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|---|--|---------------------------------------|----------------|------------------|----------------|
| TECHNICAL SPECIFICATIONS FOR 50 MT SELF ALIGNING ROTATOR. | | | | | |
| NOTE :- | | | | | |
| 1. Vendor(OEM) must submit complete information against clause at Sl.No.. 19.0 The offer, complying this clause, would only be considered. 2. The vendor(OEM) should fill the "Offered" Column in compliance to specified requirements and also "Deviations" | | | | | |
| ADDRESS OF THE SUPPLIER : | | ADDRESS OF THE INDIAN AGENTS : | | | |
| TELEPHONE NOS.: | | TELEPHONE NOS.: | | | |
| FAX NOS.: | | FAX NOS.: | | | |
| E-MAIL ADDRESS : | | E-MAIL ADDRESS : | | | |
| SCOPE: | SUPPLY, ERECTION & COMMISSIONING OF 50 MT SELF ALIGNING ROTATOR | | | | |
| SL. NO. | DESCRIPTION OF BHEL REQUIREMENT | REQUIRED | OFFERED | DEVIATION | REMARKS |
| 1.0 | PURPOSE | | | | |
| 1.1 | <u>Purpose:</u> To facilitate controlled rotation of Storage Tank, Dearator Header, shell Assembly / Cylindrical Assembly etc. | Vendor to note | | | |
| 1.2 | To perform positional welding of Stator body storage Tank, Dearator Header, Shell Assembly /cylindrical Assembly job etc. and cleaning & painting operation. | | | | |
| 2.0 | JOB REQUIREMENT : | | | | |
| 2.1 | The self aligning rotator should be capable of rotaing L.P Heaters, Duplex-Heaters / shells of following parameters:- | Vender to offer /confirm | | | |
| | i) Diameter range -1000-5000mm. | | | | |
| | (ii) Weight range-upto 50 MT | | | | |
| | (iii) Controlled & pre-determined rotation of job through remote pendant for assembly & Sequential welding of stator body on rotator. | | | | |
| 3.0 | TECHNICAL SPECIFICATION: | Vender to offer | | | |
| 3.1 | Load carrying capacity of drive unit -50 MT. | Vender to offer | | | |
| 3.2 | Load carrying capacity of Idler unit -25 MT. | Vender to offer | | | |
| 3.3 | Diameter range -1000 mm to 5000 mm. | Vender to offer | | | |

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| 3.4 | Job diameter adjustment -Automatic | Vender to offer | | | |
| 3.5 | Instantly self aligning to job irrespective of ovality or irregularity of job. | Vender to confirm | | | |
| 3.6 | Rotation speed - 125 mm /min to 1250 mm/min (Variable) with accuracy +/- 1% at set speed | Vender to offer | | | |
| 3.7 | Wheel &Size -Polyurethane wheel size suiting job requirements. | Vender to offer | | | |
| 3.8 | No of Polyurethane wheels in drive &Idler unit -8 nos | Vender to offer | | | |
| 3.9 | Overload protection device /roller to protect polyurethane rollers. | Vender to offer | | | |
| 3.10. | Anti creep mechanism on Idler . | Vender to give details | | | |
| 3.11. | Anti backlash device to ensure smooth rotation without any jerk | Vender to offer | | | |
| 4.0 | CONTROL PANEL | | | | |
| 4.1 | AC variable drive frequency panel with remote pendant . | Vender to offer | | | |
| 4.2 | Infinite variable speed control through remote pendant . | Vender to offer | | | |
| 4.3 | Display of rotational speed with proper marking /indication in panel & on remote pendant for pre-determined speed. | Vendor to confirm | | | |
| 5.0 | DRIVE SYSTEM: | Vender to offer | | | |
| 5.1 | Automatic double end drive | Vendor to offer | | | |
| 5.2 | Motor capacity -2 nos (Type ,KW,rpm) | Vendor to offer | | | |
| 5.3 | Make of motor / Drive - Crompton Greaves/ Kirloskar / Siemens. (Rating ,Model,specification) | Vendor to offer & mention | | | |
| 5.4 | All Gear drive & no chain & sprocket drive | Vender to offer /confirm | | | |
| 5.5 | Gear Box reputed make (make to be mentioned) | Vendor to offer & mention | | | |
| 6.0. | SCOPE OF SUPPLY: | Vender to offer | | | |
| | Self Aligning Rotator should consist of following:- | /confirm | | | |
| 6.1. | Drive unit as per specification | Vendor to offer | | | |

