

Domain :	bhel.abcprocure.com		
Parent department:	BHEL		
Unit name	:	BHEL Trichy	
Purchase group	:	FB Sub-Dely(Mech).	RFQ/NIT/Enquiry Officer : KANNAN S
Event ID	:	24020	RFQ/NIT/Enquiry no. : 1801900294
Enquiry Date	:	05/04/2019 05:30:00	
Tender Description	:	Supply of Pneumactical Double eccentric Butterfly trip valves for Kalinganagar project	
Terms & Conditions	:	01. The Tender will be operated on TWO PART BID basis and you are requested to submit technical Bid and Price bid in e procurement system. Vendors who are not having DSC, shall obtain the same & quote accordingly). For details related to bidding through e-procurement site (abcprocure) please visit URL - https://bhel.abcprocure.com. Refer the following documents in the site -minimum system requirement & Bidder manual. 02. Pre-Qualification requirement for Pneumatic Butterfly valves of size ranging from NB100mm to NB1200mm -Package-I and Pneumatic Butterfly valves of Size NB 2000mm and above -Package-2 for this enquiry is furnished in Annexure-A1 & A2 respectively. Potential suppliers meeting the PQR has to submit the supporting documents for same in the technical bid for evaluation and qualification of offer. 03. The item covered in this enquiry shall be considered as two Package basis for evaluation and ordering as decribed below. a) Package I : Enq Item SI No: 10-70 b) Package II: Enq Item SI No:80 Quantity splitting is not applicable. Hence vendor has to quote for the all items of respective package Package for consideration. Hence if vendor has not quoted for any items of Package - I , their offer will not be considered for Package - I. Vendor to note the same. 04. The supply shall be as per our specification mentioned in the item wise description enclosed with this enquiry. Any deviation from specifications will leads to rejection of offer. 05. Your offer shall accompany with details of Data Sheet & Drawings and technical documents for evaluation.Your point wise confirmation to our specification is also to be submitted for evaluation. In case any clarification is asked during evaluation time same to to be replied within 7 days. Otherwise offer will be treated as incomplete. Incomplete offer will lead to rejection,Please be noted. 06. The Materials are required for TATA Steel Kalinga Nagar project(1430 and 1431) and are to be dispatched to TATA Kalinganagar project after BHEL/TPI Inspection and our specific clearance. 07. Delivery term: A. For Indigenous Suppliers: The quote shall be on FOR Tata Kalinganagar project site (Odissa State)basis. Packing & forwarding, Freight to your account. Transit Insurance is on BHEL scope. Ex-Works Contracts will not be entertained.	

B. For Import Suppliers: Bidders should submit their offer on CFR Chennai Seaport basis with freight break up details. Pls. indicate the freight breakup details. Transit insurance is on BHEL scope BHEL reserves the right to order on FOB or CFR basis.

08. Kindly refer Commercial terms and conditions which is to be filled in Part -C Techno-commercial offer for evaluation.

09. Please take note of loading factors in Part-C (loading factors for commercial deviations).The same will be applicable for evaluation of net cost to BHEL basis.

10. Please take note of Special provision clause no 12 of Enquiry terms for Micro and Small Enterprises and required documents are to be submitted for availing the same.

11. For this procurement,public procurement clause no 13 of Enquiry terms (Preference to make in India),order 2017 dated 15.06.2017 and 28.05.2018 and subsequent orders issued by the respective Nodal Ministry shall be applicable as per the Commercial terms and tender terms.

12. Enquiry terms and conditions attached with this enquiry to be signed and submitted along with Techno-commercial offer for evaluation.

13. Integrity Pact (IP):

(a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

IEM (1):Shri D.R.S Chaudhary, IAS (Retd.)

E-1/164, Arera Colony Bhopal 462016 (M.P.)

E mail id: dilip.chaudhary(aicloud.com

IEM (2): Mrs. Pravin Tripathi, IA & AS (Retd.)

D-243, Anupam Gardens, Lane IB, Neb Sarai, Sainik Farms,
New Delhi - 110 068

E mail ID: pravin.tripathiasmail.com

b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

c) Please refer Section-8 of IP for Role and Responsibilities of IEMs.

In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

Note:

Both the IEM mentioned above are applicable for this tender.

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s).

