

SPECIFICATION FOR 4 TON AIR COOLED CHILLER PLANT

Specification No. Mech/M&P/3100/GM/45

1.0 IMPORTANT INSTRUCTIONS TO TENDERERS FOR FILLING TECHNICAL BID

- 1.1 Bidders are required to give clause wise comments on the technical specifications, confirming compliance/non-compliance with details of deviations if any along with their effect on the performance. Back references to be avoided, offers are likely to be ignored in case of non-compliance of these instructions for furnishing the information.
- 1.2 Unless otherwise stated, latest alterations/ revisions of specifications/ standards/ drawings shall be applicable. In respect of safety standards and environmental standards relevant to the machine, the machine manufacturers shall ensure compliance with international (CE/ISO/DIN/JIS)/National standards (IS) (where applicable).
- 1.3 Tenderers should offer and quote for all the specified concomitant accessories, as these are considered essential for commissioning and utilization of the machine. Even if bidder does not recommend the purchase any of these accessories, the price must be quoted for comparison purposes and their recommendation/suggestion indicated in the offer. Tenderers should also quote for optional accessories, spares and consumable spares as asked in the specifications.
- 1.4 In case, any item is required in sets, please specify nos./pieces per set. This is essential for proper technical evaluation of the offer. Offers received without this may be considered as incomplete and liable to be rejected.
- 1.5 The bidder should quote only for the specified make of sub-assemblies and equipment wherever specified. Makes of sub-systems other than the specified ones will normally not be acceptable. In case, some other make is quoted, specific reasons for the same including its features/advantages over specified makes must be brought out in the offer.
- 1.6 In case there is a contradiction in any information provided (some parametric values given in the specification and those given in the brochure or some other document enclosed by the tenderer), unless specifically mentioned in the deviation cum confirmation statement the values as given in the specification shall be taken as confirmed by the tenderer and offer evaluated accordingly.
- 1.7 The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the Technical Specification. However, the decision of the Purchaser in this regard shall be final.
- 1.8 Purchaser reserves the right to verify the details submitted by the bidder by actual site visits.
- 1.9 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.

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2.0 DESCRIPTION

Chiller unit for cooling of hydraulic oil, air-cooled, condenser and cooling coil (PTHE type), Refrigerant R-407 / R-410, 4 Ton capacity of **make Advance Cooling System, Mongia & Co. , Rittal, Kelvin, Hydac and Werner Finley only** to cool down hydraulic oil temperature at 20°C ±2°C .

3.0 PURPOSE & SCOPE OF SUPPLY

- 3.1 The scope of this specification covers design, manufacture, supply, installation and proving out of 4 Ton Hydraulic Oil Chiller Unit at Rail Coach Factory, Kapurthala.
- 3.2 Supply installation, testing & commissioning of 4 Ton Hydraulic Oil Chiller Unit as per schedule-I.

