Specifications for pumps for UHV sputtering chamber

1. **Magnetically levitated turbo molecular pump**
   - Inlet flange – DN200CF
   - Pumping speed:
     - Nitrogen – at least 1000 l/s
     - Hydrogen – at least 800 l/s
   - Desired compression ratio:
     - Nitrogen – at least $10^8$
     - Hydrogen – at least $10^5$
   - Ultimate Pressure in chamber must be in the order of $10^{-10}$ torr
   - Maximum continuous outlet pressure – 0.1 torr
   - Maximum pump speed rating - at least 35000 rpm
   - Maximum inlet flange temperature - 120°C
   - Must be completely oil free
   - Must be water cooled
   - Must come with appropriate power cable with length at least 5 metres

2. **Rotary vane pump (3 phase supply)**

   This pump will be used for backing the above turbo pump and for roughing the chamber.
   - Minimum Displacement volume:
     - At 50Hz – at least
     - At 60Hz – at least
   - Minimum speed:
- At 50Hz – at least
- At 60Hz - at least

- Ultimate vacuum while roughing:
  - Without gas ballast – $1 \times 10^{-3}$ mbar
  - With Gas ballast - $2 \times 10^{-2}$ mbar

- Inlet connections – NW25 flange

- Outlet connection - Nozzle 15 mm external Ø removable from 3/4 in BSP tapped hole

- Maximum allowed pressure at outlet – 0.5 bar
- Max inlet pressure for water vapour – 30 mbar
- Minimum water vapour pumping rate – 0.7 kg/hr
- Must be operational in the temperature range 15 to 40°C

- Nominal rotation speed:
  - At 50Hz – at least
  - At 60Hz – at least

- Must include power cable, mist filter and spare oil for at least 1 refill