(1)Name: S Kannan Dy. Manager, Deptt: MM/BOI

Address: _24 Building, BHEL Trichy, Kailasapuram /Phone:

(Landline/04312577765)
Email:sjkannan@bhel.in
(2) Name: R. Krishnasamy/Sr.DGM Deptt: MM/BOI
Address: 24 Building, BHEL Trichy, Kailasapuram/Phone: (04312577457)
Email: rksamy@bhel.in

Product / service / work keywords : Butterfly valve,

No. of Bid Parts : Multiple Envelope : Techno-commercial bid , Price bid

Type of contract : Goods Project duration / delivery or completion period : 25.09.2019

Download document : Before login

IEM : Shri D.R.S Chaudhary, IAS (Retd.),Mrs. Pravin Tripathi, IA & AS (Retd.) No. of items already attached : 8

Delivery/Location At : Tata kalinganagar project Delivery Date : 25/09/2019 05:30:00

Bid submission configuration

Base currency : INR

Bidding type : ICB/Global

Bidding currencies : YEN,EURO,USD,POUND,INR

Key configuration

Pre-bid meeting : Don't allow

Dates configuration

Document downloading start date : 08/04/2019 10:35:00 Document downloading end date : 30/04/2019 14:00:00

Bid submission start date : 08/04/2019 10:35:00 Bid submission end date : 30/04/2019 14:00:00

Bid opening date : 30/04/2019 14:05:00

Document / EMD / Security fee detail

Document fees : Not required EMD : Not required

Bidding forms

PART - II - PRICE BID

Price Bid 1

MATERIAL CODE	MATERIAL NAME	QUANTITY	UNIT OF MEASUREMENT
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L143014220010001	COG BOILER TRIP VLV(COG31&COG40)-NB1150	4.00	NO
L143014220010002	COG C-HEADER VENT VALVE(COG42A-B)-NB300	4.00	NO
L143014220010003	COG BNR TRIPVLV(COG62A-H,J-R,63A-D)NB400	40.00	NO
L143014220010004	COG CORNER VENT VALVE(COG60A-H)-NB150	16.00	NO
L143014220010005	BFG C-HEADER VENT VALVE(BG42A-B)- NB700	4.00	NO
L143014220010006	BFG BURNER TRIP VALVE(BG62A-H)-NB1000	16.00	NO
L143014220010007	BFG CORNER VENT VALVE(BG60A-D)-NB400	8.00	NO
L143014220016001	BFG MAIN TRIP VALVE(BG40)-NB2600	2.00	NO

Price Bid 2

ITEM NAME	SL NO
Pl. refer Table for item details	1

Information for Online Participation

Bidder who wish to participate in this tender needs to procure Digital Certificate as per Information Technology Act-2000 using that they can digitally sign their electronic bids. Bidders can procure the same from any or the CCA approved certifying agencies, or they may contact e-Procurement Technologies Ltd. at below mentioned address and they will assist them in procuring the same. Bidders who already have a valid digital Certificate need not to procure the same. In case bidders need any clarification regarding online participation, they can contact,

e-Procurement Technologies Ltd.

Corporate Office:

Address : A-201/208, Wall Street - 2, Opp. Orient Club,
Nr. Gujarat College, Ellis Bridge,
Ahmedabad - 380006, Gujarat(INDIA)

Digital Certificate Contacts

Contact Person : Mr. Himalay Vaishnav

Cell : +91-9099090830

Phone Nos. : +91-9099090830

Fax No :

e-Mail : info@abcProcure.com

Support Team Contacts

Contact Person : BHEL Support Team Ahmedabad

Cell : +91-8160087732

Phone Nos. : +91-79-68136809/849/871/823/872

Fax No :

e-Mail : Bhel.Support@abcProcure.com

Bidder who wish to participate in e-Tender need to fill data in predefined forms of Price bid available in respective tender only. After filling data in predefined forms bidders need to click on final submission link to submit their encrypted bid. Bidder need to submit Document Fees, EMD & Reference Documents in hard copy if such instruction are given by tendering authority. As Per the new Inter-operability guidelines released by Controller of Certifying Authorities(CCA), the Secured Socket Layer(SSL) certificate for a e-procurement application is generated on a new algorithm, SHA2.

