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 (1 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 $32m^3/hr$
     - At 60Hz – at least $38m^3/hr$
   - Minimum speed:
     - At 50Hz – at least $27m^3/hr$
     - At 60Hz – at least $33m^3/hr$
• Ultimate vacuum while roughing:
  o Without gas ballast – at least till 1*10^{-3} mbar
  o With Gas ballast – at least till 2*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:
  o At 50Hz – at least 1400rpm
  o At 60Hz – at least 1700rpm

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