

## Turbo Molecular Pump Vacuum Stations

### APPLICATIONS

NEC utilizes turbo molecular pump vacuum stations to provide good vacuum throughout accelerator systems. They are incorporated into ion source injector systems, terminal gas strippers, extended beamlines, analytical endstations, and more.

### DESIGN

Each pump station is complete and includes:

- Pump
- Pump controller
- Necessary cables
- Backing pump station
- Rough valve
- Pump tee
- Pump isolation valve
- Pump interlock
- Ion and wide range convection gauges
- Air cooling kit

There are three (3) main types of turbo pumping systems used by NEC, dependent on vacuum requirements needed in a particular location on the accelerator system. In most cases, the pressure in each vacuum region is less than  $1e-7$  Torr. Each station requires 80-100 psi of compressed air. The difference between the three (3) systems is the pump itself, as well as the pump controller and air cooling kit. All other items are the same for all three (3) systems.

#### TwisTorr 304 Turbo Pumping System

*This system utilizes Agilent's TwisTorr 304 turbo pump, which is rated at 250 l/s, TwisTorr 304 controller and compatible air cooling kit.*

- Used for:
- SSAMS AMS systems\*
  - Terminal stripper gas recirculation system
  - IBA systems (with low gas loads)

*\*NEC's 250 kV SSAMS AMS system does not utilize a pump isolation valve or interlock at this time.*

#### HP400 Turbo Pumping System

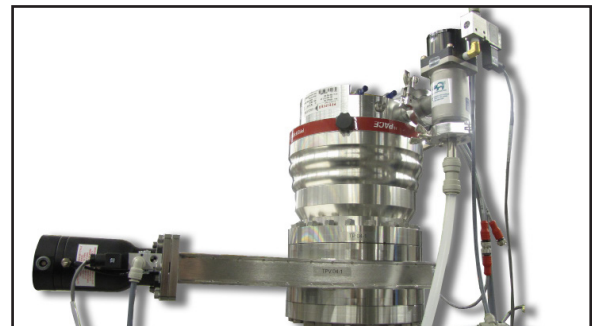
*This system utilizes Pfeiffer's HiPace 400 turbo pump, which is rated at 355 l/s, TCP350 controller, and compatible air cooling kit.*

- Used for:
- IBA systems (with low gas loads)
  - RC43 Endstations

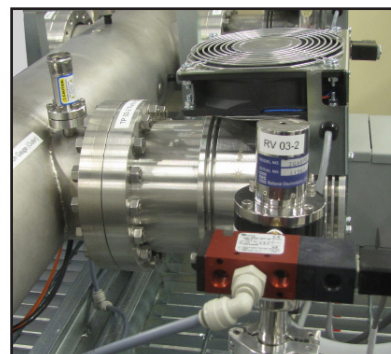
#### HP700 Turbo Pumping System

*This system is the same as the HP400 system except it utilizes a HiPace 700 turbo pump, which is rated at 685 l/s.*

- Used for:
- IBA systems (with high gas loads)
  - AMS systems (with large volumes)
  - TORVIS ion sources



*HP400 Turbo Pumping System*



*TwisTorr 304 pumping system installed on an extended beamline.*

# Turbo Molecular Pump Vacuum Stations

## Backing Pump Station

*This system utilizes Adixen's 2005 SD rotary vane pump.*

Each backing pump station includes:

- rotary vane pump
- convection gauge
- oil mist eliminator
- conversion trap



*Backing Pump Station*

## SPECIFICATIONS

	<b>TwisTorr304</b>	<b>HP400</b>	<b>HP700</b>
Speed for N <sub>2</sub> :	250 l/s	355 l/s	685 l/s
Flange Size:	6" CF	6" CF	8"CF
Controller:	TwisTorr 304- FS AG	TCP 350	TCP350
Cooling:	Air Cooling Kit	Air Cooling Kit	Air Cooling Kit
Power:	115/230 VAC	115/230 VAC	115/230 VAC
Speed:	1010 Hz	820 Hz	820 Hz

 **National  
Electrostatics  
Corp.**

[Turbo Pump v1]

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