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| 6.2. | Idler unit as per specification. | Vendor to offer | | | |
| 6.3. | Control panel .(Details to be submitted) | Vendor to offer & submit | | | |
| 6.4. | Remote control pendant with 10.0 m cable housed in flexible metallic protective cover. | Vendor to offer | | | |
| 6.5. | Idler unit fitted with anti creep device . | Vendor to offer | | | |
| 6.6. | Fitted with shock absorbing device in both drive & Idler rollers to with stand loading impact in shop floor working conditions. | Vendor to offer | | | |
| 6.7. | Fitted with overload protection device to protect polyurethane rollers . | Vendor to offer | | | |
| 6.8. | Fitted with anti back lash device in gear train to ensure jerkless smooth rotation. | Vendor to offer | | | |
| 6.9. | Base should be machined levelled & aligned . | Vendor to offer | | | |
| 6.10. | Input cable (10.0 m long)with plug / socket , any other items required for ready to use condition. | Vendor to offer | | | |
| 7.0. | ELECTRIC SYSTEM: | | | | |
| | Power supply- 415V \pm 10%,50Hz \pm 3% 3 phase AC supply with neutral. | Vendor to note | | | |
| 7.1. | REQUIREMENT FOR ELECTRICAL EQUIPMENT | Vendor to offer /confirm | | | |
| 7.2 | Power Supply will be provided by BHEL at a single point near the rotator, as per layout recommended by Vendor. All types of switches, cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine should be provided by vendor. | Vendor to note /confirm | | | |
| 7.3 | Tropicalisation: All electrical / electronic equipment shall be tropicalized. | Vendor to confirm | | | |
| 7.4 | All electrical & electronic control cabinets & panels should be dust and vermin proof. | Vendor to confirm | | | |

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| 7.5 | All electrical components in the cabinets should be mounted on DIN Rail. | Vender to confirm | | | |
| 7.6 | All electrical / electronic panels to be provided with adequate door locks. All electrical & electronic panels including operator's panel should have sufficient illumination and power receptacles/plug points of 220Volts, 5/15 Amp AC with on/off switch. | Vender to offer /confirm | | | |
| 7.7 | All motors shall conform to IEC or Indian Standards | Vender to confirm | | | |
| 8.0. | SAFETY ARRANGEMENTS | Vendor to offer | | | |
| 8.1. | All standard safety features should be provided in the rotator to avoid damage of the rotator & the operator due to malfunctioning or mistakes. | Vender to note & confirm | | | |
| 8.2. | Emergency Switches as per national / International Norms should be provided. | Vendor to submit | | | |
| 8.3. | All cables should be well supported and protected. | Vender to confirm | | | |
| 9.0. | SPARES : | | | | |
| 9.1. | Itemwise breakup of mechanical, electrical and electronic spares in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation on continuous running basis. | Vendor to offer | | | |
| 9.2. | Mechanical Spares : Following Spares are to be offered. | Vendor to offer | | | |
| 9.2.1 | All Bearings | Vendor to offer | | | |
| 9.2.2 | All Couplings | Vendor to offer | | | |
| 9.2.3 | Worm Shaft. | | | | |
| 9.2.4 | Worm Gears. | | | | |
| 9.3. | Electrical /Electronic Spares : Following Spares are to be offered. | Vendor to offer | | | |
| 9.3.1. | Relays (2 Nos each type) | Vendor to offer | | | |
| 9.3.2 | Contactors (2 Nos each type) | Vendor to offer | | | |
| 9.3.3. | Push Buttons (5 Nos each type) | Vendor to offer | | | |
| 9.3.4 | Indicating Lamps (10 Nos each type) | Vendor to offer | | | |
| 9.3.5 | Semiconductor Fuses (5 Nos each type) | Vendor to offer | | | |
| 9.3.6 | Special Fuses (5 Nos each type) | Vendor to offer | | | |

