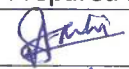
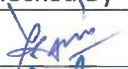
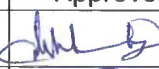
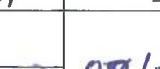
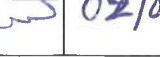
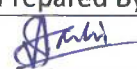
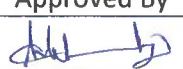


MATERIAL CODE EL8369010024	 EPD		1800-01 Rev. 00		PURCHASE SPECIFICATION FOR COMPRESSOR EXHAUST		ISSUE NO : 06 DOC.NO: SPV-UT-003 REV : 00 JUL-2019									
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	SCOPE OF WORK FOR SUPPLY, INSTALLATION AND COMMISSIONING OF EXHAUST AIR DUCTING AND AIR VENTILATION SYSTEM IN SPV COMPRESSOR HOUSE															
	Summary : BHEL-EPD is going to set up a SPV module manufacturing facility. The manufacturing facility shall comprise of equipment which require compressed air for their functioning. Hence, 4 Compressors of 211 CFM each and 8.0 bar pressure at the compressor discharge end is being procured (Indicative dimension L 2500 mm X B 1500 mm X H 1400 mm). For keeping the compressors, a centralized compressor house is being constructed by BHEL. (Inner indicative Dimensions L 13200 mm X W 6200 mm X H 5000 mm) . For maintaining proper air circulation inside the compressor house and for throwing the exhaust air of compressors proper arrangement needs to be provided. This scope of work attempts to bring out the technical requirements of BHEL-EPD in this regard. The work comprises of Supply of materials, installation, commissioning and test run. The details of the work is mentioned below : <table border="1"> <thead> <tr> <th>SI No.</th> <th>Name of work</th> <th>Description of work</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Intake port</td> <td> 1.1 Intake port shall comprise of 4 Nos of Louvered windows of Aluminium body. Specification: Louvered Windows - Al. Consturction Intake Filter HDBE 10 micron Filter Intake Louver size of 1200 x 1200 mm Intake Cross sectional Area - 6 mt/sq </td> </tr> <tr> <td>2</td> <td>Supply and installation of exhaust fan for Compressor House</td> <td> 2.1. Vendor shall provide axial exhaust fan at the place designated Specification : Axial Fan - 1 No a. Fan make: Fantech/ Adroit/ EBM-Papst b. Capacity : Bidder to indicate c. Static Pressure: Bidder to indicate d. Fan Speed : Bidder to indicate e. Drive: Direct f. Input Power – Bidder to indicate g. Motor Make: (Siemens/ NGEF/ KIRLOSKAR/ABB/ CGL) h. Material Of Construction Impeller PAG Blade with Aluminum hub Casing MS IS 2062 (Third party test certificate to be provided by vendor conforming the standard Test cetificates : i. Fan balancing ii. Material test certificate) </td> </tr> </tbody> </table>								SI No.	Name of work	Description of work	1	Intake port	1.1 Intake port shall comprise of 4 Nos of Louvered windows of Aluminium body. Specification: Louvered Windows - Al. Consturction Intake Filter HDBE 10 micron Filter Intake Louver size of 1200 x 1200 mm Intake Cross sectional Area - 6 mt/sq	2	Supply and installation of exhaust fan for Compressor House
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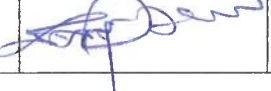
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	3 Supply and installation of GI ducting with Bellows and Exhaust fan at the exhaust of the compressors 3.1 Vendor shall provide GI duct with insulation, bellows, axial exhaust fan and hood at the exhaust of the compressors. The exhaust ducting design shall satisfy the following conditions : a. Vendor shall not directly mount the duct on the compressor with screws b. Vendor shall install wire net at the exit of the duct so that birds or big refuse cannot get in. c. Vendor shall prevent rain water entering into the exit of the duct. d. Vendor shall maximize a radius as much as possible when bending the duct. e. Suitable and robust GI hood to be provided for all exhaust ducts to protect against rain water entry and other foreign particles entry inside the duct. f. In case of installing a ventilating fan in the duct, vendor shall keep clearance of 300~400mm between ventilating duct and exhaust outlet of the compressor. 3.2. Vendor need to install the ducts conforming to the technical requirements specified in Cl. 3.1 as per their standard engineering practice. Detailed drawing shall be submitted and approved by BHEL before commencement of work. 3.3 Specification : a. GI Duct (from above the compressor to exterior with Fan): - GI -14 G - Material : GI Sheet, Coating thickness 140 gsm (As per IS Std : IS 277, Test certificates need to be provided) - Joints - 3 mm Birla Metal Glue/Saint Gobain with Pop rivits b. Bellows : Double wall rexin with hose clamp c. Insulation : 40mm thk Rock wool with Al. Cladding 22 Swg (Necessary test certificates shall be provided conforming to IS:8183). Insulation shall be provided in the GI duct inside the compressor house only.							