4.0 TECHNICAL SPECIFICATIONS

- 4.1 Body should be fabricated by MS sheet 1.5 mm thick. The covers shall be provided with locking arrangement & easily operable with the help of panel key.
- 4.2 The cabinet shall be powder coated and treated by 7 tank dip process.
- 4.3 The compressor of the chiller shall be hermetically sealed, 415 volt ±10%, 3 phase power supply capacity, 4 ton, refrigerant R-407 / R-410 , Make – Kirloskar, Copeland, Voltas, Danfoss .
- 4.4 The condenser coil of the chiller shall be air cooled provided with 02 no. high speed axle fans make EBM Nadi - American Universal, Crompton Greaves on the top of the Chiller unit.
- 4.5 The cooling coil shall be plate type heat exchanger for circulating the hydraulic oil.
- 4.6 The chiller shall be free from vibration and noise level shall be less.
- 4.7 The safety protection devices for LP, HP cut out, antifreeze system should be reputed make like Danfoss , Indfoss, Alco .
- 4.8 The chiller shall have a single phase preventer of reputed make like Minilec , L&T, BCH.
- 4.9 The chiller shall be able to work on 3 phase 440 volt +10% -15% frequency 50 hz.
- 4.10 The drier filter, thermostatic expansion valve should be provided of Danfoss or reputed make only the cooling coil and suction line shall be properly insulated.
- 4.11 The chiller shall be provided a temperature controller with NTC probe of reputed make like Carel, Subzero, Redix for indication of temperature of oil & cut off the compressor on specified temperature.
- 4.12 The control panel shall be provided on the front of the chiller with proper interlocking sequence of condenser fan, compressor and oil pump. The overload relay, contactor, relay, pushbutton, indicator, on/off switch should be reputed make like Siemens , L&T, Schneider and BCH.
- 4.13 A 3 phase 2 hp, 2800 rpm stainless steel 2 CDX SS end suction two stage monoblock pump for circulating hydraulic oil from tank to chiller unit should be provided. The pump shall be ISI marked & reputed make like Ebara , Grundfoss Crompton, Kirloskar, Bharat Bijlee Ltd.
- 4.14 Two gate valves size 1½" are required for inlet and outlet supply of hydraulic oil from oil tank of machine to pump and back to tank.
- 4.15 The size of inlet and outlet hydraulic oil pipe of chiller unit is 1½"
- 4.16 The chiller unit supplied shall have complete documentation including functional diagram and wiring plan, complete spare parts technical detail parts nos. working instruction for regular and preventive maintenance schedule etc

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or any other relevant information the supplier feels necessary shall be supplied (3 copies)in hindi or english language.

5.0 STANDARD ACCESSORIES TO BE SUPPLIED WITH MAIN UNIT

- 5.1 During warranty/ Guarantee period supplier will have to replace all spares free of cost on site. It should be very clear to the supplier that in case instrument / any of its part(s) is required to be sent to its principal outside/ Inside for repair it will be sole responsibility of the supplier to make full arrangement to sent the equipment for repair and then supply the instrument back to RCF free of cost.
- 5.2 The supplier shall provide necessary tools & tackles along with equipment at the time of commissioning of the same.

6.0 OPTIONAL ACCESSORIES AND SPARES

- 6.1 The tenderer should furnish details of optional accessories & spares covered under warranty.
- 6.2 The tenderer should furnish the price list of optional accessories & spare parts required for two years normal maintenance of the equipment.
- 6.3 List of recommended optional accessories & spares for normal maintenance after expiry of warranty period to till useful life of the equipment.
- 6.4 Life estimated/expected for each equipment and its sub assembly.

7.0 OPERATING CONDITIONS

The equipment shall be capable to operate at temperature 0°C. to +50°C, Relative Humidity 98% max.

8.0 COMMISSIONING AND PROVING OUT

- 8.1 The Successful tenderer shall have to commission the machine within 15 days from the date of receipt of machine/ date of intimation by the consignee at RCF, Kapurthala.
- 8.2 The successful tenderer shall have to prove out the accuracy of the machine at RCF premises to the entire satisfaction of the consignee.
- 8.3 The supplier shall depute adequate number of personal so that installation and commissioning delays are eliminated.

9.0 TRAINING OF STAFF

The training for operation, maintenance and trouble shooting of the Equipment shall be provided to 3 persons of RCF to their full satisfaction free of cost at RCF, Kapurthala.

10.0 ELIGIBILITY CRITERIA

- 10.1 The tenderer shall be registered on IREPS website (www.ireps.gov.in) to participate in the tendering process.
- 10.2 The tenderer shall have established quality control system and organization to ensure the supply of good quality products to the purchaser.
- 10.3 The tenderer shall provide a performance statement giving a list of major supplies of same/similar equipments effected in last 5 years to the reputed organizations giving details of the order no. and date and the quantity supplied and whether the supply was made within the delivery schedule. Such period shall be reckoned from the date of opening of tender.
- 10.4 References must be given to prove that the instrument model quoted is latest one and has earlier been installed at least 03 locations and has been successfully operating for last 02 years.

