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|  | <u>BHARAT HEAVY ELECTRICAL LIMITED</u> | | | | Enquiry No. : |
| <u>UNIT'S ADDRESS:</u> | | | | Due Date : | |
| <u>CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL (FROM PURCHASE DEPTT.)</u> | | | | Supplier Qtn. No.: | |
| | | | | Date : | |
| <u>SPECIFICATION OF GEAR/PINION SHOT PEENING</u> | | | | | |
| <u>MACHINE</u> | | | | | |
| NOTE:- | | | | | |
| 1. Vendor(OEM) must submit complete information against clause no. 12.0 The offer meeting this clause would only be processed. | | | | | |
| 2. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance. | | | | | |
| 3. The offer and all documents enclosed with offer should be in English language only. | | | | | |
| NAME & ADDRESS OF THE SUPPLIER : | | | NAME & ADDRESS OF THE INDIAN AGENT : | | |
| TELEPHONE NOS.: | | | TELEPHONE NOS.: | | |
| FAX NOS.: | | | FAX NOS.: | | |
| E-MAIL ADDRESS : | | | E-MAIL ADDRESS : | | |
| SCOPE: SUPPLY, ERECTION & COMMISSIONING OF GEAR/PINION SHOT PEENING MACHINE COMPLYING WITH SPECIFICATIONS AS BELOW | | | | | |

| SNO | DESCRIPTION FOR BH&L REQUIREMENT | SPECIFIED / TO BE CONFIRMED BY | OFFERED | DEVIATIONS | REMARKS |
|---|--|--------------------------------|---------|------------|---------|
| 1.0 PURPOSE & WORKPIECE MATERIAL | | | | | |
| 1.1 | Purpose :- Shot peening at root of Traction Gears/Pinion's. | Vendor to Confirm | | | |
| 1.2 | Material:- Quench hardened (oil/water), RC - 44 to 63 . | Vendor to Confirm | | | |
| 2.0 SPECIFICATION:- | | | | | |
| | Configuration:-Shot peening on root of gears/pinion's by specified steel shots through high speed impeller with suction of dust/fumes to obtain specified peening intensity. | | | | |
| 2.1 JOB DATA | | | | | |
| 2.1.1 | Max.Tip circle diameter/O.D. max | 1000 mm | | | |
| 2.1.2 | Max. Face width max | 350 mm | | | |
| 2.1.3 | Weight max. | 450 kg | | | |
| 2.1.4 | Root dia max. | 800 mm | | | |
| 2.1.5 | Root dia min | 50 mm | | | |
| 2.1.6 | Peening Intensity by S330 required(ALMEN strip C), 200% coverage , in max 4 minutes. | 0.007 to 0.01 inch | | | |
| 2.1.7 | Peening Intensity by S170 required(ALMEN strip A), 200 % coverage , in max. 4 minutes. | 0.01 to 0.012 inch | | | |
| 2.2 Table | | | | | |
| 2.2.1 | OD max | 1200 mm | | | |
| 2.2.2 | Table load | 600 kg | | | |
| 2.2.3 | Wear resistant and Perforated table . | vendor to specify | | | |
| 2.2.4 | Table drive syetem | vendor to specify | | | |
| 2.2.5 | No. of swing table | vendor to specify | | | |
| 2.2.6 | Work height of the table | vendor to specify | | | |
| 2.3 Impeller(Centrifugal wheel) | | | | | |
| 2.3.1 | No. and Position of Impellers | vendor to specify | | | |
| 2.3.2 | Provision for setting of Peening Intensity and Peening angle. | vendor to specify | | | |
| 2.3.3 | size and drive system of the Impeller | vendor to specify | | | |
| 2.3.4 | RPM of Impeller | vendor to specify | | | |
| 2.3.5 | Shots flow rate kg/hr. | vendor to specify | | | |
| 2.3.6 | Provision for setting of shots flow rate.. | vendor to specify | | | |

