

	<u>BHARAT HEAVY ELECTRICAL LIMITED</u>					
	<u>UNIT'S ADDRESS: BHOPAL</u>					
	<u>CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL (FROM PURCHASE DEPTT.)</u>					
<u>SPECIFICATION CUM COMPLIANCE CERTIFICATION FOR</u> <u>" Gas Flow Analyser"</u>						
	NOTE:-					
1. Vendor must submit complete information against clause no. 12 (Qualifying Condition). The offer meeting this clause would only be processed.						
2. The "Offered" Column and the "Deviations" & "Remarks" Column, if applicable, of this format shall be filled by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance .						
3. The offer and all documents enclosed with offer should be in English language only.						
NAME & ADDRESS OF THE SUPPLIER :				NAME & ADDRESS OF THE INDIAN AGENT :		
TELEPHONE NOS.:				TELEPHONE NOS.:		
FAX NOS.:				FAX NOS.:		
E-MAIL ADDRESS :				E-MAIL ADDRESS :		

SCOPE: SUPPLY, ERECTION & COMMISSIONING OF SOURCE OF "GAS FLOW ANALYSER", SPECIFICATIONS AS BELOW:

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	DEVIATIONS	REMARKS
1.0	PURPOSE & WORKPIECE MATERIAL				
1.1	Purpose: Gas Flow Analyser is required to test the Ventilators	Vendor to note			
1.2	WORK PIECE MATERIAL: Ventilators	Vendor to note			
1.3	Quantity: 10 Nos	Vendor to confirm			
2.0	SPECIFICATION: (Minimum requirements)				
2.1	Make & Model	Vendor to Specify			
2.2	Features				
2.2.1	Battery life hours	Min 8 hrs	Vendor to confirm		
2.2.2	Charge time in hours	Max 5 hrs, typical	Vendor to confirm		
2.2.3	Memory	Internal memory	Vendor to confirm		
2.2.4	Connection type	USB, Micro-B device port	Vendor to confirm		
2.2.5	Weight	3.6 lb (1.6 kg)	Vendor to confirm		
2.2.6	Display	17.8 cm (7 in)	Vendor to confirm		
2.2.7	Single full-range channel	√	Vendor to confirm		
2.3	Flow	Vendor to confirm			
2.3.1	Full range flow channel (includes both low and high flow)	Vendor to confirm			
2.3.1.1	Range	±300 slpm	Vendor to confirm		
2.3.1.2	Accuracy (air)	1.7 % or 0.04 slpm	Vendor to confirm		
2.3.2	Volume	Vendor to confirm			
2.3.2.1	Range	±100 l	Vendor to confirm		
2.3.2.2	Accuracy	± % or 0.02 l	Vendor to confirm		
2.4	Pressure	Vendor to confirm			
2.4.1	High pressure	Vendor to confirm			
2.4.1.1	Range	-0.8 to 10 bar	Vendor to confirm		
2.4.1.2	Accuracy	±1 % or ±0.007 bar	Vendor to confirm		
2.4.2	Differential low pressure	Vendor to confirm			
2.4.2.1	Range	±160 mbar	Vendor to confirm		
2.4.2.2	Accuracy	±0.5 % or ±0.1 mbar	Vendor to confirm		
2.4.3	Airway pressure	Vendor to confirm			
2.4.3.1	Range	±160 mbar	Vendor to confirm		
2.4.3.2	Accuracy	±0.5 % or ±0.1 mbar	Vendor to confirm		
2.4.4	Barometric pressure	Vendor to confirm			
2.4.4.1	Range	550 to 1240 mbar	Vendor to confirm		
2.4.4.2	Accuracy	±1 % or ±5 mbar	Vendor to confirm		

