



Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

An ISO 9001
Company

CAPITAL PURCHASE / MATERIALS MANAGEMENT / MANUFACTURING

ENQUIRY	Phone: +91 431 257 79 38 Fax : +91 431 252 07 19 Email : tvenkat@bheltry.co.in Web : www.bhel.com
----------------	---

	Enquiry Number: 2620700061	Enquiry Date: 07.08.2007	Due date for submission of quotation: 20.09.2007
--	---	---	---

Your are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order

Item	Description	Quantity	Delivery (Item required at BHEL on)
10	Centrifugal Air Compressor – 3000 cfm @ 8 bar as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or http://tenders.gov.in)	2 Nos.	30.11.2008

BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats along with technical specifications can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference “2620700061”.

Tenders should reach us before 14:00 hours on the due date Tenders will be opened at 14:30 hours on the due date Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present	Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED Manager / Capital Purchase / MM / Manufacturing
--	--

PART A

SECTION – I : QUALIFYING CRITERIA

The BIDDER has to compulsorily meet the following requirements to get qualified for consideration of the technical offer for the CENTRIFUGAL AIR COMPRESSOR-3000CFM @8 Bar

S. No.	REQUIREMENTS	VENDOR's RESPONSE
1	The BIDDER shall have a minimum of TEN Years of Continuous Experience in the field of Design, Manufacture and Supply of CENTRIFUGAL AIR COMPRESSORS	
2	Only those vendors, who have supplied and commissioned at least CENTRIFUGAL AIR COMPRESSOR of 3000CFM or above and delivery pressure of 8 Bar or above 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. Performance certificate from the customers regarding satisfactory performance of machine supplied to them in attached format to be enclosed along with technical offer.	
2.1	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	

SECTION – II

The BIDDER / VENDOR is requested to provide the following information:

3.0	The BIDDER/VENDOR to furnish Reference List of Customers, with full address, details of contact person, where CENTRIFUGAL AIR COMPRESSOR-3000CFM @8 Bar or higher rating has been supplied in the past.	
4.0	Details of Quality System followed [Furnish the salient aspects of the Quality Assurance System followed] and Stages of In-House Inspection, including Third Party Inspection Schedule.	
6.0	Details on SERVICE-AFTER-SALES Set-Up	

CABS-2-69N CENTRIFUGAL COMPRESSORS

	in India including the Addresses of Agents / Service Centers in South India	
7.0	Any Additional Data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

SECTION – III

The BIDDER has to comply with the following, for accepting the Technical Offer for scrutiny by the Purchaser:

S. No.	PARTICULARS	VENDOR'S RESPONSE
8.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical Offer [with PART A & PART B] & Commercial and Price Bid.	
9.0	The Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause. A just 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	
10.0	The Technical Offer shall be supported by Product Catalogue and Data Sheets in ORIGINAL and complete technical details of 'Bought-Out-Items' with copies of Product Catalogue and Selection Criteria	
11.0	The Commercial Offer (given with the Technical Offer) shall contain the Scope of Supply and the Un-Priced Part of the Price-Bid, for confirmation	
12.0	BIDDER has to indicate the Country of Origin for the supply of main equipment / important bought-out items.	

PERFORMANCE CERTIFICATE

(On Customer's Letter Head)

1. Supplier of the machine :
2. Make & Model of the Equipment :
3. Month & Year of Commissioning :
4. Application :
5. Capacity :
- Output Pressure :
- Medium Handled :
6. Performance of the Machine : Best in the market /
(Strike off whichever is not applicable) Satisfactory /
Good /
Average /
Not Satisfactory
7. Any other remarks:

Date:

Signature & Seal of the Authority
Issuing the Performance certificate

**PART-B: SPECIFICATIONS FOR INTERGRALLY GEARED 3000 CFM
CENTRIFUGAL COMPRESSORS**

S. No.	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER (with complete Technical Details)
1.0	SCOPE		
	The scope of supply includes Design, Manufacture, Supply, Erection and Commissioning of 3000 CFM Centrifugal Air Compressor with complete accessories at Specified Location in Bharat Heavy Electricals Limited, Tiruchirapalli. The Centrifugal Compressor, including inter-coolers and after-coolers, lube system etc. shall be a complete packaged machine consistent with good accessibility for maintenance. All equipment furnished is to be heavy-duty Industrial design for long operating life. The compressor shall be the integral gear-type, directly connected at low speed bull gear to its driver with specification of relevant standards for material selection, parameters design and controls, etc.		
2.0	AIR COMPRESSOR		
2.1	Type	Centrifugal, with Vertical or Horizontal split gear box	
2.2	Rating	Continuous	
2.3	Delivered flow	3000 CFM	
2.4	Rated Pressure	8 Kg / Cm ² (g)	
2.5	Pressure Setting Range	7 to 8 Kg / Cm ²	
2.6	Inlet Guide Vane	Vendor to specify	
2.7	Compressor Shaft Power (Kw)	Vendor to specify	
2.8	Specific Power consumption (Kw / 100 CFM)	Vendor to specify	
2.9	Tolerance on specific power consumption	Vendor to specify	
2.10	Turn down ratio at rated pressure	Vendor to specify	
2.11	No. Of Stages of the Compressor	Vendor to specify	
3.0	CONSTRUCTION		
3.1	Gear Box (Direct driven horizontally /vertically split)	Vendor to specify	
3.2	All internal parts should have good accessibility of inspection and maintenance. The casing components shall be equipped with lifting lugs, guide bolts to facilitate maintenance. It should be possible to inspect all internal components without having to dismantle other major components / major external connections	Vendor to confirm	

