



Andrzej Soltan Institute for Nuclear Studies

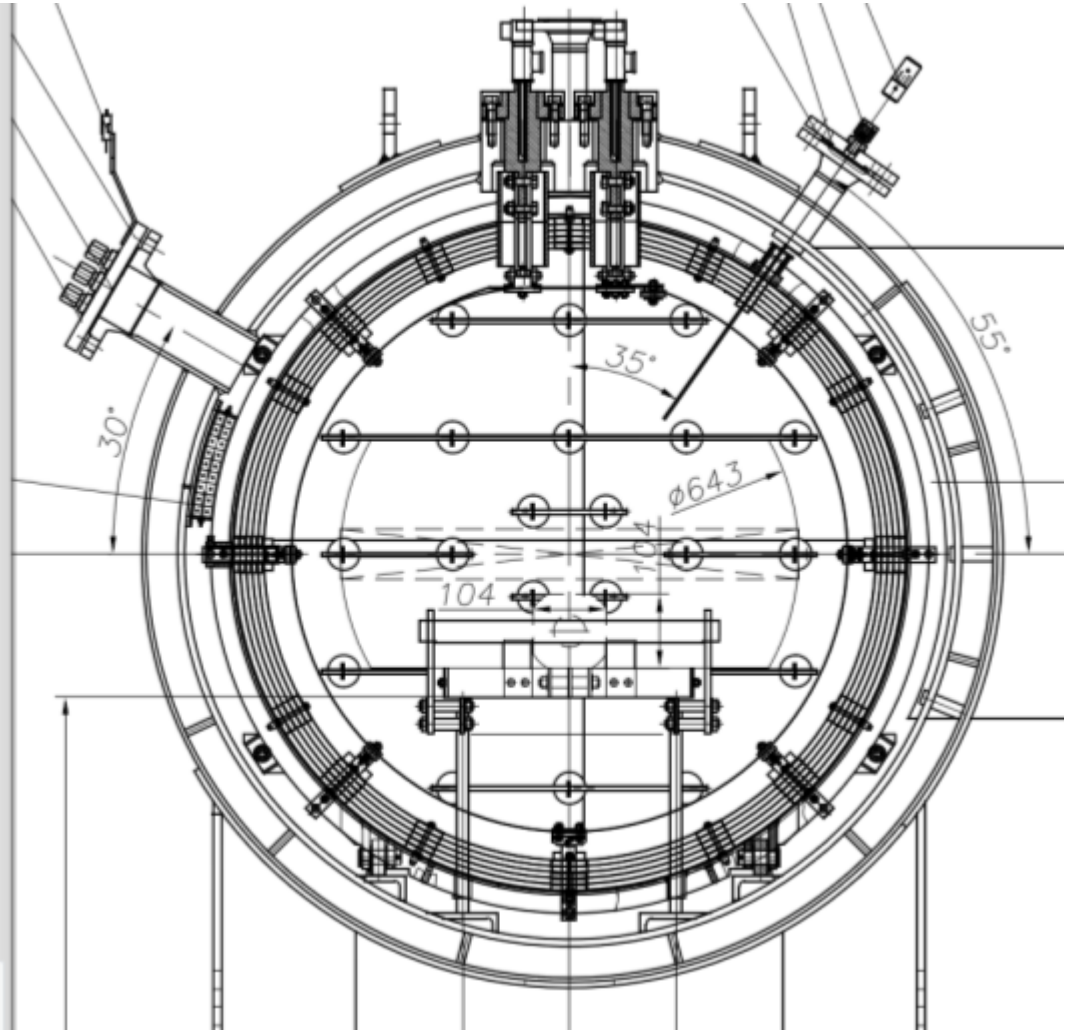
PIMS IN INSTITUTE FOR NUCLEAR STUDIES

Brazing

Furnace



Diameter: 650mm
Length: 2000mm
Max. temperature: 1150°C
Temperature flatness: $\pm 5^\circ\text{C}$
Vacuum level: better than 1×10^{-6} mbar in 850°C
Max weight of brazing elements: 250 kg
Leak rate: 3×10^{-3} mbar*l/s
Ventilation: pressured nitrogen
Temperature growth speed:
0 ÷ 850°C – 1h
850 ÷ 1150°C – 1h



Furnace...

