

BHARAT HEAVY ELECTRICAL LIMITED, JHANSI			
		Specification No.	9045
		Item No.	SP/CA/9045
		Location	LOCO TEST
		Quantity	TWO NUMBER
SCOPE :			
DESIGN, MANUFACTURING, TESTING AT SUPPLIER WORKS, SUPPLY, ERECTION & COMMISSIONING OF COMPRESSOR COMPLYING AS PER SPECIFICATION BELOW			
NOTE :			
	1. VENDOR must submit complete information against clause No. 20.0 (Qualifying condition). The offer meeting this clause would only be processed.		
	2. The " offered" Column and where applicable, the " Deviations" Column of this format shall be filled in by the Vender and submitted along with the offer. Technical details also submitted with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specification / requirements shall be treated as non - compliance.		
	2. The offer and all documents enclosed with offer should be in English language only.		
SPECIFICATION CUM COMPLIANCE CERTIFICATE OF COMPRESSOR			
<u>S.NO.</u>	<u>REQUIREMENT</u>	<u>OFFERED</u>	<u>DEVIATION</u>
1.0	SCOPE		
1.1	The specification governs the quality requirements of design, manufacturing, supply, erection and commissioning of 95-120 CFM compressor complete in all respect.	Vendor to confirm & specify	
2.0	GENRAL FEATURES		
2.1	An independent Staionary, single stage , oil cooled Screw Type Air Compressor unit capable of continuously supplying compressed air to the compressor, powered by a 3 phase A.C. electric motor .	Vendor to confirm	
3.0	SPECIFICATION		
3.1	Receiver Tank (conforming to ASME Norms) fitted with Safety Valves, pressure gauge.	Vendor to confirm and furnish the details	
3.2	Pressure Relief Valve,	Vendor to confirm and furnish the details	
3.3	Automatic Pressure Switch,	Vendor to confirm and furnish the details	
3.4	Oil Sight Glass,	Vendor to confirm and furnish the details	
3.5	Non Return Valve,	Vendor to confirm and furnish the details	
3.6	Auto Drain Valve	Vendor to confirm and furnish the details	
3.7	Starter for the motor.	Vendor to confirm and furnish the details	
3.8	High temperature shut down sensor	Vendor to confirm and furnish the details	
3.9	Heavy duty TEFC Sq. cage induction motor. (18.5 KW /25 HP minimum).	Vendor to confirm & specify	
3.10	Air delivery : (range from 95 CFM to 120 CFM)	Vendor to confirm & specify	
3.11	Normal working pressure: 8 Kg/Sq cm	Vendor to confirm	
3.12	Maximum working pressure: 10 Kg/Sq cm	Vendor to confirm	
3.13	Receiver Air tank capacity: 500 liters(minimum.)	Vendor to confirm	

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF COMPRESSOR

<u>S.NO.</u>	<u>REQUIREMENT</u>	<u>OFFERED</u>	<u>DEVIATION</u>
3.14	Duty: Continuous	Vendor to confirm	
3.15	Cylinder: deep finned cast Iron make	Vendor to confirm	
3.16	Valves : Stainless steel make	Vendor to confirm	
3.17	Noise level (1 Meter away from compressor): 70 DB	Vendor to confirm	
4.0	Control system and panel		
4.1	Control panel for monitoring continuously & accurately (through microprocessor based Regulator and Electronic Controller) the data and for controlling the performance through feedback to the operator and interlocking arrangements. Built in protection systems, inclusive the following, should be provided for safe and foolproof operation of the complete compressor system.	Vendor to confirm and furnish details	
4.2	Phase sequence protection relay,	Vendor to confirm and furnish details	
4.3	Phase failure protection relay,	Vendor to confirm and furnish details	
4.4	Motor overload Trip,	Vendor to confirm and furnish details	
4.5	High Air / Oil Discharge Temperature Trip.	Vendor to confirm and furnish details	
4.6	Protection against starting on load,	Vendor to confirm and furnish details	
4.7	Dual Hours meter for Run/Load.	Vendor to confirm and furnish details	
4.8	Auto ON/OFF as per requirement of air pressure	Vendor to confirm and furnish details	
5.0	Compressor Status Indications		
5.1	a) Voltage ON (LCD Indication)	Vendor to confirm	
5.2	b) Compressor ON (Stand-By , Start-Up & Shut down Mode)	Vendor to confirm	
5.3	c) Compressor in "UN-LOAD" condition	Vendor to confirm	
5.4	d) Compressor in "LOAD" condition	Vendor to confirm	
6.0	ELECTRICAL:		
6.1	Input Power Supply: 3 Phase, 415 ± 10%Volt, 50 ± 3% Hz	Vendor to confirm	
6.2	Tropicalisation: All electrical / electronic equipment shall be tropicalized.	Vendor to confirm	
6.3	All electrical & electronic control cabinets & panels should be dust and rodent proof.	Vendor to confirm	
6.4	Motors shall conform to IEC or Indian Standards .	Vendor to confirm	
7.0	SAFETY ARRANGEMENTS:		
7.1	Safety feature should be incorporated for safety of operator and the compressor	Vendor to confirm	
7.2	Anti Vibration Mountings should be provided on the compressor frame for vibration isolation from Screw element, Motor and Oil Separator Tank.	Vendor to confirm	
7.3	All the pipes, cables etc. on the compressor should be well supported and protected.	Vendor to confirm	

