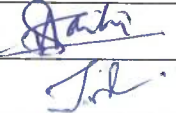
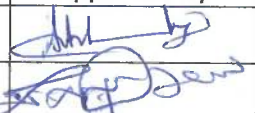
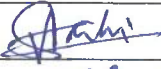
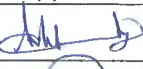
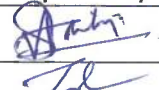
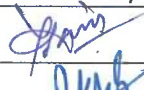
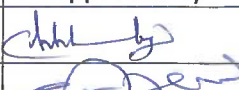
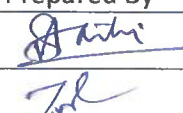
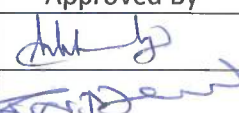


MATERIAL CODE EL8369010016	 EPD		1800-01 Rev. 00			PURCHASE SPECIFICATION FOR AIR COMPRESSOR		ISSUE NO : 06 DOC.NO: SPV-UT-001 REV : 00 JUN-2019		Page 1 of 8																														
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						DOC.NO: SPV-UT-001	
			REV : 00		JUN-2019		
			Page 2 of 8				
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	13	Motor: Heavy duty Energy efficient motor					
	14	Nominal Motor power: Should not exceed 55 KW					
	15	Electrical Connection: 415 V / 3 ph / 50Hz					
	16	Starter: Automatic Star Delta (in-built)					
	17	Motor Protection: IP 55					
	18	Duty Rating: Continuous S1					
	19	Motor Make: Siemens/ABB/ALSTOM/CGL/Bharat Bijlee					
	20	Insulation Class: F					
	21	Motor Construction: TEFC Air cooled					
	22	Temperature at Discharge : Max 35 Deg Centigrade					
	23	Specific power consumption at 8 bar to be indicated					
	24	Oil filling for each machine to be indicated					
	25	Noise Level: Max. 75 DbA at a distance of 1 mtr away from the compressor under free field condition					
	26	Drive type: Direct drive with suitable coupling and speed reducer					
27	HMI and Parameter indication : Minimum 5.7 inch graphic display visualize compressor - Operating parameter - Caution status - Shut down status - Service information • Last 4 events of caution / shut down status with trend data before event can be stored in memory. • Selectable language • Sequencing up to two machines standardly equipped. • Standard I/O for remote operation and alert equipped. • Heavy electrical protection like 12,000V lightning surge killer, and 0.5sec momentary blackout ride-through as standard feature.						
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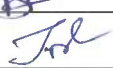
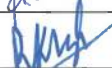
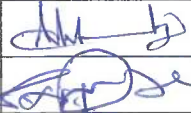
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	Page 3 of 8						
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		29	Mechanical Safety system: Can include additional mechanical safety features apart from the following: 1. Inter-stage pressure relief valve 2. Discharge pressure relief valve 3. Oil pressure relief valve 4. Air receiver high pressure relief valve				
30		Air Water Separator: Suitable air water separator should be provided along with the compressor to be fitted at the outlet of compressor, air dryer and receiver. Air Water Separator shall be of no air loss type. Preferred makes: Kobelco/ Atlas Copco/ Ingersoll Rand/ Boge/ Parker/ Trident					
31		Standard accessories: The indicative standard accessories are listed below, bidders to confirm and also provide additional accessories as required for enhancing the performance, safety and efficiency. 1. Oil sight glass 2. Non-return valve 3. Auto drain valve 4. High temperature shut down sensor system					
32		Suitability to operating condition at BHEL: Compressor should work satisfactorily and within the defined parameters under the following operating and environmental conditions with specified accuracies: 1. Power supply: Voltage 415 V $\pm 10\%$ 2. Frequency: 50 Hz $\pm 3\%$ Ambient conditions: 1. Temperature: 15 to 45 degree Centigrade 2. Relative humidity : Max 95% Vendor to confirm that the compressor is suitable for the above and details of provisions on the compressor for the same are to be furnished by the vendor					
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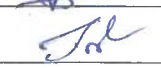
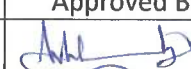
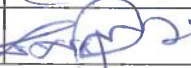
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	Page 4 of 8							
	C REFRIGERATED AIR DRYER							
	1 Quantity: 4 Nos 2 Flow : Flow of the dryer shall be minimum 50% more than flow of the compressor 3 Dimensions: To be indicated 4 Refrigerant type air drier of matching capacity to be offered along with the compressor 5 Make: To be indicated Should be a) Same make as that of the compressor is preferred. b) In case of different make, the design, engineering and technology should be certified by the Compressor OEM for compatibility BHEL, at its discretion, may evaluate and indicate alternative make of refrigerated air driers of proven make in case of Option (b) 6 Model: To be indicated 7 Dew Point: +3 Deg C to +7 Deg C 8 The refrigerant type air drier to have full features electronic control system for ensuring efficient operation of the compressed air system. The following indicative features shall be incorporated in the drier: a. Auto OFF/ ON for energy saving b. Alarm display for high and low dew point c. Programmable electronic drain valve d. In built strainer with quick access for maintenance 3. The refrigerant type air drier to be eco-friendly and non CFC type. Details to be given 9 Refrigerant type: Environment friendly and chlorine free refrigerant is to be used 10 Motor of Air dryer: Suitable energy efficient motor with continuous duty rating, IP 55 protection, Class F insulation 11 Make: Siemens/ABB/ALSTOM/CGL/Bharat Bijlee 12 The brought out components shall be of industry standard and good quality makes, details of such bought out components like refrigerant, compressor, auto drain valves, control and indication instrumentation shall be provided 13 Specific power consumption to be indicated							
D AIR RECEIVER								
1 Quantity: 4 Nos 2 General Scope: Air receiver of suitable parameters for storing air at 8 bar pressure should be supplied. The receiver should be designed and manufactured complying to pressure vessel rules, Tested and certified by competent person 3 Capacity: 1000 L 4 Dimension: To be indicated 5 Working pressure: Should be suitable for working pressure of 10 bar								
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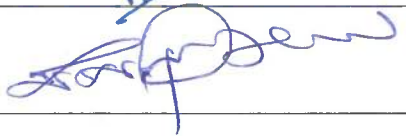
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	Page 5 of 8						
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								Page 7 of 8
	4 Tests/ activities to be carried out at BHEL works while commissioning of compressor 5 Demonstration of all features of compressor, control system and accessories for compliance to the defined compressor and parameters 6 Training of BHEL compressor operator/ maintenance personnel in operation and maintenance of complete compressor and accessories by the supplier's engineers during commissioning period 7 Demonstration by actual use of all supplied auxiliaries and accessories to their rated capacity 8 Final Acceptance: Final acceptance shall be after installation and commissioning of the complete air compressor system at BHEL by the vendor subjected to full compliance to set specifications and parameters. The criteria shall be Satisfying all the clause of Technical specifications given above, and observation of continuous running of air compressor for 32 hours. M WARRANTY 1 12 months from the date of commissioning or 18 months from the date of supply whichever is earlier 2 Supplier to indicate replacement parts and consumables for 2 years continuous operation (24 hours/ day basis). During the period of warranty, these spares and consumables are the scope of supplier 3 List of spares and consumables to be provided along with techno-commercial offer N QUALIFYING CRITERIA: 1 Bidder should be Original Equipment Manufacturer of the quoted item or their authorized dealer. Bidder to submit company credentials to prove as OEM registration certificate as a manufacturer or any other document to establish that the Bidder is an OEM or authorized representative 2 Bidder should have manufactured, supplied and successfully commissioned compressor of the rated capacity minimum of 5 numbers inclusive of air dryer in the last 3 years. Bidder to submit a copy of purchase orders, commissioning certificates and performance certificate for the supply with contact details of the customer. BHEL preserves the right for independent verification of the reference provided. 3 Offer shall be for new equipment and not for any refurbished or used equipment 4 For imported equipment, the vendor shall have local representative or office for providing after sales and services 5 BHEL reserves the right for independent verification of the compliance to PQR							
	<i>Note: Any other make quoted by bidder apart from the preferred makes indicated by BHEL will be subjected to BHEL's approval during technical discussion</i>							
Rev 00: 1 st Issue		Issued By SPV PROD GROUP	Prepared By  	Checked By  	Approved By  	Date 29/06/19		