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10.5 Tenderer not submitting the requisite information may note that his offer is liable to be ignored.

11.0 DEVIATION

The tenderer should clearly certify that the machine offered fully meets the specification various design features incorporated in the machine to fulfill different technical performance requirements should be fully explained in the offer. However, minor deviations from this specification, which do not affect or in any way interfere with the stipulated performance standards, or would result in improved safety/reliability or would reduce recurring maintenance/operating cost of the machine, can be considered for acceptance.

12.0 MAKE & AUTHORISATION

12.1 The supplier shall furnish the complete details of Model No. Make & Manufacturer's details/ address, Country and authorization details of Dealership.

12.2 The firm shall provide the calibration certificate of National / International Traceability along with validity of at least two years.

12.3 Tenderer should be either OEM or authorized dealer of any reputed brand/make.

13.0 SERVICING FACILITIES

13.1 The tenderer shall clearly spell out in the offer about the facility available with him or his agent/dealer for providing adequate after sales service in Punjab during warranty period.

13.2 The tenderer shall also indicate the service organization located at various places in India and availability of trained staff, maintenance spares etc.

13.3 The contractor shall give a comprehensive spare part list with OEM details and price for all the sub systems.

13.4 The tenderer/contractor shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period

13.5 For maintenance during warranty following criteria shall be considered.

a) Service engineer of the supplier shall be available for attending to the system faults during first 07 days after successful commissioning of equipments during 09.00 - 17.00 hrs on all working days including Saturdays.

b) Service engineers shall visit RCF on quarterly basis thereafter till the end of warranty/extended warranty period for Preventive Maintenance at least for one full day at a time.

c) In case of any breakdown affecting the performance of the system completely or partly, firm shall depute its service engineer as soon as and when informed by any suitable means like Fax, SMS or email possible after receiving such call.

d) Breakdown period shall be calculated from 8 hours after it's reporting to the firm upto the time it is attended. If intimation to the firm is delayed from Railway's side, then the breakdown period calculation will start from the time by which it is reported to the firm.

13.6 Total up time of the system should be at least 90%. Up time shall be counted in following manner:-

a) Total breakdown of less than 8 hours shall be ignored for the purpose of this calculation.

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- b) Penalty may be imposed if the down time is more than 10% without any valid reasons. The levy of token penalty as deemed fit based on the merit of the case may also be consider as per clause 17 (b) of GCC -201.
- 13.7 Warranty period for part or machine shall be extended after completion of warranty period by the duration under which the part or machine remains under breakdown during warranty.
- 13.8 Tenderer shall provide list of spares, consumables required for maintenance for 5 years after completion of warranty period as per annexure-A
- 13.9 Tenderer shall provide expected life for the components of the system and provide the maintenance schedule required for 10years for as per annexure -A
- 13.10 Tenderer shall provide the service charges /per day/per man for deputing service engineer on the machine on requirement separately for Indian and Foreign engineer.

14.0 TECHNICAL LITERATURE:-

- 14.1 Four copies of operational instruction manual, electrical circuit and troubleshooting guide along with warranty/Guarantee certificate for smooth and trouble free working of the instrument for at least two year of its commissioning at site should be provided to the consignee.
- 14.2 One copy of printed illustrative catalogue showing various features of equipment and its elements must be enclosed with tender bid.
- 14.3 Tenderer shall supply one soft copy containing all the manuals.