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF COMPRESSOR

S.NO.	REQUIREMENT	OFFERED	DEVIATION
8.0	ENVIRONMENTAL PERFORMANCE OF THE COMPRESSOR:		
8.1	The compressor shall conform to following factors related to environment :	Vendor to confirm	
8.2	(a) If any safety / environmental protection enclosure is required it should be built in the compressor by the vendor.	Vendor to confirm	
8.3	(b) Paint of the compressor should be oil / coolant resistant and should not peel off and mix up with coolant.	Vendor to confirm	
9.0	LEVELING & ANCHORING SYSTEM		
9.1	Complete anchoring system including foundation bolts, anchoring materials, fixators, leveling shoes etc should be supplied .	Vendor to confirm	
10.0	TOOLS FOR ERECTION, OPERATION & MAINTENANCE :		
10.1	Special tools and equipment required for erection and necessary tools like Torque Wrench, Spanners, Keys, grease guns etc.for operation and maintenance of the compressor should be supplied. List of such tools should be submitted with offer	Vendor to confirm	
11.0	SPARES:		
11.1	Supplier should quote spares & consumables for 2 years continuous operation (@ 24 hr / day basis) of the Compressor Unit. Complete list of spares & consumables (inclusive of the following spares & consumables) is to be provided (along with the offer itself), giving individual item's part identification no, its application, life (in hrs of use), recommended quantity and unit cost.	Vendor to confirm and submit	
11.2	a) Oil separator	Vendor to confirm and submit	
11.3	b) Oil Filter	Vendor to confirm and submit	
11.4	c) Oil	Vendor to confirm and submit	
11.5	d) Air Filter	Vendor to confirm and submit	
12.0	DOCUMENTATION :		
12.1	During participation in technical Bid.	Vendor to confirm	
12.1.1	General arrangement drawing with all details of compressor.	Vendor to confirm	
12.2	After Receipt of LOI/Purchase Order (TWO SETS FOR APPROVAL)	Vendor to confirm	
12.2.1	Out line genaratl arrangement drawing (For approval)	Vendor to confirm	
12.2.2	Electrical schematic and control circuit diagram (For approval)	Vendor to confirm	
12.3	With the supply of compressor (THREE SETS)	Vendor to confirm	
12.3.1	Operating manuals of compressor	Vendor to confirm	
12.3.2	Detailed electrical circuit should also be supplied along with the air compressor.	Vendor to confirm	
12.3.3	Detailed Maintenance manual of compressor with all drawings of compressor assemblies/sub-assemblies/parts.	Vendor to confirm	
12.3.4	Detailed specification of all rubber items and hydraulic/lube fittings	Vendor to confirm	
12.3.5	Complete Master List of parts used in the compressor shall be submitted by the vendor.	Vendor to confirm	
13.0	CIVIL WORK		

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF COMPRESSOR

S.NO.	REQUIREMENT	OFFERED	DEVIATION
13.1	Vendor shall submit the layout drawing for getting BHEL's approval within one month from the date of Letter of Intent (LOI) / P.O. . The layout should consist of all requirements pertaining to complete compressor including space requirement for any accessories. BHEL shall construct complete foundation for the compressor under supervision of supplier and at supplier's responsibility. Vendor should arrange equipments 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 compressor.	Vendor to confirm	
14.0	ERECTION & COMMISSIONING		
14.1	Supplier to take full responsibility for carrying out the erection, start up, testing of compressor, it's control & all types of other supplied equipment , etc. Service requirement like power, air & water 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	
14.2	Tools, Tackels, Test Mandrels, instruments and other necessary equipment including Laser equipment required to carry out all above activities should be brought by the supplier. .	Vendor to confirm	
14.3	Commissioning spares, required for commissioning of the compressor within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to confirm	
14.4	Portion, if any, of the compressor, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colours of paint used.	Vendor to confirm	
14.5	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to confirm and submit	
14.6	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	Vendor to confirm and submit	
15.0	OPERATING CONDITIONS & THERMAL STABILITY :		
15.1	Compressor should work trouble free and efficiently under following operating conditions and should give specified accuracies. Power Supply : Voltage: 415 V - 10%, +10% Frequency : 50 Hz +3%, - 3%, No. of phases = 3 Ambient Conditions: Temperature = 5 to 45 degree celsius Relative Humidity = 95% max. (Vendor to confirm that compressor is suitable for above and details of provisions on the compressor for the same are to be furnished by Vendor)	Vendor to confirm and submit details	
15.2	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. compressor shall be kept in the normal shop floor condition. Max. temperature variation is up to 25 deg Celsius in 24 hours. (Vendor to confirm that compressor is suitable for above and details of provisions on the compressor for the same are to be furnished by Vendor)	Vendor to confirm and submit details	
15.3	Thermal Stability of the complete compressor keeping in view specified Ambient Conditions and accuracy requirements of BHEL components and trouble free operation of the compressor should be ensured by vendor. (Confirm that compressor is suitable for above and details of provisions on the compressor for the same should be furnished)	Vendor to confirm and submit details	
16.0	COMPRESSOR ACCEPTANCE: (Tests/Activities to be Performed by Vendor)	Vendor to confirm	

