

TECHNICAL SPECIFICATION



Heavy Power Equipment Plant,
Bharat Heavy Electricals Limited,
 Ramachandrapuram -502032, Andhra Pradesh, INDIA.

Enquiry No. :

Due Date :

Supplier Qtn.
No.:

E-MAIL (FROM PURCHASE DEPTT.)

SPECIFICATION FOR AIR COMPRESSOR SYSTEM

NOTE:- 1. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and
 2. The offer and all documents enclosed with offer should be in English language only.

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 AIR COMPRESSOR SYSTEM COMPLYING WITH SPECIFICATION AS BELOW

S.No	BHEL Requirements	SPECIFIED / TO BE CONFIRMED BY	OFFERED	DEVIATIONS	REMARKS
1	Purpose: "Compressor Air System" consisting of Lubricated Screw Type Air Compressor, Air Filters, Air Receiver and Valves etc. as per the following specifications is required to supply dry and clean compressed air in manufacturing shop, for the operation of different equipments.	Vendor to Note			
2	The air compressor system shall have the following features:				
2.1	Type of Air Compressor : Rotary, Contact Cooled, Screw Air Compressor, Fixed Speed	Vendor to confirm			
2.2	Capacity (Min)	500 cfm or more			
2.3	Design Pressure (Min)	9 Kg/cm ²			
2.4	Operating Pressure (Min)	8 Kg/cm ²			
2.4	Type of Cooling : Air Cooled	Vendor to confirm			
2.5	No. of stages (No.)	Vendor to specify			
2.6	Direct Drive Electric motor- Siemens/ABB or Equivalent standard Motor, Power supply 415v, 50Hz, Three phase AC Supply.-standard	Vendor to confirm			
2.7	Motor Rating :	Vendor to Specify			
2.7.1	Type : Sq. Cage induction motor with automatic star delta starter Panel.	Vendor to confirm			
2.7.2	Electric Motor should be energy efficient (EFF-1) and IP-55 Class F	Vendor to confirm			
2.7.3	Rated Speed of main motor	1485 rpm			

2.7.4	Specific Power consumption @ 8 bar pressure	Vendor to specify			
2.7.5	Suitable for continuous duty	Vendor to confirm			
2.8	Discharge Temperature : Ambient Temp + 10° C (±1°C (or) ±1% whichever is higher)	Vendor to confirm			
2.9	Oil fill capacity	Vendor to confirm			
3.0	Oil Carry Over	Less than 3ppm			
3.1	Reference standard for noise level	PNEUROP/PN8NTC2.2			
3.2	AIR DRYER: Purpose: Refrigerated type Air Dryer, suitable for application of the above mentioned Air Compressor to deliver dry compressed air of the required quality. The Air Dryer system shall have the following features:	Vendor to Note			
3.2.1	Type of Air Dryer	Refrigeratant Type			
3.2.2	Rated Capacity, max	750 cfm			
3.2.3	Inlet Condition:				
3.2.3.1	Inlet Pressure, max	16 Kg/cm2(g)			
3.2.3.2	Inlet Temperature	55 deg C			
3.2.3.3	Relative Humidity	100%			
3.2.3.4	Ambient Temperature	45 deg c			
3.2.4	Outlet Condition				
3.2.4.1	Outlet Air Temperature	30 - 35 deg C			
3.2.4.2	Outlet Air Pressure	15 Kg/cm2(g)			
3.2.4.3	Pressure Dew Point at outlet	3 deg c			
3.2.4.4	Atmospheric Dew Point at outlet	-23 deg C			
3.2.5	Refrigerant Used	R 134a			
3.2.6	Pressure Drop across the Dryer	0.2 Kg/cm2(g)			
3.2.7	Design Code	IS 2825 Class III			
3.3	Utilities				
	Input Supply	415 V / 50Hz / 3 Ph			
3.4	Control Circuit				
	Voltage	220 V			
	Frequency	50 Hz			

