffusion pump.
- GH2 measures the pressure in chamber.

A. Checks:

1. Make sure Liquid Nitrogen is available
2. Inspect the mask if it is not clear put in ultrasonic bath using DI water for 15 minutes on both the sides.

B. Process:

1. Switch ON water line and mains power supply from the back side of tool.

2. Switch ON the MCB of main switch on the right side of the system.

3. Switch ON the MCB of rotary vacuum pump the Green light of rotary vacuum pump lamp will glow on the front panel.

4. Check backing and roughing valve s are closed.

5. Switch ON the Pirani gauge. Check the rotary pump vacuum with Pirani gauge GH-1 for its satisfactory operation. ($1*10^{-3}$)

6. Open the backing valve wait till the pressure $1*10^{-3}$ mbar in order to switch on the diffusion pump. It will take 5 min.(If it takes more than 10 min please inform to SO of the system for leak checking)

7. Switch ON the MCB of diffusion pump (DP) the green light of DP pump lamp will glow on the front panel of system.

8. The diffusion pump will take about 30 minutes to reach the operating temperature.

9. Before opening the chamber check GH2. Check roughing valve is closed. Switch to GH1. Slowly Vent the chamber by opening the air

admittance valve. Pressure in GH 1 should not increase. If it increases means the roughing valve is not closed. Stop vent. Close roughing valve. Pump the backing line down. If problem persists switch off DP and report to SO

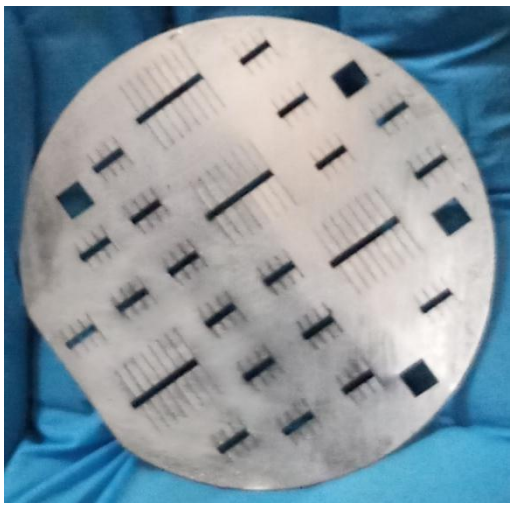
10. Open the chamber when the pressure inside is equal to the atmospheric pressure.(sound from the interlock confirms that the chamber is ready to be opened).

11. Open the chamber and slide it on a side. Clean the chamber and observing window glass with IPA and lint free cloth.

12. Check the condition of the filament, if found in a bad condition replace same. Add the target material if required

13. Align the sample with metal mask and close the chamber.

14. Close the vent valve



15. Close the chamber door by aligning it to the base. Slowly pull down and push from the shaft and chamber top and then close the air admittance valve.

16. Close the backing valve and open roughing valve. Strike the penning gauge. Wait till $1*10^{-3}$ mbar vacuum in Pirani gauge.

17. Close the roughing valve and Open the backing valve and pour Liquid Nitrogen (LN2) till it get overflow.

18. Again Close the backing and open the roughing valve to check the vacuum in chamber $1*10^{-3}$

19. Close the roughing and open the backing valve and then Turn on the HI-VAC handle of the valve (towards the top position) and wait till 5*10-6 vacuums in penning gauge.

20. Set the Parameters in Digital Thickness monitor (DTM) as per desired metal.

21. Switch on the MCB of LT and keep selector knob on LT on position.

22. Press start in DTM and increase the current with the ‘variac’. When the DTM shows desired thickness deposition value press ‘stop’ in DTM and reduce the ‘variac’ to zero.

23. Keep LT/HT selector knob on off position and close the MCB of LT. Turn off the HI-VAC handle then close the MCB of DP and wait for 30 min to decrease the temperature.

24. Vent the chamber and unload the samples. Again clean the chamber and close it.

25. Close the backing valve and open the roughing valve. Take the roughing vacuum, then close the roughing valve.

26. Close the MCB of rotary pump and mains.

27. Close the water line and main supply.

C. Safety Instructions

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1. Before using instrument check all valves are closed

2. Never open roughing and backing valves together.

3. Use safety hand gloves, Safety shoes and Eyewear while handling Liquid Nitrogen.

4. Clean the targets, metal mask before using in the system.
5.
6. Do not keep Chamber open for longer time.

7. Aluminum, Silver, Titanium, and Palladium are allowed material in this system.

8. **Please take prior permission to use other than these materials from concern faculties.**