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| 9.3.7 | Circuit Breakers (1 No each type) | Vendor to offer | | | |
| 9.3.8 | Main Power Switch (1 No each type) | Vendor to offer | | | |
| 9.3.9 | Drive | Vendor to offer | | | |
| 9.4 | All types of spares for Rotator and accessories should be available for at least ten years after supply of the machine. If machine or control is likely to become obsolete in this period, the vendor should inform BHEL sufficiently in advance and provide spares. | Vendor to confirm | | | |
| 9.5 | Complete list of spares for rotator and accessories, with proper identification No./Code. Complete list of all Bought out items along with specification /Type , rating ,model, make & address of supplier. Details technical leaflets ,literature for all bought out item, accssories etc. of the supplier. All the details given on the drawing and manual should be in English .Address of the spare supplier shall be furnished along with documentation to be supplied with the machine. | Vendor to confirm/ submit | | | |
| 10.0 | DOCUMENTATION : Three sets of following documents (Hard copies) in English language should be supplied along with the machine:- | Vendor to offer/ confirm | | | |
| 10.1 | Operation manuals with Dos & Donots. | Vendor to submit | | | |
| 10.2 | Detailed Maintenance manual of machine with all drawings of Rotator assemblies/sub-assemblies/parts including Electrical / circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also in English. | Vendor to confirm/ submit | | | |
| 10.3 | Catalogues, Operation & Maintenance Manuals of all bought out items including drawings, wherever applicable. | Vendor to submit | | | |
| 10.4 | Detailed specification of all polyurethane items and fittings /couplings. | Vendor to submit | | | |
| 10.5 | Operating Manuals, Maintenance Manuals & Catalogues for supplied accessories. | Vendor to submit | | | |

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| 10.6. | Complete list of parts/items(Bill of materials) used with identification nos. | Vendor to submit | | | |
| 10.7. | One additional set of all the above documentation on CD ROM, wherever possible. | Vendor to submit | | | |
| 11.0. | ERECTION & COMMISSIONING by Vendor at BHEL works. | Vendor to confirm & offer | | | |
| 11.1. | Successful proving of BHEL components by the supplier shall be considered as part of commissioning for the Rotator . | Vendor to confirm | | | |
| 11.2. | Tools, Tackles, instruments and other necessary equipment/ tools required to carry out all erection & commissioning activities should be arranged and brought by the supplier. | Vendor to confirm | | | |
| 11.3. | Commissioning spares, required for commissioning of the rotator within stipulated time, shall be brought by the supplier on returnable basis. | Vendor to confirm | | | |
| 11.4 | Schedule of Erection and Commissioning shall be submitted with the offer. | Vendor to submit | | | |
| 11.5 | Terms & conditions for Erection & Commissioning should be furnished in detail separately by vendor along with offer. | Vendor to submit | | | |
| 1.6 | Portion, if any, of the rotator, accessories/attachments and other supplied items where paint got rubbed or peeled off during transit or erection should be repainted and matched with the original adjoining paint by the vendor. | Vendor to confirm | | | |
| 12.0. | PROVEOUT | | | | |
| 12.1 | Successful load testing as per BHEL requirements (refer specification at BHEL works). | Vendor to accept & offer | | | |
| 13.0. | AMBIENT CONDITIONS & THERMAL STABILITY | Vendor to note. | | | |
| 13.1. | The Rotator including all supplied items should work trouble free and should give specified accuracies under existing power supply and ambient operating conditions, as mentioned below. | Vendor to confirm | | | |
| 13.2. | Power Supply (AC): Voltage = 415V +10% / -10% of fluctuations , Frequency= 50Hz +3 / -3 , No. of phases = 3 phase with neutral. | Vendor to note. | | | |