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2.5	Other	Vendor to confirm			
2.5.1	Temperature	Vendor to confirm			
2.5.1.1	Range	0 to 50 °C	Vendor to confirm		
2.5.1.2	Accuracy	±0.5 °C	Vendor to confirm		
2.5.1.3	Resolution	0.1 °C	Vendor to confirm		
2.5.2	Humidity	Vendor to confirm			
2.5.2.1	Range	0 to 100 % RH	Vendor to confirm		
2.5.2.2	Accuracy	±3 % RH (20 to 80 % RH) ±5 % RH (20< or >80 % RH)	Vendor to confirm		
2.5.3	Oxygen	Vendor to confirm			
2.5.3.1	Range	0 to 100 %	Vendor to confirm		
2.5.3.2	Accuracy	±2 %	Vendor to confirm		
2.6	Breath parameters	Vendor to confirm			
2.6.1	Inspiratory tidal volume range	0 to 60 l	Vendor to confirm		
2.6.2	Inspiratory tidal volume accuracy	± % or 0.02 l	Vendor to confirm		
2.6.3	Expiratory tidal volume range	0 to 60 l	Vendor to confirm		
2.6.4	Expiratory tidal volume accuracy	± % or 0.02 l	Vendor to confirm		
2.6.5	Minute volume range	0 to 100 l	Vendor to confirm		
2.6.6	Minute volume accuracy	± % or 0.02 l	Vendor to confirm		
2.6.7	Breath rate range	1 to 1500 bpm	Vendor to confirm		
2.6.8	Breath rate accuracy	±1 %	Vendor to confirm		
2.6.9	Inspiratory to expiratory time ratio (I:E) range	1:300 to 300:1	Vendor to confirm		
2.6.10	Inspiratory to expiratory time ratio (I:E) accuracy	±2 % or 0.1	Vendor to confirm		
2.6.11	Peak inspiratory pressure (PIP) range	±160 mbar	Vendor to confirm		
2.6.12	Peak inspiratory pressure (PIP) accuracy	±0.75 % or 0.1 mbar	Vendor to confirm		
2.6.13	Inspiratory pause pressure range	±160 mbar	Vendor to confirm		
2.6.14	Inspiratory pause pressure	±0.75 % or 0.1 mbar	Vendor to confirm		
2.6.15	Mean airway pressure range	±160 mbar	Vendor to confirm		
2.6.16	Mean airway pressure accuracy	±0.75 % or 0.1 mbar	Vendor to confirm		
2.6.17	Positive end expiratory pressure (PEEP) range	±160 mbar	Vendor to confirm		
2.6.18	Positive end expiratory pressure (PEEP) accuracy	±0.75 % or 0.1 mbar	Vendor to confirm		
2.6.19	Lung compliance range	0 to 1000 ml/mbar	Vendor to confirm		
2.6.20	Lung compliance accuracy	±3 % or 0.1 ml/mbar	Vendor to confirm		
2.6.21	Inspiratory time range	0 to 60 s	Vendor to confirm		
2.6.22	Inspiratory time accuracy	0.02 s	Vendor to confirm		
2.6.23	Inspiratory hold time range	0 to 60 s	Vendor to confirm		
2.6.24	Inspiratory hold time accuracy	1 % or 0.1 s	Vendor to confirm		
2.6.25	Expiratory time range	0 to 90 s	Vendor to confirm		
2.6.26	Expiratory time accuracy	0.5 % or 0.01 s	Vendor to confirm		
2.6.27	Expiratory hold time range	0 to 90 s	Vendor to confirm		
2.6.28	Expiratory hold time accuracy	0.02 s	Vendor to confirm		

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2.6.29	Peak expiratory flow range	±300 lpm	Vendor to confirm		
2.6.30	Peak expiratory flow accuracy	±1.7 % or 0.04 lpm	Vendor to confirm		
2.6.31	Peak inspiratory flow range	±300 lpm	Vendor to confirm		
2.6.32	Peak inspiratory flow accuracy	±1.7 % or 0.04 lpm	Vendor to confirm		
2.7	Environmental	Vendor to confirm			
2.7.1	Operating temp	10 °C to 40 °C	Vendor to confirm		
2.7.2	Storage temp	-20 °C to 60 °C	Vendor to confirm		
2.7.3	Operating humidity	10 to 90 % non-condensing	Vendor to confirm		
2.7.4	Storage humidity	5 to 95 % non-condensing	Vendor to confirm		
2.8	Gas corrections	Gas types	Vendor to confirm		
2.8.1	ATP (ambient temp/pressure, actual humidity)	Air	Vendor to confirm		
2.8.2	ATPD (ambient temp/pressure, dry)	Nitrogen (N ₂)	Vendor to confirm		
2.8.3	ATPS (ambient temp/pressure, saturated)	Nitrous Oxide (N ₂ O)	Vendor to confirm		
2.8.4	STP20 (20 °C temp/pressure 760 mmHg, actual humidity)	Carbon Dioxide (CO ₂)	Vendor to confirm		
2.8.5	STP21 (21 °C temp/pressure 760 mmHg, actual humidity)	Oxygen (O ₂)	Vendor to confirm		
2.8.6	STPD0 (0 °C temp/pressure 760 mmHg, dry)	Argon	Vendor to confirm		
2.8.7	STPD20 (20 °C temp/pressure 760 mmHg, dry)	Heliox (21 % O ₂ , 79% He)	Vendor to confirm		
2.8.8	STP or STPD21 (21 °C temp/pressure 760 mmHg, dry)	Oxygen/Nitrogen	Vendor to confirm		
2.8.9	BTPS (body temp 37 °C/ambient pressure 760 mmHg, saturated)	Oxygen/Nitrous Oxide	Vendor to confirm		
2.8.10	BTPD (body temp 37 °C/ambient pressure 760 mmHg, dry)	Oxygen/Helium	Vendor to confirm		
3.0	DOCUMENTATION : The following shall be supplied along with the system				
3.1	Instruction manual : 4 copies in hard form and in soft form also	Vendor to Confirm			
3.2	Maintenance manual along with circuit/block diagrams and schematics with troubleshooting instructions: 4copies in hard form and in soft form	Vendor to Confirm			
3.3	Test & Guarantee Certificate : One set	Vendor to Confirm			
3.4	List of customer where equipment has been supplied earlier : One set	Vendor to Confirm			
4.0	SYSTEM INSPECTION:				
4.1	Inspection at BHEL works. Vendor representative has to demonstrate and comply the specification as per clause 2.1 to 2.8 at BHEL works during Inspection.	Vendor to Confirm			
5.0	INSTALLATION & COMMISSIONING				
5.1	Supplier have to take full responsibility for carrying out entire installation and commissioning of the equipment and GO LIVE of solution.	Vendor to Confirm			
5.2	Tools required for Installation and Commissioning of the system shall be brought by the supplier on returnable basis.	Vendor to Confirm			
5.3	Schedule for delivery, installation and Commissioning shall be submitted along with the offer.	Vendor to furnish			