Also, the Digital Certificates that will be applicable for these platforms have to be SHA2 algorithm complaint. For the same, the

users have to ensure that they have Windows XP(SP3)/Windows Vista/Windows7 installed in their respective PC/Laptop. In case of Windows XP Service pack - 3, if you get any issue you can install the SSL patch, which is available at our download section of our e-Tender/e-Auction Portal and also at our corporate website www.abcprocure.com just below the label of "Knowledge section".

Fraud Prevention

Bidder along with its associate/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

Preference to Make in India

For this procurement, Public Procurement (Preference to Make in India), order 2017 dated 15.06.2017 & 28.05.2018 and subsequent orders issued by the respective Nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT. In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable. Default margin of purchase preference shall be 20% to local suppliers with default minimum local content of 50%.

Annexure A1

Eng no: 1801900294 dt 05.04.19 Pre-Qualification Requirement for Pneumatic butterfly valves of sizes NB 1200 mm and below – Package – I

SI No	PQR	Vendor confirmation and details of supporting documents attached
1	The vendor shall be an established manufacturer of pneumatic butterfly valves of double eccentric type for Blast furnace gas (BFG) and Coke Oven Gas (COG) application. Vendor shall have adequate Engineering, Manufacturing, testing and service facilities.	
2	The supplier shall have experience of having supplied pneumatic butterfly valves of sizes ranging from NB 100 mm to NB 1200 mm or higher in either steel making industry or power plants for BFG and COG gas applications. Vendor should have executed a similar job in the last 5 years. The supplier shall have experience of having supplied the butterfly valves for applications of similar severity as specified in the enquiry.	
3	The butterfly valve offered shall be from the existing regular manufacturing range of the supplier. Vendor shall provide the Product catalogue of the offered model and general reference list supplied to various customer along with the offer.	
4	Vendors to submit the following document in proof of the above point to the fullest satisfaction of BHEL. a. Product catalogue b. Minimum one Purchase order for butterfly valve with respective GA drawings (within last five years from the date of enquiry) to meet the above said conditions. Minimum one Customer inspection report/performance certificate as proof of successful execution of the order.	
5	Customer approval: Customer approval for quoted vendor is applicable for this enquiry and consideration of offer is subject to customer approval for size range.	
6	Integrity pact: The Integrity pact (IP) as enclosed in the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid. Only those vendors who have entered into such a IP with BHEL would be competent to participate in the bidding. In other words, entering into IP would be preliminary qualification.	
7	BHEL prefers only manufacturers for this requirement. Following documents may be submitted: a. Company registration document / Company constitution document b. PAN card copy. c. GST registration copy. d. D & B or equivalent credential reports for foreign vendors	

Annexure A2

Enq no: 1801900294 dt 05.04.19 Pre-Qualification Requirement for Pneumatic butterfly valves of sizes NB 2000 mm and above – Package – II

SI No	PQR	Vendor confirmation and details of supporting documents attached
1	The vendor shall be an established manufacturer of pneumatic butterfly valves of double eccentric type for Blast furnace gas (BFG) and Coke Oven Gas (COG) application. Vendor shall have adequate Engineering, Manufacturing, testing and service facilities.	
2	The supplier shall have experience of having supplied pneumatic butterfly valves of sizes not less than NB 2000 mm in either steel making industry or power plants for BFG and COG gas applications. Vendor should have executed a similar job in the last 10 years. The supplier shall have experience of having supplied the butterfly valves for applications of similar severity as specified in the enquiry.	
3	The butterfly valve offered shall be from the existing regular manufacturing range of the supplier. Vendor shall provide the Product catalogue of the offered model and general reference list supplied to various customer along with the offer.	
4	Vendors to submit the following document in proof of the above point to the fullest satisfaction of BHEL. a. Product catalogue b. Minimum one Purchase order for butterfly valve with respective GA drawings (within last five years from the date of enquiry) to meet the above said conditions. Minimum one Customer inspection report/performance certificate as proof of successful execution of the order	
5	Customer approval: Customer approval for quoted vendor is applicable for this enquiry and consideration of offer is subject to customer approval for size range.	
6	Integrity pact: The Integrity pact (IP) as enclosed in the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid. Only those vendors who have entered into such a IP with BHEL would be competent to participate in the bidding. In other words, entering into IP would be preliminary qualification.	
7	BHEL prefers only manufacturers for this requirement. Following documents may be submitted: e. Company registration document / Company constitution document f. PAN card copy. g. GST registration copy. h. D & B or equivalent credential reports for foreign vendors	



**GENERAL SPECIFICATION FOR BLAST FURNACE GAS LINE
VALVES**

1. BINDING DOCUMENTS:

- a. The partially filled data sheet shall be carefully gone through and technical requirements met with.
- b. Vendor shall fill the complete data and submit with offer.
- c. The specification and the final approved data sheet shall form part of the purchase order and be binding.