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| 13.3. | Ambient Operating Conditions: Temperature = 5 to 50 degree Celsius , Relative Humidity = 95% max. | Vendor to note. | | | |
| 13.4 | The Rotator should be suitable for continuous operation to its full capacity for 24 hours a day and 7 days a week throughout year. Vendor to ensure and confirm the same. | Vendor to confirm | | | |
| 14.0. | ACCEPTANCE (Tests/Activities to be performed & demonstrated by Vendor) | Vendor to accept & confirm | | | |
| 14.1. | Tests/Activities to be carried out at vendor's works before dispatch :(pre-dispatch inspection) | Vendor to accept & confirm | | | |
| 14.1.1 | Demonstration of all features of the Rotator , control system & accessories before dispatch to BHEL personnel. | Vendor to accept & confirm | | | |
| 14.2. | Tests/Activities to be carried out at BHEL works while commissioning the rotator : | Vendor to accept & confirm | | | |
| 14.2.1 | Full load test to demonstrate the maximum capacity of the Rotator.(Refer technical specification) | Vendor to accept & confirm | | | |
| 1.2.2 | The Rotator should be tested for continuous running of 48 hrs. If any break down occurs during this test, the test should be repeated for 48 hrs from that time. | Vendor to accept & confirm | | | |
| 14.2.3. | Training of BHEL operators in operation & maintenance by the supplier's experts during their stay at BHEL works. | Vendor to accept & confirm | | | |
| 15.0. | PACKING | | | | |
| | Sea worthy & rigid packing for all items of complete Rotator , all Accessories and other supplied items to avoid any damage/loss in transit. When it is dispatched in containers, all small loose items shall be suitably packed in boxes. | Vendor to offer & confirm | | | |
| 16.0. | GUARANTEE | | | | |
| | Guarantee for complete rotator & accessories for 24 months from the date of acceptance of the rotator. | Vendor to offer | | | |
| 17.0. | GENERAL | | | | |
| 17.1. | Model No. | Vendor to inform | | | |
| 17.2. | Total connected load (KVA) | Vendor to inform | | | |

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| 17.3. | Total Space required (Length, Width, Height) for complete rotator & accessories. | Vendor to inform | | | |
| 17.4. | Painting : RAL 6011 Apple Green (Polyurethane Paint) | Vendor to offer | | | |
| 17.5. | Total weight of the rotator. | Vendor to inform | | | |
| 17.6. | Weight of heaviest part. | Vendor to inform | | | |
| 17.7. | Weight of the heaviest assembly. | Vendor to inform | | | |
| 17.8. | Dimensions of largest part. | Vendor to inform | | | |
| 18.9. | Vendor to submit reference list of customers where similar rotators have been supplied mentioning broad specifications of the supplied rotator i.e. Model, capacity etc. | Vendor to submit | | | |
| 18.10. | Detailed catalogues, sketches/drawings/photographs pertaining to the offered model should be submitted with the offer. | Vendor to submit | | | |
| 18.0. | QUALIFYING CONDITIONS | | | | |
| | Only those vendors, who have supplied and commissioned at least 2 rotators of same or higher capacity for similar applications and working satisfactorily for two years minimum. | Vendor to comply & submit with the offer | | | |
| 18.1 | Name of the customer / company where similar rotator is installed. | Vendor to inform | | | |
| 18.2. | Complete postal address of the customer. | Vendor to inform | | | |
| 18.3 | Month & Year of commissioning. | Vendor to inform | | | |
| 18.4 | Name and designation of the contact person of the customer. | Vendor to inform | | | |
| 18.5 | Phone, FAX no. and e-mail address of the contact person of the customer. | Vendor to inform | | | |

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| 18.6 | Performance certificate from the customers regarding satisfactory performance of rotator supplied to them (Original Certificate or Through E-mail directly from the customer). The original performance certificate may be returned after verification by BHEL, | Vendor to submit | | | |
| 18.7 | BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false/incorrect, the offer shall be rejected. | Vendor to accept & confirm | | | |
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