

	<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 BLASTING 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					
	3. The offer and all documents enclosed with offer should be in English language only.					
	NAME & ADDRESS OF THE SUPPLIER :					
	TELEPHONE NOS.:			NAME & ADDRESS OF THE INDIAN AGENT :		
	FAX NOS.:			TELEPHONE NOS.:		
	E-MAIL ADDRESS :			FAX NOS.:		
				E-MAIL ADDRESS :		
SCOPE: SUPPLY, ERECTION & COMMISSIONING OF GEAR/PINION SHOT BLASTING MACHINE COMPLYING WITH SPECIFICATIONS AS BELOW						

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	DEVIATIONS	REMARKS
1.0 PURPOSE & WORKPIECE MATERIAL					
1.1	Purpose :- Shot blasting of Traction Gears/Pinions.	Vendor to Confirm			
1.2	Material:- Quench hardened (oil/water), RC - 44 to 63 .	Vendor to Confirm			
2.0 SPECIFICATION:-					
	Configuration:-Shot blasting of gears/pinions on rotating table by steel shots through high speed impeller from side and top with suction of dust/fumes .				
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	Time cycle for Gears 1- 400 mm dia.(102 teeth, 4.22 mm module) , 2.- 18 teeth 216mm dia 10.18 mm module ,3. - 74 teeth,10.18mm module 762 mm OD to be provided.	Vendor to specify			
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	1			
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 blasting 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			

2.4	Abrasive Circulation System					
2.4.1	Details of abrasive collection and transfer system after blasting			vendor to specify		
2.4.2	Details of abrasive filtration and segregation system			vendor to specify		
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		
2.6	DRIVE SYSTEM:					
2.6.1	All the motors and drive should be of reputed make.			vendor to confirm		
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.			vendor to confirm		
2.7.2	Video images on CD including hard copy explaining the technical features /			vendor to confirm		
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		
2.9	LUBRICATION SYSTEM : Details should be Submitted by the Vendor			vendor to confirm		
2.10	ELECTRICAL SYSTEM :					
2.10.1	415V +/-10%, 50HZ +/-1.5 HZ, 3 Phase AC (3 wire system without 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		

2.10.2	Tropicalisation: All electrical equipment shall be tropicalized								
2.10.3	All electrical & operating panels should be dust and vermin proof.								
2.10.4	All electrical and electronic panels including 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.								
2.10.5	Motors shall conform to IEC or Indian Standards								
2.10.6	Vendor should ensure the proper earthing for the machine and its peripherals.								
2.10.7	In-cycle hour counter with reset facility is to be included in the offer.								
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.								
2.11.2	The compressor should be screw type preferably of Atlas Copco,Ingersol Rand or Elgi make.								
2.12	SAFETY ARRANGEMENTS:								
	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.								

2.13	ENVIRONMENTAL PERFORMANCE OF THE MACHINE :						
	The Machine shall conform to following factors related to environment :						
	(a) Maximum noise level shall be 85 dB(A) at normal load condition, 1 M away from the machine with correction factor for back ground noise, if necessary.						
	(b) No hazardous chemicals shall be required to be used in the machine.						
	(c) Safety / environmental protection enclosure is required it should be built in the machine by the vendor.						
	(d) Paint of the machine should be oil / coolant resistant and should not peel off .						
	3.0 TOOLS FOR ERECTION, OPERATION & MAINTENANCE :						
	3.1 Special tools and equipment required for erection of the machine shall be brought by the vendor. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the machine should be supplied. List of such tools should be submitted with offer	vendor to confirm					
	4.0 ACCESSORIES:						
	4.1 Suitable shots for blasting. (3 Tonnes Steel shots)	vendor to confirm					
	4.2 Clamping fixtures for gears and pinions.	vendor to confirm					
	5.0 SPARES:						
	5.1 Itemise breakup of mechanical, hydraulic,pneumatic, electrical spares used on the machine in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation on three shifts continuous running basis should be offered by vendor. The list to include following, in addition to other recommended spares: (Unit Price of each item of spare should be offered)Indentor to identify spares to be procured along with the machine	vendor to confirm					
	a) Mechanical ,Pneumatic & Hydraulic Spares: All types of pumps, All types of Valves, All types of pressure switches / transducers, All types of filters, All types of seals	vendor to specify					
	b) Electrical /Electronic : All types of Relays, Contactors, Proximity Switches, limit switches, timers,Push Buttons, Indicating Lamps, Main Power Switch, Power Module & Control Cards for Main Drive as well as Feed Drives etc.	vendor to confirm					