2. TECHNICAL REQUIREMENTS:

- a. For flow parameters and requirement of accessories refer to item description and / or the data sheet.
- b. Carbon steel body flanged as per ANSI / BS 4504 to meet the technical requirements.
- c. Butterfly valves shall be of carbon steel discs, SS stem and SS seat; seal and packing materials as per service requirements.
- d. Ball valves shall be of SS ball, SS stem and SS seat; seal and packing materials as per service requirements.
- e. Steam polished & finished to 2-4 microns RMS in case of TFE packing.
- f. Valve internals shall not vibrate or chatter & not unduly noisy; the noise level shall be limited to 85 Db at one metre distance.
- g. Valve hysteresis shall be limited to 5% of input span for valves without positioners & to 0.5% for valves with positioners.

3. THE FLUID:

- a. Blast furnace gas is dust laden and saturated. The valves shall be operable and shall offer specified leak tightness under operating conditions.
- b. There is a possibility that the BF gas lines will be occasionally purged with steam/nitrogen to remove the gas from the ducts before doing any maintenance. The seals offered shall be suitable for the purging temperature. The temperature during purging is expected to go to 50°C.
- c. BF gas leakage through the glands to the atmosphere is very hazardous and can kill people around and hence the glands shall be of suitable design to avoid any leakage. It is preferable to provide glands which do not require any external sealant gas/air. Tender shall state the leakage rate through the glands, if any.
- d. Special gaskets for the flanges if any for BFG/COG gas valves to avoid leakage shall be quoted.
- e. Leak tightness shall be as per API-598 – bubble tight shut off.



4. SPECIAL REQUIREMENTS:

- a. The closing time for the trip valves shall be preferably less than the specified time, when connected through solenoid pilot. Tender shall indicate the minimum possible value. The quick exhaust valves can be quoted if required to meet with this closing time. Preference will be given for faster closing valves.
- b. Soft seals shall be replaceable independent of seat ring. Seal replacement shall be swift and easy without major handling.
- c. Blow out proof stem and fire safe design shall be offered for all applications.
- d. All valves shall be provided with outboard type of bearings suitable for easy replacement from outside. The bearing shall not require frequent lubrication. Non-lubricated / self lubricated bearings preferable.
- e. There should be a minimum reserve of 20% torque developed by the actuator over the valve torque at all operating conditions.
- f. The valves shall be designed for a minimum life of 1000 cycles.

5.ACCESSORIES:

- a. Include accessories as under item description & / or data sheet.
- b. Offer shall include easily operable hand-wheel with gear unit depending upon the operational torque requirements. The offer shall also include two numbers of limit switches of Honeywell model EXDAR or equivalent Or cam operated enclosed rotary switches with DPDT contacts (110AC 10A) & 1 / 2 inch-14 NPSM female cable entry.
- c. All accessories shall be with explosion proof enclosure to NEMA 7 & 9, suitable for outdoor installation & 70°C ambient.
- d. All accessories shall be supplied in fully mounted & piped-up condition with SS tubing.
- e. Pneumatic ports on all equipment shall be suitably sized to meet timing requirements.
- f. Include quick exhaust valves, if required, to limit the valve closing time.
- g. Solenoid pilot valve as per data sheet, and shall be provided with moulding coil class H insulation. Explosion proof housing, wired to the terminal block / junction box.
- h. Limit switches and / or solenoid pilot wiring shall be terminated in an explosion proof junction box.
- i. Supplier to provide counter flanges, fasteners and gaskets for all butterfly valves.

6.MARKING:

- a. Stainless steel nameplates with following boldly engraved shall be firmly fixed to the body; suitable local indicators for open / close position of the valve. Maker's name & production serial number;



service; BHEL material code; type, size & rating of body; size & form disc; type, size & spring range of actuator; valve action; air failure position.