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				DOC.NO: SPV-UT-001	
				REV : 00	JUN-2019
				Page 8 of 8	
<u>SPECIFICATION REVIEWED AND APPROVED</u>					
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BHARAT HEAVY ELECTRICALS LTD.,
ELECTRIC & PHOTOVOLTAIC DIVISION, IISC POST, BENGALURU - 560012
DEPARTMENT : SPV & WEX - Projects

Ref : PR No. 50003232
Date: 27.06.2019

LIST OF LINE ITEMS / BILL OF MATERIALS

Sl No.	Item / Description	Unit	Quantity	Rate	Amount	Remarks
1	Air Compressor - Oil free type with refrigerated air dryer and storage receiver	set	4			The Air Compressor as per Purchase Specification No. SPV-UT-001 Complete inclusive of the following units / components and not limited to: a. Air Compressor - 4 No ✓ b. Refrigerated Air Dryer - 4 No ✓ c. Compressed air receiver - 4 No ✓ d. Air filtration system- 4 Sets ✓ e. No loss type Auto Drain Valve - 4 No ✓ f. Protection / Safety systems as required - 1 Lot g. Power & Control Panel with HMI - Visual system and associated software - 1 Lot ✓ h. Additional / Associated equipment : Other accessories as required - 1 Lot ✓
2	Installation and Commissioning of the system at BHEL - EPD	Set	4			
3	Training of BHEL Staff on Operation and Maintenance					
4	Technical Documentation, Software and other associated information					
5	Consumables for a period of 2 years	Set	1			Bidder to indicate and provide details
6	Spare Parts package for a period of 2 years	Set	1			Bidder to indicate and provide details