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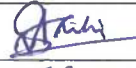
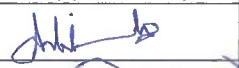
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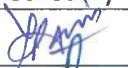
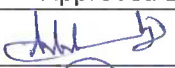
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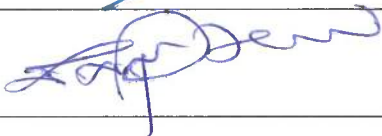
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	d. Axial Fan Bidder to indicate flow in CFM Make: Fantech/ Adroit/SE Qty: 1 No Drive : Direct Speed : Bidder to indicate Input Power: Bidder to indicate Motor Power : Bidder to indicate Motor Insulation : Class F to withstand upto 100 deg C. Motor make: (Siemens/ NGEF/KIRLOSKAR/ABB/ CGL) Static Pressure : Bidder to indicate Blade Material : Blade shall be capable of withstanding upto 90 Degree C. Necessary details are to be provided. 3.4 Vendor to provide GI flange arrangement for fixing the GI Duct with bellows with the exhaust of the Compressors. Temperature is Approx. 20 °C above than ambient temp.						
	4	Installation Period and Activity schedule	4.1. Successful bidder shall come for installation and commissioning of the components as and when called. 4.2. The duration for installation of Louvers, Axial fan and GI ducts shall be within 30 days from the date of clearance given by BHEL. 4.3. Duration for testing of lines and connections - 1 Week 4.4. Successful bidder shall provide detailed activity schedule for the full work after receipt of work order. Any clarification required from BHEL in this regard shall be clearly brought out				
5	Inspection and Testing	5.1. All ducts after installation shall be checked for leaks. Any leaks noticed shall be corrected. Vendor shall make all the necessary arrangement in the BHEL site for the same. Water column test for static pressure of shall be done.					
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COPY RIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.	6	Guarantee Period	6.1. For material: 12 months from the date of arrival of materials at BHEL-EPD premises. Vendor shall arrange for replacement of material in case of any failure. 6.2. For workmanship: 18 months from the date of installation certificate signed by BHEL official. Any service required during the warranty period shall be under the scope of vendor.				
	7	Qualification criteria	7.1. Vendor shall have experience in laying GI Ducting for compressors, dryers or Duct Recovery fans. Vendor shall submit Minimum 2 Nos commissioning certificate for carrying out similar jobs in the last 3 years.				
	7.2. Certifications and standards: a. Vendor shall have certifications conforming to IS-655:2006 Standard for carrying out GI ducting work. Necessary certificate to be provided b. Vendor should conform to IS standards for materials supplier as detailed in Clause 3.3						
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<u>SPECIFICATION REVIEWED AND APPROVED</u>						
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	AMARTYOTI SAIKIA					
	Y. RAVI					
	S. ARUNACHALAM					
	MOHAN J					
	R. K. SINGH					
	C. N. PURUSHOTHAM					

BHARAT HEAVY ELECTRICALS LTD.,
ELECTRIC & PHOTOVOLTAIC DIVISION, IISC POST, BENGALURU - 560012
DEPARTMENT : SPV & WEX - Projects

Ref : PR No. 50003229
 Date: 02.07.2019

LIST OF LINE ITEMS / BILL OF MATERIALS

SI No.	Item / Description	Unit	Quantity	Rate	Amount	Remarks
1	Air compressor- hot air exhaust system	Set	1			The Hot air exhaust system as per Purchase Specification No. SPV-UT-003 Complete inclusive of the following units / components and not limited to: a. GI Exhaust ducting with supports, bellows, exhaust flange and hood arrangement with suitable clamping - 4 Set b. Al Louvered windows 1200 mm X 1200 mm with HDPE to micron intake filter- 4 sets c. Room exhaust axial fan - 1 No d. Duct exhaust axial fan- 4 No e. 40 mm thick Rock wool with Al cladding 22 Swg for GI duct insulation inside compressor house - 4 Set f. Additional / Associated equipment : Other accessories as required.
2	Installation and Commissioning of the machine at BHEL - EPD	Set	1			
3	Technical Documentation and other associated information	Set	1			