- b. Each spare shall be individually tagged with part name, maker's name & spare code and BHEL material code.

7. PAINTING:

- a. All interior surfaces applied with rust preventive oil, following hydraulic test and drying.
- b. All exposed surfaces degreased, de-rusted and epoxy coated over red oxide primer.

8. PACKING:

- a. All openings (fluid, pneumatic and electric) shall be firmly capped.
- b. Valves shall be land worthy packed in wooden boxed with waterproof under cover.
- c. Liberal packing material & struts shall be provided to arrest rolling & to protect from transmit damages.
- d. Items like limit switches, solenoid valve etc. shall be capsulated/ covered properly with thermocole material.

9. TEST CERTIFICATES:

- I) Following work TCs shall be submitted along with the supplies;
 - a. Body hydraulic test done at 1.5 times the cold working pressure;
 - b. Seat leak test as specified in valve data sheet.
 - c. Material certificates for body, discs, seat, seal and shaft.
 - d. Standard performance tests for actuator & solenoid pilot.
 - e. For proper actuation and response of switches.
 - f. Dimensional certificate for overall dimensions and all terminal connections.
 - g. Chemical composition
 - h. Shore hardness for resilient materials.
 - i. Open / close timings.
- II.) Following test certificate shall be provided:
 - a. Torque measurement for actuator and valves.

10. INWARD INSPECTION:

- a. Verify the works test certificates, marking particulars, nameplates of each accessory and the scope of supply
- b. Watch for Damages.
- c. Perform random check on all terminal connections and the internal particulars.



11. After placement of purchase order 6 sets of following documents / drawings.

Required within one month from the date of purchase order:

- a. Quality plan.
- b. Supporting arrangement detail for valve
- c. Complete dimensional drawings.
- d. O & M instructions for all items concerned.
- e. Spares identification drawings.
- f. Test supports.

12. Along with the quotation, submit following documents in full for technical evaluation:

- a. Completely filled-in data sheet.
- b. Dimensional drg with all accessories mounted, catalogues, Specifications, spares, identifier drgs, O & M manuals.
- c. Copies of std test methods and copies of certificates formats for main valve and all accessories.
- d. Confirmation /deviation list to each point of this specification

13. All the materials / assemblies are subjected to purchaser's customer's inspection at any stage. The stages of inspection will be decided based on the quality plan submitted by the vendor.

14. Vendor shall furnish valves as per codes/standards specified in this specification & associated data sheets. International standards equivalent to purchaser's specified standards are also acceptable subject to purchaser's approval.

15. Supplier shall indicate the total weight of the assemblies for all the items.

16. GUARANTEE & WARANTEE

All the materials shall be defect free and shall be replaceable free of cost during guarantee period. The performance of valves shall be guaranteed for a period of 12 months from the date of commissioning or 18 months from the date of supply whichever is earlier.

17. Nothing in this specification shall be construed to relieve the vendor from his responsibility. This specification covers the minimum requirements of the system. It is the responsibility of the vendor to include all the requirements for completeness of the system.

18. The technical requirements of the datasheet shall supersede in case the requirement of this specification is different from that of the datasheets.



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 01 OF 28**

**PART - I: DATASHEET FOR BUTTERFLY TRIP VALVE
COG Boiler Isolation Valve (Tag: COG31) &
COG Main trip Valve (Tag: COG40)**

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-° C
BHEL Material Code: L143014220010001