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 men weeks)- (a) Electrical, Mechanical & Hydraulic maintenance of the machine & other supplied equipments (b) Operation of the machine & other supplied equipments.	vendor to confirm			

8.0 FOUNDATION:					
8.1	Vendor shall submit the preliminary layout drawing for getting BHEL's approval within one month from the date of Letter of Indent (LOI)/ P.O. , whichever is earlier. Soil condition data will be furnished by BHEL alongwith the approval. Complete Foundation Design including details, like Static/ Dynamic load details etc. and final Layout Drawings shall be submitted by the supplier within three months after getting BHEL's approval. The Layout should consist of all requirements pertaining to complete machine and all accessories. BHEL shall construct complete foundation for the machine under supervision of supplier and at supplier's responsibility. Vendor should arrange equipment required for the testing of foundation, if required by the vendor. The vendor shall also indicate detailed specifications of grouting compound and grouting procedure etc. for foundation bolts of the machine.	vendor to confirm			
9.0 ERECTION & COMMISSIONING					
9.1	Supplier to take full responsibility for carrying out the erection, start up, testing of machine, it's control system & all types of other supplied equipment etc. Service requirement like power, air shall be provided by BHEL at only one point to be indicated by supplier in their foundation/layout drawings. Other requirements like crane and helping personnel shall also be provided by BHEL. Details of these requirements should be informed by vendor in advance.	vendor to confirm			
9.2	Schedule of Erection and Commissioning shall be submitted with the offer.	vendor to confirm			
9.3	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	vendor to specify			
9.4	Free after sale services should be ensured and provided during gaurantee period .	vendor to confirm			
9.5	The m/c should be supplied complete with levelling & aligning jacks, base plate, foundation bolts and anchoring materials etc.	vendor to confirm			

10.0	AMBIENT CONDITIONS & THERMAL STABILITY :				
10.1	Total machine including system and all supplied items should work trouble free and efficiently under following operating conditions and should give efficient performance. Power Supply: Voltage: 415 V - 10%, +10% Frequency: 50 Hz +1.5%, -1.5% No. of phases = 3, 3 wire , no neutral. Ambient Conditions: Temperature = 5 to 50 degree celsius Relative Humidity = 95% max.	vendor to confirm			
10.2	The machine, including attachments and accessories, should be suitable for 24 hrs. continuous operation to its full capacity for 24 hour a day and 7 days a week throughout. Vendor to ensure and confirm the same.	vendor to confirm			
11.0	MACHINE ACCEPTANCE: (Tests/Activities TO be Performed by Vendor)	vendor to confirm			
11.1	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			
11.2	Full load test to demonstrate the maximum power & blasting capacity of the machine.	vendor to confirm			
11.3	Training of BHEL machine operators in operation of complete machine & accessories etc by the supplier's experts / engineers during their stay at BHEL works	vendor to confirm			
11.40	Six days supervision of independent operation of machine by BHEL after job proveout.	vendor to confirm			
12.0	REFERENCE LIST / QUALIFYING CONDITIONS :				
12.1	Only those vendors(OEM), who have supplied and commissioned at least one SHOT BLASTINGMACHINE 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 supplied .						
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.						
	13.0 GUARANTEE :					
	13.1 24 months from the date of acceptance of the machine.			vendor to confirm		
	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		

14.1	Detailed catalogues , sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	vendor to confirm			
14.1	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			