15.0 SCHEDULE OF ANNUAL MAINTENANCE CONTRACT (AMC) FOR PERIOD OF 5 YEARS AFTER COMPLETION OF WARRANTY PERIOD

- 15.1 Tenderer shall provide proposal for 5 year Annual Preventive Maintenance. Schedule to be executed after completion of warranty period in the format as per annexure-B.
- 15.2 Annual maintenance contract is entered into with the contractor with an intention to maintain the machine in good working condition and to ensure that the machine shall be available for production/operation with full capacity with a minimum up time of 85% during the first year of AMC and with 90% up time with full capacity during the second year of AMC. The uptime for the machines shallbe calculated on monthly basis against available machine hours. [up time for the machine = available machine hours –(scheduled down time for maintenance+ duration of machine stoppage on account of RCF)]. If the break down period of the machine exceeds the allowed limits during the AMC period, RCF administration shall take an appropriate decision on further course of action.
- 15.3 The firm shall maintain the machine in good working condition during the contract period and shall correct the fault or failures, repair or replace the worn or defective parts/equipment during the normal working hours of shop where the equipment has been installed. Unserviceable parts/equipment need to be replaced at no extra cost with brand new parts/equivalent or superior specification.

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- 15.4 The firm shall respond by deputing service personal to oral / telephonic/ or other modes of intimation for repair and maintenance of the said machines within 2 hours.
- 15.5 The firm shall ensure that the machine is in proper working condition, to the full capacity, after repair and maintenance.
- 15.6 To have a timely supply of spares during AMC, the contractor shall furnish a total list of spares which should contain list of spares that shall be arranged by the firm, both chargeable, duly mentioning the charge against each item, and spares which shall be non-chargeable, and list of spares to be held by RCF.
- 15.7 The contractor shall clearly list-out the list of consumables required for day-to-day operation of the machine. It shall be the scope of RCF to arrange the consumables once the completion certificate is issued for the retrofitted machine.
- 15.8 The tenderer/contractor shall provide suitable standby when repairs exceeds 2 hours. When any equipment is taken for repair to the tenderer/contractor's premises suitable standby equipment should be provided.
- 15.9 Besides attending the breakdown calls, the firm shall attend to the corrective and preventive maintenance of the machines once in a month.
- 15.10 The AMC is valid for five years from the date of completion of the warranty period . No freight is admissible.
- 15.11 During the AMC period, whatever equipment is defective shall be handed over to RCF. During completion of the AMC period the machines should be handed over in full working condition to its full capacity.
- 15.12 The firm should maintain a register duly indicating the nature of defects and repair attended and got signed by RCF authority. Preventive maintenance schedule should be made. The schedule should be made in such a way that more than one machine should not be attended on the same day. A copy of the schedule should be given to RCF at the beginning of the AMC and the schedule should be strictly followed and on carrying out the preventive maintenance the same should be entered in the register and got signed by RCF authority.
- 15.13 AMC charges shall be paid quarterly as one quarter of the total AMC charges applicable for that year on submission of bills duly certified by the engineers in charge with regard to the satisfactory execution of AMC during the period for which the bill is claimed. Income tax @ 2% or service tax as applicable at the time of payment shall be deducted at source.

16.0 WARRANTY

The warranty condition of contract will be as per IRS conditions or as quoted by the tenderer whichever is later.

ANNEXURE-A

S.N.	Item	Part No.	Service Life	Price

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Annexure –B

S.N.	YEAR	AMC CHARGES
1.	IST YEAR	
2.	IIND YEAR	
3.	IIIRD YEAR	
4.	IVTH YEAR	
5.	VTH YEAR	

SCHEDULE – I

1.	Capacity of Chiller Unit	4 Ton
2.	Refrigerant	R-407 / R-410
3.	Cooling coil	Plate Type Heat Exchanger
4.	Condenser	Air cooled
5.	Supply	415 Volt, +10% -15% 50 Hz
6.	Oil temperature required	20°C ± 2°C
7.	Hydraulic pump	2 HP Stainless Steel End suction two stage Mono block Pump

Note: Tenderer to furnish following detail of the Chiller unit offered

S.no.	Technical Parameter	Offered by Tenderer

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