S. No.	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (with complete Technical Details)
3.2	Impellor (Construction features, material and mounting details to be enclosed)	Vendor to specify
3.3	High speed gears: Type/ material/ AGMA class to be specified	Vendor to specify
3.4	Radial bearings	Vendor to specify
3.5	Thrust bearings	Vendor to specify
3.6	Air and Oil Seals (type & material along with details)	Vendor to specify
3.7	Stainless Steel expansion bellows to be provided	Vendor to confirm
3.8	Inlet & Outlet Cooling Water Manifold to be integrated in the compressor package	Vendor to confirm
3.9	Required cooling water flow for compressor package, including air cooler and oil cooler (liters / minute)	Vendor to specify
3.10	Intercoolers and after coolers Should be mounted and be part of the packaged compressor	Vendor to specify with details
3.11	Moisture separator with drain trap & condensate piping should be provided for each inter and after cooler	Vendor to confirm
3.12	Inter stage air piping to intercoolers and after coolers	Vendor to confirm
4.0	SITE CONDITIONS	
4.1	Design Inlet condition <ul style="list-style-type: none"> a. Ambient Temp 40°C b. Relative Humidity 70% (Non-condensing) c. Altitude: 78 Mtr. Above MSL d. Cooling water inlet temperature 30°C. 	
4.2	11 Kv, 50 Hz 3 phase 3 wire supply & 415V, 3 phase, 3 wire supply will be provided at one point in / near the compressor house. Control voltage requirements shall be derived by the supplier by providing suitable transformers in the starter / control panels (the power supply may fluctuate + or - 10% from specified voltage and + or - 3% from specified frequency)	
4.3	Building size is 20 M X15 M X 9 M	

S. No.	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (with complete Technical Details)	
5.0	LUBE OIL SYSTEM		
5.1	Total lube oil system to be mounted on the base frame of the compressor package	Vendor to specify	
5.2	Total lube oil system to be suitably sized so that incase of electric power failure it provides sufficient lubrication to allow the compressor to coast to a standstill without damage	Vendor to specify	
5.3	Lube oil tank capacity	Vendor to specify	
5.4	Lube oil specification	Vendor to specify	
5.5	Main oil pump (Shaft driven)	Vendor to specify	
5.6	Oil Pressure	Vendor to specify	
5.7	Auxiliary oil pump (Electrically driven)	Vendor to specify	
5.8	Oil cooler	Vendor to specify	
5.9	Suction strainer	Vendor to specify	
5.10	Filter	Vendor to specify	
5.11	Lube oil filter differential pressure switch	Vendor to specify	
5.12	Lube oil pressure switch	Vendor to specify	
5.13	Oil level indicator	Vendor to specify	
5.14	Necessary valves and safety valves	Vendor to specify	
5.15	Interconnecting piping suitably terminated	Vendor to specify	
5.16	Initial oil fill is in the scope of vendor	Vendor to confirm	
6.0	DRIVE MOTOR		
6.1	Type: Electrical Motor Suitable for 11 KV – 50Hz Continuous Rating, Induction type Class F insulation, with temperature rise limited to class B. Motor shall be mounted on Compressor base	Vendor to specify	
6.2	Motor Bearing & Motor Cooling	Vendor to specify	
6.3	Motor Power Rating	Vendor to specify	
6.4	Power source 11 KV 3 Ph up to the breaker point is in the scope of BHEL. From breaker to the starter and from starter to motor is in the scope of supplier. The approximate distance of cabling between motor to breaker is 100 mtr.	Vendor to confirm	
6.5	Suitable HT Motor Starter with Motor Protection Controls to be included	Vendor to specify	