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| | 2.4 Abrasive Circulation System | | | | | | | | |
| | 2.4.1 Details of abrasive collection and transfer system after peening, suitable for both S330 and S170 shots. | | | | vendor to specify | | | | |
| | 2.4.2 Details of abrasive filtration and segregation system suitable for both S330 and S170 shots | | | | vendor to specify | | | | |
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| | 2.5 Dust Collector | | | | | | | | |
| | 2.5.1 Details of dust collector and fume extractor system.(Both Pulse jet and shaker type may be quoted separately.) | | | | vendor to specify | | | | |
| | 2.5.2 Adjustments provision for proper functioning of the system. | | | | vendor to specify | | | | |
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| | 2.6 DRIVE SYSTEM: | | | | | | | | |
| | 2.6.1 All the motors and drive should be of reputed make. | | | | vendor to specify | | | | |
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| | 2.7 CONSTRUCTION: | | | | | | | | |
| | 2.7.1 Vendor to furnish details of material, hardness & constructional details, including explanatory drawings, of various components/assemblies like wheel , table,bearing ,bags, fans,belts etc. of the machine. | | | | | | | | |
| | 2.7.2 Video images on CD including hard copy explaining the technical features / Literature with photographs, drawings explaining the technical features should be enclosed with the offer | | | | | | | | |
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| | 2.8 OPERATION AND CONTROL SYSTEM: | | | | | | | | |
| | 2.8.1 Independent control panel should be provided for proper operation of the machine.equipped with ammeter ,voltmmeter, timers, and different indicators/switches . | | | | vendor to confirm | | | | |
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| | 2.9 LUBRICATION SYSTEM : Details should be Submitted by the Vendor | | | | vendor to confirm | | | | |
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| | 2.10 ELECTRICAL SYSTEM : | | | | | | | | |
| | 2.10.1 415V +/-10%, 50HZ +/-1.5 HZ. 3 Phase AC (3 wire system with out neutral) Power Supply Source will be provided by BHEL at a single point near the machine, as per layout recommended by Vendor. All types of cables, connections, circuit breakers etc. required for connecting BHEL's power supply point to different parts of the machine/control cabinets, shall be the responsibility of vendor. Requirement of grounding/earthing with required material details is to be informed by vendor well in advance so that same could be incorporated during construction of foundation. | | | | vendor to specify | | | | |

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| 2.10.2 | Tropicalisation: All electrical equipment shall be tropicalized | vendor to confirm | | | |
| 2.10.3 | All electrical control cabinets & panels should be dust and vermin proof. | vendor to confirm | | | |
| 2.10.4 | All electricals and operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters/receptacles should have compatibility with Indian equivalents. | vendor to confirm | | | |
| 2.10.5 | Motors shall conform to IEC or Indian Standards | vendor to confirm | | | |
| 2.10.6 | Vendor should ensure the proper earthing for the machine and its peripherals. | vendor to confirm | | | |
| 2.10.7 | In-cycle hour counter with reset facility is to be included in the offer. | vendor to confirm | | | |
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| 2.11 | PNEUMATIC SYSTEM: | | | | |
| 2.11.1 | In BHEL, compressed air of pressure 5kg/cm2 is available if machine requires more pressure for proper functioning then the Vendor has to supply the compressor with machine. | Vendor to Confirm | | | |
| 2.11.2 | The compressor should be screw type preferably of Atlas Copco, Ingersol Rand or Elgi make. | Vendor to Confirm | | | |
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| 2.12 | SAFETY ARRANGEMENTS: | vendor to confirm | | | |
| | Following safety features in addition to other standard safety features should be provided on the machine: | | | | |
| | 1. Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, workpiece and the operator due to the malfunctioning or mistakes. Machine functions should be continuously monitored and alarm / warning indications through lights/ alarm number with messages should be available. | | | | |
| | 2. A detailed list of all alarms / indications provided on machine should be submitted by the supplier. | | | | |
| | 3. All the pipes, cables etc. on the machine should be well supported and protected. | | | | |
| | 4. All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations. | | | | |
| | 5. Emergency Switches at suitable locations as per International Norms are to be provided. | | | | |
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| 5.2 | All types of spares for total machine and accessories should be available for atleast 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 drawings of parts / details of spares & suppliers to enable BHEL to procure these in advance, if required | | | | vendor to confirm | | | |
| 5.3 | Recommended set of spares for all attachments are to be offered with details. | | | | vendor to confirm | | | |
| 5.4 | Vendor to confirm that complete list of spares for machine and accessories, along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the machine | | | | vendor to confirm | | | |
| 6.0 | DOCUMENTATION : Five sets of following documents (Hard copies) in English language should be supplied along with the machine | | | | vendor to confirm | | | |
| 6.1 | Operating manuals of Machine & accessories system | | | | | | | |
| 6.2 | Detailed Maintenance manual of machine with all drawings of machine assemblies/sub-assemblies/parts including Electrical / Pneumatic/ Hydraulic circuit diagrams. All Assembly/ Sub Assembly Drawings shall be supplied with the part list also | | | | | | | |
| 6.3 | Catalogues, O&M Manuals of all bought out items including drawings,wherever applicable. | | | | | | | |
| 6.4 | Detailed specification of all rubber items and hydraulic/lube fittings | | | | | | | |
| 7.0 | TRAINING: | | | | | | | |
| 7.1 | BHEL Persons should be trained at BHEL for one week per person in the area of (total 2 man weeks)- (a) Electrical, Mechanical & Hydraulic maintenance of the machine & other supplied equipments (b) Operation of the machine & other supplied equipments. | | | | vendor to confirm | | | |

