Vacuum system for high heat flux test facility was successfully commissioned and its functionality was tested as per design requirements.

Various subsystems of high heat flux test facility were integrated with vacuum system and their performance was tested.

Hardwired interlocks were implemented for safe operation of vacuum system during high heat flux testing.

**CONTACT**

Website: [www.ipr.res.in/httd/index.html](http://www.ipr.res.in/httd/index.html)
Ph-No: +91-79-2396 4420
Fax.No: +91-79-2396 2277
E-mail id: technology@ipr.res.in
OBJECTIVE

To test large sized (1.5m x 1m x 1m) and heavy components (1 Ton) such as divertor and first wall components of ITER-like device

Designed for mounting electron beam gun, diagnostics & monitoring equipments / sensors and vacuum pumping system of HHFTF

DESIGN

- **Configuration**: D-shaped double walled
- **Material of construction**: SS 304 L
- **Vacuum requirement**: $10^{-9}$ mbar
- **Dimensions**: 2.5m dia, 1.5m height
- **EB gun ports**: 3 Nos.
- **Diagnostic ports**: 29 Nos.
- **Beam dump (copper based)**: 3Nos
- **Pumping ports**: 4 Nos
- **Test component**: 1m$^2$ area, 1 Ton
- **Design code**: ASME Sec VIII Div.1
- **Target handling facility**: Mounted on rail mechanism with hydraulic clamping
- **Cooling lines**: Chamber, beam dump, target

VACUUM PUMPING SYSTEM

- **Roughing Pumps**: 5 Nos
  - Rotary pump: 65 m$^3$/h
  - Root pump: 150 m$^3$/h
- **UHV pumps**: 2 Nos
  - TMP: 1000 l/s for N$_2$
  - Cryo: 4500 l/s for N$_2$
- **Total volume**: 5 m$^3$
- **Ultimate vacuum**: $1.0 \times 10^{-6}$ (mbar)
- **Total pump down time**: 320 minutes

CONTROL SYSTEM

- PXI & PLC based fast real time data acquisition and control system for vacuum data measurements, display and status indication, safety interlocks.
- Remote operation of vacuum pumping system using Human Machine Interface (HMI)

GUI of DACS for Vacuum System

HMI for Vacuum System