3.5	AIR RECEIVER:				
3.5.1	Capacity in Water Volume (minimum)	5000 Litres			
3.5.2	Type	Vertical, Cylindrical			
3.5.3	Maximum Working Pressure	12.5 bar			
3.5.4	Code of manufacture	ASME section VIII Div 1			
3.6	AIR DOWNSTREAM FILTERS : Set of suitable down stream Filters for removal of particals down to 0.003 ppm including water and oil aerosols	Vendor to confirm and offer additional filters (if any)			
3.7	ACOUSTIC ENCLOSURE				
3.7.1	Suitable Acoustic Enclosure to cover Air Compressor and Drier to reduce noise level below 75 dbA- 80 dbA.	Vendor to offer			
3.7.2	Acoustic enclosure should be designed such that no pressure drop at suction filter and avoids entry of dust particles.	Vendor to offer			
3.7.3	Suitable Anti vibration mounts to be provided.	Vendor to confirm			
3.7.4	Size and details of Acoustic Enclosure	Vendor to submit details			
3.8	FIRST FILLING OF OILS / REFRIGERANT				
3.8.1	First filling of all required Oil, Grease and Refrigerant etc. required for the Compressor and other items like Air Filter, Air Drier and Air Receiver etc., to be supplied by vendor. Makes of such items / codes to be submitted by the vendor.	Vendor to offer			
3.9	Control Panel				
3.9.1	Electronic microprocessor for surveillance, management and monitoring of compressors	Vendor to offer			
3.9.2	Functions of electronic microprocessor system: 1. Load unload control 2. Accurate pressure control 3. Programmable start stop 4. Delayed second stop 5. Dual pressure band setting 6. Multi logic control 7. Multi mode control (local / remote/ LAN) 8. Intelligence shutdown protections 9. Automatic restart after voltage failure 10. Remote operation Facility 11. All interlocks to be provided	Vendor to confirm			
3.9.3	LCD display 1. Operational status at a given instance 2. Maintenance messages(alarms and faults) like Lubrication Oil Level, Lubrication oil temperature 3. Setting parameters of the compressor	Vendor to confirm			

3.9.4	Compressor Safety Inter lockings i) Emergency Stop ii) High Sump Pressure Trip with Indication iii) Single Phase Preventor with Reverse rotation Trip iv) Fan Motor Trip with Indication v) Main Motor Trip with Indication vi) Main Motor Trip with Indication (Potential Free Contact)	Vendor to offer			
4	ENVIRONMENTAL PERFORMANCE OF THE MACHINE: The Machine should conform to following factors related to environment	Vendor to confirm			
4.1	If any safety / environmental protection enclosure is required it should be built in the machine by the vendor	Vendor to confirm			
4.2	Paint of the machine should be oil / coolant resistant and should not get peeled off and mixed up with coolant.	Vendor to confirm			
5	POWER SUPPLY / ENVIRONMENT CONDITION				
5.1	The machine should be suitable for operation in the following conditions: Power supply for the machine: 415 V +10 % / -15 %, 3 phase, 50 Hz +/-3 % - Ambient Temperature range : 5 deg celsius to 45 deg celsius - Relative humidity: 95 % max. - Other conditions: Similar to tropical country. - Dust laden atmosphere during some part of the year	Vendor to confirm			
6	SPARES :				
6.1	Vendor to offer their recommended mechanical, electrical and hydraulic spares for 2 years of trouble free operation of Compressor and other items like Air Filter and Air Receiver etc. Itemised breakup of the offered spares should be offered by vendor. Unit Price of each item of spare should be offered.	Vendor to offer			
6.2	200 Litres of cooling oil in addition to first filling to be provided.	Vendor to offer			
7	O & M MANUALS:				
7.1	Three sets of Operation & Maintenance Manuals in English language and its soft copies in CD should be supplied along with the equipment. Manuals should contain the following information in it.	Vendor to offer			
7.2	Operating manuals of Compressor including other items like Air Filter and Air Receiver etc.	Vendor to offer			
7.3	Detailed Maintenance manual of Compressor including other items like Air Filter and Air Receiver etc. With the help of drawings of main assemblies/sub-assemblies/parts including Electrical / Coolant / Hydraulic circuit diagrams	Vendor to offer			