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF COMPRESSOR

<u>S.NO.</u>	<u>REQUIREMENT</u>	<u>OFFERED</u>	<u>DEVIATION</u>
16.1	Tests/Activities to be witnessed by BHEL representative at supplier's works on the compressor before dispatch :	Vendor to confirm	
16.1.1	Test certificates, Specification compliance and performance of the complete supplied system shall be checked and verified.		
16.1.2	Demonstration of all features of the compressor, control system & accessories.	Vendor to confirm	
16.2	Tests/Activities to be carried out at BHEL works while commissioning the compressor :	Vendor to confirm	
16.2.1	Demonstration of all features of the compressor, control system & accessories to the satisfaction of BHEL for efficient and effective use of the compressor	Vendor to confirm	
16.2.2	One weeks supervision of independent operation of compressor by BHEL after job acceptance	Vendor to confirm	
16.2.3	Training of BHEL compressor operators/maintenance personnel in operation/maintenance of complete compressor & accessories etc by the supplier's experts / engineers during their stay at BHEL works	Vendor to confirm	
16.2.4	Demonstration by actual use of all supplied attachments and accessories to their full capacity.	Vendor to confirm	
16.3	<u>FINAL ACCEPTANCE</u>		

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF COMPRESSOR			
S.NO.	REQUIREMENT	OFFERED	DEVIATION
16.3.1	Final acceptance shall be after erection and commissioning of the complete air compressor system at BHEL by the vendor to the full satisfaction of BHEL. The criteria for acceptance of the air compressor system after erection shall be "satisfying all the clauses of Technical Specifications" given above	Vendor to confirm	
17.0	PACKING:		
17.1	Sea worthy & rigid packing for all items of complete compressor , all Accessories and other supplied items to avoid any damage/loss in transit. Whencompressor is despatched in containers, all small loose items shall be suitably packed in boxes	Vendor to confirm	
18.0	GUARANTEE :		
18.1	24 months from the date of commissioning of the compressor.	Vendor to confirm	
19.0	GENERAL : The vendor should submit the following information:		
19.1	Equipment Model	Vendor to furnish	
19.2	Dimension of Compressor	Vendor to furnish	
19.3	Total weight of the system	Vendor to furnish	
19.4	Detailed catalogues , sketch/ photographs of thecompressor and accessories/ attachments should be submitted with the offer.	Vendor to furnish	
20.0	QUALIFYING CONDITION :		
20.1	Only those Vendors who are manufacturer of the compressor or authorised dealers and supplied & commissioned atleast one compressor of similar rating or heigher in the past ten years (on the date of opening of tender) and such Compressor is presently working satisfactorily for more than one year after commissioning (on the date of opening of tender) .	Vendor to accept and confirm	
20.2	Vender should submit company profile of the compressor manufacturer	Vendor to furnish	
20.3	The following information should be submitted by the vendor about the companies where similar compressors have been supplied. This is required from all the vendors for qualification of their offer.		
	1. Name of the customer / company where similar machine is installed.	Vendor to inform	
	2. Complete postal address of the customer.	Vendor to inform	
	3. Month & Year of commissioning.	Vendor to inform	
	4.Parameters ofcompressor(s) supplied (CFM, Working Pressure,duty etc.) & application for which the machine is supplied.	Vendor to inform	
	5. Name and designation of the contact person of the customer.	Vendor to inform	
	6. Phone, FAX no. and email address of the contact person of the customer.	Vendor to inform	
	7. Performance certificate from the customers regarding satisfactory performance of compressor supplied to them (original certificate or through E-mail directly from the customer).The original may be returned after verification by BHEL,If required.	Vendor to inform	
21.0	BHEL reserves the ight 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.	Vendor to confirm	
	S.J.Chakraborty	Inder Mathur	Susheel Kumar
	Sr. DGM (WE&S)	Sr. Manager (WE&S)	Manager (Loco Test)