



International and Inter University Centre for Nanoscience and Nanotechnology

**Mahatma Gandhi University**

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Tender No.24/Qut-Tend/IIUCNN/2018-2019

### INVITING TENDERS

The International and Inter University Centre for Nanoscience and Nanotechnology (IIUCNN), Mahatma Gandhi University, Kottayam, Kerala, India, invites competitive tenders from companies/firms for supplying the instruments mentioned below.

### Chiller Unit for VSM

<b>Names of the equipments</b>	Chiller Unit for VSM
Last date and time of submission of relevant documents by speed post	06.02.2019 2.PM
Date and time of opening of technical bid	07.02.2019 10.AM
Date and time of opening of financial bid	07.02.2019. 10.30AM

#### Application

- 1 Application : Primary CRYO- Chiller for VSM
- 2 Application Details : Adapter and Coupling for CRYO Cooling system
- 3 Heat Load: 17.5 kW
- 4 Required Entry Media Temperature to Process: 15° C
- 5 Required Flow Rate: 50 lpm
- 6 Required Pressure: 3 bar
- 7 Cooling Media Details: Soft Water

- 8 Any Impurities in Media: RO purified water
- 9 Rated Operating Ambient Temp: 35° C
- 10 Maximum Operating Ambient temp:45° C
- 11 Minimum Operating Ambient temp: 10° C
- 12 Indoor / Outdoor Installation Indoor
- 13 Air Flow Direction, Top / Side Top throw
- 14 Ambient Air Quality normal

#### Chiller specification

- 1 Cooling Capacity 17.5 kW / 5 TR / 15000 kcal/hr
- 2 No. of Compressor Circuits 1
- 3 Refrigerant R407C
- 4 Outlet Cooling media Temperature from Chiller 15° C
- 5 Process Flow rate & Pressure or cooling Media delivered from chiller 50 lpm & 3 bar
- 6 No. of Process Pumps 1
- 6 (A) Internal Pumps NA
- 7 Type of Compressor Scroll
- 8 Type of Controller Microprocessor
- 9 Type of Condenser / MOC Air cooled condensor / Copper tubes with Aluminium Fins
- 10 Type of Expansion Device Thermostatic expansion valve
- 11 Type of Evaporator / MOC Brazed Plate Heat exchanger / SS 316 plates
- 12 Reservoir Volume / MOC 125 ltrs / SS 304
- 13 Type of Pump / MOC Centrifugal / SS 304 impeller and CI casing
- 14 MOC of other Wetted Parts SS 304
- 15 MOC of Chiller Frame CRCA
- 16 Type of Surface Coating Powder coated
- 17 Color RAL 7037 & RAL 7035
- 18 Castor Wheels / Hard mount Castor Wheels
- 19 Power Supply 3 PH, 415 V, 50 Hz
- 20 Power Consumption 6.8 kW

- 21 Current 12.2 A
- 22 Hydraulic End Connection Size & Type 1 " BSP
- 23 No. of Skids 1
- 24 Skid (s) Description NA
- 25 Dimensions of Skid (s) 900mm W X 900mm D X 1550mm H
- 26 Weight per Skid 280Kg
- 27 Submission for Approval / Reference Dimensional dwg, electrical ckt drawing / layout dwg.
- 27.A Customer Approval Required
- 28 Noise 90 dBA

#### Additional specifications

- 1 Chiller performance rating ambient temperature 35 deg C
- 2 Chiller performance rating media temperature 15 deg C
- 3 Add Recommended percentage of glycol to water ion media temperatures ... < 5 deg C
- 4 Chiller performance tolerance +/- 5 % for full load and + / - 12% for part load

#### Design Specifications Refrigeration

- 1 Compressor Type Scroll
  - Sealing Hermetic
  - Refrigerant R407C
  - Unloading percentage 0% / 100%
  - Motor insulation type F class insulation
- 2 Condenser Type Air cooled
  - Tubes Copper internally grooved
  - Fins Aluminium, sine wave
- 3 Type Axial flow
  - Exhaust fan MOC CRCA powder coated wings
  - Insulation class for motor F
  - Electrical protection IP 44
- 4 Evaporator Type Brazed plate Heat exchanger

MOC SS 316

Test pressure 40 bar

- 5 Expansion Device Type Thermostatic expansion valve
- 6 Refrigeration Line Components Standard components like filter drier, hand shut off valves, HP/LP switches, etc

#### Design Specifications Hydraulic

- 1 Pump Type Centrifugal  
MOC SS 304 impeller and casing, Cast iron inlet and outlet chambers  
Mechanical Seal EPDM  
Motor F class insulation, IP 55 protection
- 2 Volume 125 ltrs  
Reservoir MOC SS 304  
Insulation Nitrile rubber  
Accessories Level indicator, level switch, temp. sensor
- 3 Piping MOC SS 304  
Flexible hose Synthetic elastomer, Textile braiding, MS clamping
- 4 Pressure guage Analog type, glycerine filled

#### Design Specifications Electrical

- 1 Controller Type Microprocessor  
Display LED  
Accuracy +/- 1 deg C, with 1 NTC probe  
Electrical protection IP 41
- 2 Switch Gears MPCB, Contactor, MCB, Main switch complying to IEC standards
- 3 Transformer Control transformer with multi tapping consisting of Primary input of 420V, 400V and 380V and Secondary output of 240V, 220V, 200V respectively
- 4 Accessories Other electrical accessories include SPP, indicators, grommets, Cables, wires, Cable glands, terminal blocks, MCB channel, lugs etc.
- 5 Cabinet Powder coated electrical cabinet with industrial lock. IP 54 protected for outdoor application / IP 41 protected for indoor application

## Design Specifications Enclosure

- 1 MOC CRCA
- 2 Surface Coating 7 tank degreasing process, Powder coating
- 3 Color RAL 7037 & RAL 7035

## Design Specifications Safety Interlocks

- 1 HP trip High pressure trip to the compressor from the pressure switch, safeguarding the system from conditions like blocked condenser, High ambient temperature or overcharged system
- 2 LP trip Low pressure trip to the compressor from the pressure switch, safeguarding the system from conditions like Gas leakage, system blockage, Evaporator freezing or undercharged system
- 3 WLL trip Water level trip to the pump from the Float switch fixed inside the tank, safeguarding the pump from dry running
- 4 SPP trip Single phase prevention trip to all the electrical components in the chiller providing safety from phase reversal or phase loss
- 5 OLR trip Overload relay trip to all the electrical components, securing system from over load current.
- 6 AFT trip Anti-freeze trip to the compressor, preventing the evaporator from freezing and securing the system from the conditions of pump failure

Design Specifications Coupling adapters for VSM : specified Q3D interlock with VSM required.

## TERMS AND CONDITIONS

1. The quoted price should be inclusive of all taxes/freight/installation charges, etc.
2. Customs/Excise Duty exempted price should also be quoted
3. The quotation should have at least three months validity
4. Brand name of the equipment should be mentioned and brochure to be enclosed
5. Warranty conditions, details of the nearest servicing centers, user reference, necessary supporting catalogues and demonstration should be provided
6. The right to accept or reject quotes without assigning any reason rests entirely with the undersigned
7. Authorized dealer certificate should be attached with tender.
8. If the date of receipt and opening of quotation is declared a holiday, the next working day shall be the last day for the purpose.
9. At least two users should be trained by the application engineers during the time of installation.

10. The item mentioned in the tender is for research purpose. Any Specification which is above or below the defined values is not compatible for the studies and hence not fit to purpose and will be rejected. Only the specifications which is exactly or most close will be considered for the next stage of the tender process.

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