S. No.	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (with complete Technical Details)	
7.0	ACCESSARIES		
7.1	Air Intake Filter with Silencer (Piping between intake to suction is in vendor's scope)	Vendor to specify	
7.2	Accessories Not Mentioned But Considered Essential Shall also be included in Technical offer	Vendor to specify	
7.3	Blow off valves with actuator and silencer (Piping from blow off to exhaust in Vendor's scope)	Vendor to specify	
7.4	Mounted discharge check valve	Vendor to specify	
8.0	OPERATION & CONTROL		
8.1	Bidder to explain the need, if any for separate instrument air (Flow, pressure and line size should also be mentioned)	Vendor to specify	
8.2	Microprocessor based Auto Dual mode for controlling Pressure and flow. Should have interface for interconnection to remote PC	Vendor to specify	
8.3	Protection / Display / Alarm / Trip for 1. For equipment protection 2. Operator's Control 3. Operation details	Vendor to specify	
8.4	The compressor package should have noise level less than 85 dB at 1M distances.	Vendor to specify	
9.0	GENERAL POINTS		
9.1	The offer shall include the catalog for offered equipment and a complete technical description of all parts of the compressor as also the materials of construction of the major parts. The bearings and seals used shall be described. Full description of compressor protection features should be included	Vendor to confirm	
9.2	GA Drawing, Schematic & Foundation Diagram Showing the Layout and Interconnections shall be submitted along with the offer.	Vendor to confirm	
9.3	Motor shall be any of the following makes: M/s BHEL, NGEF or any other reputed	Vendor to confirm	

S. No.	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (with complete Technical Details)
9.4	All Electrical devices, Contactors, Relays, Limit, Switches, Push buttons, etc. shall be from Siemens / L&T / Alstom / Cuttler Hammer / Telemecanique	Vendor to confirm
10.0	SPARES	
10.1	Itemized breakup of mechanical, electrical and electronic spares used in the machine in sufficient quantity as per recommendation of Vendor for 2 years of trouble free operation on three shifts continuous running basis shall be offered by vendor. (Unit Price for each item of spare shall be offered)	Vendor to confirm
10.2	All types of spares for total machine and accessories shall be available for at least ten years after supply of the machine. If machine 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
10.3	Vendor to confirm that complete list of spares for machine and accessories, along with item part no / 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
11.0	DOCUMENTATION:	
11.1	Three sets of following documents (3 Hard copies,) in English language should be supplied along with the Compressor	Vendor to confirm
11.2	a. Operation & Maintenance Instructions	Vendor to confirm
11.3	b. Spare Parts Manual	Vendor to confirm
11.4	c. GA Drawing	Vendor to confirm
11.5	d. Electrical Wiring Drawings Power & Control circuits	Vendor to confirm

S. No.	PARTICULARS AND BHEL SPECIFICATION	BIDDER'S OFFER (with complete Technical Details)
11.6	One additional set of all the above documentation shall be given in the form of CD.	Vendor to confirm
12.0	TRAINING	
12.1	The Vendor shall train Four BHEL's Engineers in Operation and Maintenance (Mechanical, Electrical/ Electronics System) of the compressor at Vendor's works, for not less than 10 working days.	Vendor to confirm
12.2	The Vendor shall impart training to BHEL's Machine Operators and Maintenance crew in Operation and Maintenance after the commissioning of the Machine at BHEL works for not less than 15 working days	Vendor to confirm
12.3	Airfare, boarding & lodging for the BHEL Trainees shall be borne by BHEL.	Vendor o Confirm
12.4	Vendor to quote for training on per man per week basis for training at vendor's work	Vendor to confirm
13.0	ERECTION & COMMISSIONING	
13.1	Vendor to take full responsibility for supervision of the erection, vendor shall start up, test the compressor, it's control & all types of other supplied equipment, and prove the output Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by Vendor 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
13.2	Tools, Tackles, Test Mandrels, instruments and other necessary equipment required to carry out all above activities should be brought by the Vendor.	Vendor to confirm
13.3	Commissioning spares, required for commissioning of the machine within stipulated time, shall be brought by the Vendor on returnable basis.	Vendor to confirm
13.4	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to confirm
13.5	Charges, duration, terms & conditions for E&C should be furnished in detail separately by Vendor along with offer.	Vendor to confirm

S. No.	PARTICULARS AND BHEL SPECIFICATION		BIDDER'S OFFER (with complete Technical Details)
14.0	TESTING & ACCEPTANCE		
14.1	The equipments shall be offered for inspection by BHEL Engineers at suppliers works prior to dispatch	Vendor to confirm	
14.2	Testing: - Compressor shall be fully tested at the supplier's works to determine its mechanical and aerodynamic characteristics. Compressor air capacity, pressures and temperatures shall be measured and recorded Compressor surge point and stonewall condition shall be demonstrated during the test. A test curve related to guarantee conditions should be submitted to the purchaser	Vendor to confirm	
15.0	GAURANTEE		
	The equipment and accessories shall be guaranteed for proper operation and shall have warranty for all parts for a period of 24 months from the date of commissioning	Vendor to confirm	