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| 11.0 | MACHINE ACCEPTANCE: (Tests/Activities TO be Performed by Vendor) | | | | | | | | |
| 11.1 | Proving of Peening intensity as per(as per para2.1) requirement/specification. | | | | | | vendor to confirm | | |
| 11.2 | The eqpt. is to be completely Tested and inspected before Dispatch in presence of BHEL. Copies of inspection Certificate to be attached | | | | | | vendor to confirm | | |
| 11.3 | Full load test to demonstrate the maximum power & peening capacity of the machine. | | | | | | vendor to confirm | | |
| 11.40 | Six days supervision of independent operation of machine by BHEL after job proveout. | | | | | | vendor to confirm | | |
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| 12.0 | REFERENCE LIST / QUALIFYING CONDITIONS : | | | | | | | | |
| 12.1 | Only those vendors(OEM), who have supplied and commissioned at least one SHOT PEENING MACHINE of same or higher sizes for similar applications in the past ten years (on the date of opening of tender) and such machine is presently working satisfactorily for more than one year after commissioning (on the date of opening of tender) , should quote. However if such machine(s) has/had been supplied to BHEL, then such machine should be presently working satisfactorily for more than six months after its commissioning and acceptance (on the date of opening of tender) in BHEL should quote. The following information should be submitted by the vendor about the companies where similar machines have been supplied. This is required from all the vendors for qualification of their offer. | | | | | | vendor to confirm | | |
| | 1. Name of the customer / company where similar machine is installed. | | | | | | | | |
| | 2. Complete postal address of the customer. | | | | | | | | |
| | 3.Month & Year of commissioning. | | | | | | | | |
| | 4.Parameters of machine(s) supplied & application for which the machine is | | | | | | | | |
| | 5. Name and designation of the contact person of the customer. | | | | | | | | |
| | 6. Phone, FAX no. and email address of the contact person of the customer. | | | | | | | | |
| | 7. Performance certificate from the customers regarding satisfactory performance of machine supplied to them (original certificate or through E-mail directly from customer)The original may be returned after verification by BHEL,if required. | | | | | | | | |
| | 8.BHEL reserves the right to verify information provided by vendor.In case the information provided by vendor is found to be false/incorrect,the offer shall be rejected. | | | | | | | | |

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| 13.0 | GUARANTEE : | | | | | | |
| 13.1 | 24 months from the date of acceptance of the machine. | | vendor to confirm | | | | |
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| 14.0 | GENERAL : The vendor should submit the following information: | | | | | | |
| 14.1 | Machine Model | | Vendor to specify | | | | |
| 14.2 | Total connected load (KVA): | | Vendor to specify | | | | |
| 14.3 | Floor area required (Length, Width, Height) for complete machine & accessories | | Vendor to specify | | | | |
| 14.4 | Painting of Machine/ Electrical Panels: RAL 6011 Apple Green (Polyurethane Paint) | | vendor to confirm | | | | |
| 14.5 | Total weight of the machine | | Vendor to specify | | | | |
| 14.6 | Weight of heaviest part of machine | | Vendor to specify | | | | |
| 14.7 | Weight of the heaviest assembly/ subassembly of the Machine | | Vendor to specify | | | | |
| 14.8 | Dimensions of largest part/ subassembly/ assembly of the machine | | Vendor to specify | | | | |
| 14.9 | Vendor to submit, along with offer, the reference list of customers where similar machines have been supplied mentioning the customer, Machine Model, major specifications of the supplied machine, Year of Supply etc | | vendor to confirm | | | | |
| 14.10 | Detailed catalogues , sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer. | | vendor to confirm | | | | |
| 14.11 | Hydraulic, Pneumatic & oil pipings should be preferably metallic except places where flexible pipings are essential.All the pipes required for the same shall be included in the standard scope of the machine. | | vendor to confirm | | | | |