

### Annexure-1

#### **Technical Details:**

1. Heating & Cooling Unit: 10TR (30,000Kcal/hr.)
2. Refrigerant: R407c/R134a (Eco - Friendly)
3. Ambient temperature: 15 - 45°C
5. Temperature Stability:  $\pm 2^{\circ}\text{C}$
6. Controlled Operating temperature of Oil: (+10°C) (+80°C) (Requirement)
7. Media to be cooled: refrigerant to soft Water; soft water to Hydraulic Oil
8. Internal water Circulation Pump: 100 LPM@2Bar
9. Oil Circulation Pump: 60LPM@ 2 -3 Bar
10. Frame: CRCA frame with Powder coating.
12. Installation site (indoor/outdoor): Indoor
13. Inlet & Outlet End Connection: 1" BSPP
14. Power supply: 415V/3PH/ 50Hz $\pm$ 10%.
15. Control supply: 230V
16. GA drawing: Drawing shall be submitted prior to approval/manufacturing (After PO is placed)
17. Interlocks in chiller: Compressor cut in and cut off as per set Temperature in the controller, HP trip, LP trip, Water level Low trip, SPP trip, AFT trip, OLR trip, Emergency Stop.
18. Dimensions (not to exceed): LxBxH : 1.5 x 1m x 1.5m (max)

**Annexure-1**

**Bill of Material-BOM**

SL NO	ITEM	DESCRIPTION	MAKE	Vendor compliance
1	Compressor	Hermitically sealed Scroll/Reciprocating Supply:415V/3PH/50Hz	Emerson/Danfoss/ Panasonic	
2	Condensers	Air-cooled Copper tube Aluminum fins	ACE / ACTO	
3	Fans	Heavy duty Axial flow Supply:415V/3PH/50Hz	FAVELLE/HICOOL	
4	Evaporator	Brazed plate heat ex-changer Compact & copper brazed SS 304	SWEP/Danfoss/GEA	
4	Water Tank	SS 304 construction Volume: 150 LTRS 12mm nitrile foam insulation	In- house	
5	Internal Circulation Pump	Centrifugal SS 304 construction Supply:415V/3PH/50Hz	Grundfos/CNP/ Calpeda	
6	Oil Circulation Pump	Centrifugal SS 304 construction Supply:415V/3PH/50Hz	Grundfos/CNP/ Calpeda	
7	Refrigeration Accessories	Filter drier Expansion valve Dual Pressure Switch: L/P & H/P Liquid Line Solenoid Valve Digital Antifreeze Oil Separator Pin type valve Copper Tube with silver rod Brazing Insulation	Danfoss/Emerson Danfoss/Emerson Danfoss/Emerson Danfoss/Emerson Subzero Repute Reputed In-house Polynitrile	
8	Electrical	MCB MPCB Contactors Indicators Relays SSR Temperature Controller Temperature Indicator SS Float Switch SPP Connectors Wiring	Schneider /Siemens Schneider /Siemens Schneider /Siemens Schneider /Siemens Omron/Reputed Reputed ABB/Reputed Omron/reputed Davison/ Filpro Crozet/GIC Wago In-house: Lapp cable	
9	Secondary Heat Exchanger	Gasketed Plate Heat Exchanger (M10) With NBR Gasket SS316 Plate, Capacity: 10TR	ALFA LAVAL /GEA/VARALKA	

10	Plumbing & Additional Accessories	Heaters 6KW SS Pipes/SS Hose, Ball Valve & Gate Valves, 3 Way Modulating Valves	HITCO/ELTAK/SS INST. Reputed Siemens/Honeywell	
----	-----------------------------------	---	--	--

**SCOPE OF WORK:**

- Design and manufacturing of chiller( Heating and cooling unit)
- First charge of refrigerant and oil
- Performance testing at vendor place.
- Supply and installation at CMTI.