7.4	Catalogues, Operation & Maintenance Manuals of all bought out items including drawings, wherever applicable	Vendor to offer			
8	ERECTION & COMMISSIONING				
8.1	Supplier to take full responsibility for carrying out the assembly and commissioning of Compressor alongwith its all accessories at BHEL - HPEP hyderabad plant. Electrical power shall be provided by BHEL at only one point to be indicated by supplier in their layout drawings. Other requirements like crane shall also be provided by BHEL. During commissioning, vendor will have to demonstrate proper operation / functioning of the Compressor and all other items like Air Filter and Air Receiver etc.as per their specifications. Quality of outlet air from the Compressor Unit will also to be demonstrated as per the technical specifications. Supervision of erection & commissioning shall be in vendor scope.	Vendor to offer			
8.2	The charges for E&C to be quoted seperately.	Vendor to offer			
9	QUALIFYING CONDITIONS:-				
9.1	Only those vendors, who have supplied and commissioned at least two nos. "Screw type Air Compressor system" of same or higher capacity (Air delivery rate) in the past five years (on the date of opening of tender) and such Compressors are presently working satisfactory for more than 12 months after commissioning (on the date of opening of tender), should quote. The following information should be submitted by the vendor about the company (s) where similar compressors have been supplied. This is required from all the vendors for qualification of their offer.	Vendor to comply and submit with offer			

9.2	Name of the customer / company where similar Compressors are installed.	Vendor to provide details.			
9.3	Complete postal address of the customer.	Vendor to provide details.			
9.4	Month & Year of commissioning	Vendor to provide details.			
9.5	Broad specification of the machine (s).	Vendor to provide details.			
9.6	Performance certificate from the customer regarding satisfactory performance of machine supplied to them (Original Certificate or Through e-mail directly from the customer).	Vendor to provide details.			
9.7	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 provide details.			
10	EQUIPMENT ACCEPTANCE: (Tests/Activities should be Performed by Vendor)				
10.1	Tests/Activities should be carried out at supplier's works before dispatch & at BHEL works while commissioning the equipment :	Confirm & Vendor to specify the applicable standard (IS / ISO / Any other)			
10.2	Demonstration of all features of the equipment, control system & accessories for efficient and effective use of the equipment	Vendor to Confirm			
10.3	Full load test to demonstrate the maximum capacity of the equipment.	Vendor to Confirm			
11	GUARANTEE :				
11.1	Complete Air compressor system shall be guaranteed for 24 Months from the date of commissioning of the equipment.	Vendor to Confirm			
11.2	Service beyond guarantee period	Vendor to Specify Details			
11.3	Supplier shall be responsible for after sales service of the equipment.	Vendor to Confirm			
12	GENERAL :				
12.1	Equipment Model No.	Vendor to Specify Details			
12.2	Painting of Equipment	Vendor to Specify Details			
12.3	Total weight of the equipment	Vendor to Specify Details			
12.4	Vendor to submit , along with offer, reference list of customers along with details of contact person, where similar or higher capacity compressors have been supplied.	Vendor to Confirm			
12.5	Detailed catalogues, sketch/ photographs of the equipment and accessories should be submitted with the offer.	Vendor to Confirm			
12.6	GA and foundation details of compressor/dryer/recievers and filters to be submitted along with offer	Vendor to Confirm			
12.7	Vendor shall submit his latest design. In case of any variance with the present Spec., BHEL reserves the right to study & make minor changes.	Vendor to Confirm			