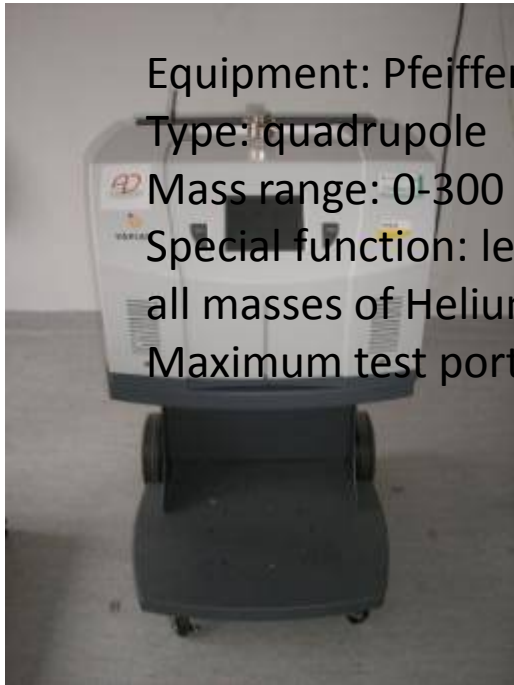
- Pumping
- Based on dry pump
- Low Vac
- pump with
- High Vac
- cryogenic
- Pumping
- manufact
- Pumping
- Med
- pump
- Cryo
- 1000



- Control system:
- based on Siemens PLC controller
 - steering with touch screen
 - cell phone alarm system

Leak rate detection

□ By Helium detector



Equipment: Pfeiffer PrismaPlus

Type: quadrupole

Mass range: 0-300 AMU

Special function: leak detector for all masses of Helium

Maximum test port pressure: 1×10^{-4} mbar

□ By mass spectrometry

Equipment: Varian PD03 Helium detector mobile and stationary version

Parameters:

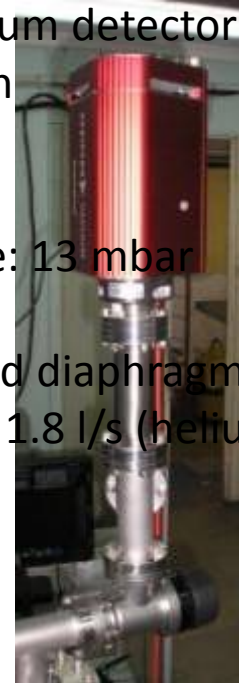
- Leak rate: 5×10^{-12} Pa*m³/sec

- Maximum test port pressure: 13 mbar

- Pumping speed:

- Combo pump (scroll and diaphragm): 3m³/h

- Turbomolecular pump: 1.8 l/s (helium)



Pumping system

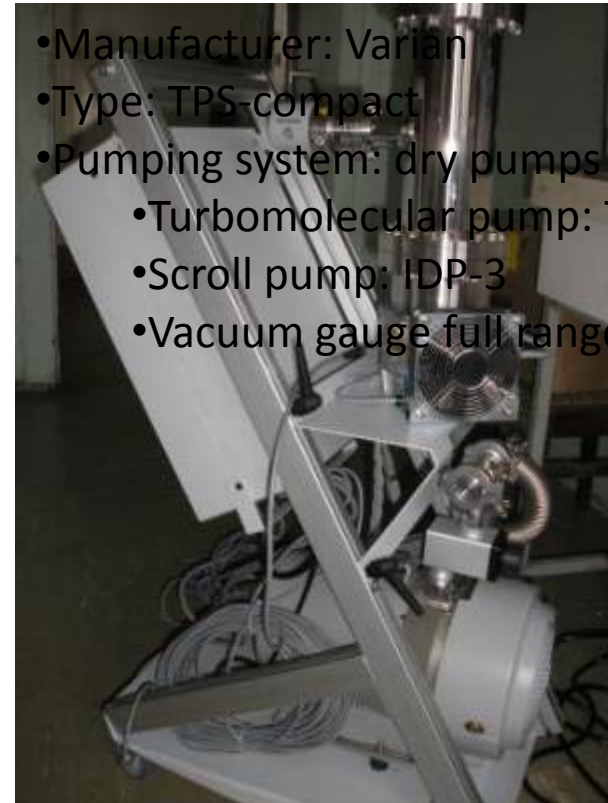
□ Stationary

- Manufacturer: Varian
- Type: Mobile pumping station
- Pumping system: dry pumps
 - Turbomolecular pump: Turbo V-301
 - Scroll pump: SH110
- Vacuum gauge full range: FRG-700



□ Mobile

- Manufacturer: Varian
- Type: TPS-compact
- Pumping system: dry pumps
 - Turbomolecular pump: Turbo V-81
 - Scroll pump: IDP-3
- Vacuum gauge full range: FRG-700



Questions

- Water pressure test: for a clean level would it be better to use a pressured gas (helium)?
- Cleaning before brazing: cleaning, maybe electropolishing (especially before nickel-plating)?