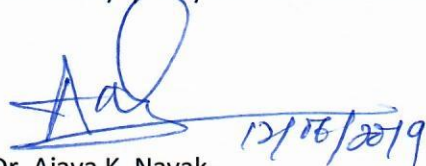


**Technical Evaluation of: Tender NO. NC-000946-PH1705-18-19**  
**for TURBO MOLECULAR PUMPING STATION**

<b>TURBO MOLECULAR PUMPING STATION</b>	1
Spec	<b>Pfeiffer Vacuum</b>
<p><b>Turbomolecular pump with integrated drive unit.</b>            Inlet flange: - DN 160 CF-F,            Outlet flange: - DN 25 ISO-KF,            Pumping speed for: -            Nitrogen: higher than 680 l/s, Helium: - higher than 650 l/s,            Hydrogen: - higher than 550 l/s, Argon: - higher than 660 l/s            Compression ratio for: -            Nitrogen: - higher than <math>1 \times 10^{11}</math>, Helium: - higher than <math>3 \times 10^7</math>,            Hydrogen: - <math>4 \times 10^5</math>, Argon: - higher than <math>1 \times 10^{11}</math>            Backing vacuum pressure for N2: - higher than 10 mbar            Gas throughput for N2: - 6.5 mbar l/s,            Weight: - Weight should be less than 20 kg            Protection category: - Against water spillage ( IP protection should be higher than IP 54) Ultimate pressure with rotary vane backing pump: <math>&lt; 5 \times 10^{-10}</math> mbar as per DIN 28428 standard.            Control Unit for the above pump should inform following parameters: -            a) Speed of the pump in terms of revolutions per seconds.            b) Current drawn by the pump.            c) Operating hours.            Air cooling kit, vent valve, splinter shield, connecting components and other essential accessories to be quoted.            The turbo pump should have maintenance free, permanent magnetic bearing at High Vacuum Side, and oil lubricated ceramic bearing.            Backing pump: Double stage rotary vane vacuum pump with magnetic coupling, with 10 m<sup>3</sup>/hr pumping speed</p>	Complied
<p><b>Specifications for Double Stage Rotary Vane Pump</b>            1) Pumping speed: - 10 m<sup>3</sup>/h.            2) Flange connection: - DN 25 ISO-KF            3) Ultimate pressure: - 0.005 mbar without gas ballast.            4) Noise level: - <math>&lt; 60</math> dB(A)            5) Forced oil lubricated bearings.            6) Motor to pump coupling: - Magnetic coupling.            7) Leak rate of the pump: - <math>1 \times 10^{-5}</math> mbar l/s            8) Integrated with high speed hydraulically controlled high vacuum safety valve.            9) Oil mist filter</p>	Complied
<p><b>l) Pirani gauge head</b>            Connection flange: DN 16 CF-F            Measurement range: 1000 mbar to <math>1.10^{-4}</math> mbar.            Accuracy:            20 – <math>2 \times 10^{-3}</math> mbar: + 10% , 20 – 1000 mbar: + 30%            Bakeout temperature: 80 OC            Feed through: Glass, Filament: Tungsten</p>	Complied

Protection Category: - IP 40 Repeatability: $2 \times 10^{-3}$ – 20 mbar: + 2% Operating temperature: + 5 to + 600 C Flange: St. steel, Seal: Metal - Connecting cable length 3m	
<b>Active Cold cathode gauge head</b> Connection flange: DN 40 CF-F Measurement range: 0.01 mbar to 2.10-9 mbar. Accuracy: 10-8 – 10-3 mbar: + 30% Pressure max:- 10 bar Operating temperature: + 5 to + 550 C Supply: Voltage: 15 – 30 V Supply: Power consumption max.: 2 W Filament: Molybdenum Feed through: Al <sub>2</sub> O <sub>3</sub> Bakeout temperature: 1500C with electronics removed. Flange: St. steel, Seal: FPM - Connecting cable length 3m	Complied
<b>Dual Gauge Controller Unit:</b> No. of sensor connections: 2 Measurement range: 55000 mbar to 5.10-11 mbar Supply: 90 – 250 V AC, 50/ 60 Hz, 1 phase. Power consumption: 65 VA Interface: USB,RS-485, Ethernet Measurement signal output, analog: 0 – 10 V DC Operating temperature: + 5 to + 500C. Measurement rate: 100 1/s Display rate: 10 1/s. Set point: potential free changeover contact: 4 pieces Set point: Voltage, max: 60 V DC Set point, Current max: 1 A Filter time constant: 0.75/ 0.15/ 0.02 sec Protection: IP 20 with one year onsite comprehensive free warranty After Sale Service Facility: -In case of break down, Following Turbo Pump repairs should be possible at site.	Complied
Bearing replacement, Rotor & Stator replacement Motor part replacement, Complete cleaning of the pump with one year onsite comprehensive free warranty	Complied

Pfeiffer Vacuum complies with all the technical specs for the above mentioned item. Therefore, they technically qualify for the financial bid opening.

  
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