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6.0	ACCEPTANCE CRITERIA:				
6.1	Routine test reports given by supplier for tech. details (clause 2.1 to 2.8) with material. Further vendor demonstrate all the technical parameters during commissioning.	Vendor to Confirm			
7.0	TRAINING:				
7.1	Training to BHEL user and maintenance person should be provided at BHEL, Bhopal in the area of working for 2 days (a) Use of all system Features, programming etc. (b) Electrical, Electronic & maintenance for system & other supplied equipments	Vendor to Confirm			
8.0	AMBIENT CONDITIONS:				
8.1	Total System and all supplied items should work trouble free and efficiently under following operating conditions and should give specified accuracies. Power Supply: 230V 1 ϕ or 415 V, 3 ϕ $\pm$ 10%, 50 Hz $\pm$ 3% Ambient Temperature = 2° to 50° C Relative Humidity = 95% max. Temperature Variation =20°C in 24 hrs. (Vendor to confirm that system is suitable for above and details of provisions on the system for the same are to be furnished by Vendor)	Vendor to confirm			
9.0	PACKING:				
9.1	Air worthy/Sea worthy & rigid packing for all items of complete system, all Accessories and other supplied items to avoid any damage/loss in transit. When system is despatched in containers, all small loose items shall be suitably packed in boxes	Vendor to confirm			
10.0	GUARANTEE :				
10.1	Minimum 12 months from the date of commissioning of the system.	Vendor to confirm			
11.0	GENERAL : The vendor should submit the following information along with offer:				
11.1	Equipment Model & make	Vendor to submit			
11.2	Total weight of the equipment	Vendor to submit			
11.3	Vendor to submit, along with offer, the reference list of customers where similar systems have been supplied mentioning the customer, Machine Model, major specifications of the supplied system, Year of Supply etc.	Vendor to submit			
11.4	Detailed catalogues , sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Vendor to submit			

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12.0	QUALIFYING CONDITIONS :				
12.1	The supplier should either be an Original Equipment Manufacturer(OEM) or an authorised dealer of the OEM for the offered equipment. Dealers have to submit along with the offer, a valid Certificate of Authorisation from OEM for quoting the system, alongwith declaration for support from OEM during erection & commissioning, after sales service & necessary spares.	Vendor to specify and submit authorisation in case of Dealer			
12.2	The dealer or its OEM must have supplied and commissioned at least one equipments meeting specifications as per Clauses 2.1 to 2.8 in the past seven years (on the date of opening of Tender) and these equipments are working satisfactorily for more than one year after commissioning. Note: Item is related to public safety, as this will used for testing of Ventilators; hence relaxation to MSME and Startup bidders, shall not be allowed.	Vendor to note			
12.3	The following information should be submitted by the vendor about the companies where similar equipments have been supplied. This is required from all the vendors for qualification of their offer.	Vendor to submit			
12.3.1	Un-priced Purchase Orders for equipments supplied in line with Clause 12.2	Vendor to submit			
12.3.2	Complete postal address of the customer.	Vendor to submit			
12.3.3	Month & Year of commissioning.	Vendor to submit			
12.3.4	Details of equipment supplied & application for which it is used.	Vendor to submit			
12.3.5	Name and designation of the contact person of the customer.	Vendor to submit			
12.3.6	Phone, FAX no. and email address of the contact person of the customer.	Vendor to submit			
12.3.7	Vendor to self certify that the materials supplied, erected and ccommissioned against purchase order submitted for Clause 12.3.1, are working satisfactory.	Vendor to submit			
12.4	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 note			
12.5	The bidders shall submit the latest I.T.R/ Balance Sheet/ Profit & Loss Statement/ any other document certified by CA for evidance of turnover for last three years. Turnover should be minimum 20 Lakhs.	Vendor to submit			
13	POINTWISE CONFIRMATION:				
13.1	Vendor should confirm/clarify pointwise (all the points) as per specification and provide original technical leaflet, technical details, photographs, scope of supply etc. at the first instance.	Vendor to confirm			