O.FLOW DATA		C.SOLENOID PILOT			
1. Line Fluid		1. Make / Type No			
2. Flow Max		2. Style			
3. Normal in pr		3. To Open Main Valve	Energise Solenoid coil		
4. Allowable DP		4. To Close Main Valve	De-Energise Solenoid coil		
5. Actuator Sizing DP		5. Enclosure			
6. Temp Max		6. Coil Duty	Continuous, for 100° C ambient		
7.Flow Temp		7. Coil Rating	24 V DC		
8. Flow Sp Gravity		8. Insulation Class			
9. Flow Viscosity		9. Inrush / Hold Wattage			
10. Max Flow Cv		10. Valve Flow Cv			
11. Flap rotation %		11. Body Material	Forged Brass		
12. Valve Cv		12. Wetted parts	Stainless Steel		
13. Valve Closing Time	Sec.	13. Seating	Resilient for tight shut		
14. Valve Opening Time	Sec. Adjustable	14. Valve Ends			
		15. Cable entry			
A. VALVE BODY		16. Terminal Block	Provided		
1. Make/Type No		D. QUICK EXHAUST VL	To meet O.13		
2. Line Size	ODxT mm	1. Make/type No			
3. Body/port Size	Nb mm	2. Port Conn			
4. Flap rotation	degrees				
5. Body Style / Rating	NP	E. FLOW RESTRICTOR	To meet O.14		
6. Ends	Flanged to :	1. Make/Type No			
7. Valve Disc type		2. Port Conn			
8. Disc Material		3. Adjustable Time Range			
9. Body Matl	Carbon Steel				
10. Seat Material		F. AIRSET	Type No		
11. Stem Size /Material		1. Airset set pressure			
12.Seat, Matl		2. End Connection			
13. Seat Leak Class	Bubble tight shut off as per API 598	G. LIMIT SWITCHES			off
14. Bonnet / packing		1. Make/Type No			
15. Noise Level		2. Mounted For	Full open	Full close	% Open
16. Mating flanges	To suit valve & line size	3. Contacts	Off		
17. Fasteners for flanges	Qty	4. Contact Rating	240Ac 10Amp	110 Dc 0.5 Amp	
18. Non-asbestos gaskets	Specify	5. Enclosure			
		6.Cable Entry			
		H. JUNCTION BOX	Provided		
		1.Enclosure			
		2. No. of Terminals			
		I.SUPPLY CONDITION			
		1. Assembly – 1			
		2. Assembly – 2			
		3. Pneumatic Terminal	To suit 1/2" SS tubing. Vendor to specify.		
		4. Spares	individually tagged and packed		
B. ACTUATOR ASSY		IBR	NO		
1. Make/Type No		REF. DOCUMENTS:(SPECIFY DWG/MANUAL REF.Nos.BELOW)			
2. Style		1.Assy Dimensional Dwg			
3. Size/Volume		2.Assy Hookup Dwg			
4. Spring No/Range		S.No	ITEM	O & M Manual	Spares identifier
5. Spring to	Close				Catalog&Spec
6. Air to	Open				
7. Signal pr		3	A		
8. Pr port Conn		4	B		
9. On Air Failure	Stay Put	5	B 11		
10. Lockup Valve type No		6	C		
11. Lockup Valve Set pr		7	D		
		8	E		
		9	F		
		10	G		
PREPARED BY (VENDOR)		DATE	APPROVED BY (BHEL)		DATE



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 02 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG Boiler Isolation Valve (Tag: COG31) &
COG Main trip Valve (Tag: COG40)**

BHEL MATERIAL CODE: L143014220010001

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIB	BHEL SPECIFICATION	VENDOR CONFIRMATION			
J.APPLICABLE STANDARDS:					
1.Control valve sizing equations	ANSI / ISA S75.01				
2. Control valve capacity test procedure	ANSI / ISA S75.02				
3. Seat leakage	API 598				
4. Face to face dimensions.	Manufacturer's standards				
5. Flange dimensions & drilling	ANSI B 16.5				
O.FLOW DATA					
1. Line Fluid	Coke Oven Gas (COG)				
2. Flow Max	46000+5% NM ³ /hr				
3. Normal in pr	1200 mm wc				
4. Allowable DP	5 mm wc				
5. Actuator Sizing DP	2000 mm wc				
6. Temp Max	50°C				
7.Flow Temp	27°C				
8. Flow Sp Gravity	0.449				
9. Flow Viscosity	16.492 x 10 ⁻⁶ Ns/Sq.m				
10. Max Flow Cv	Vendor to specify				
11. Flap rotation (%)	Full				
12. Valve Cv	Vendor to specify				
13. Valve Closing Time	<5 sec				
14. Valve Opening Time	6 to 10 sec adjustable				
A. VALVE BODY					
1. Make/Type No	Vendor to specify				
2. Line Size mm	OD 1168 x 10 t				
3. Body / port Size mm	NB 1150 mm				
4. Flap rotation	Vendor to specify				
5. Body Style / Rating	Flanged PN 6 or higher				
6. Ends	Flanged				
7. Valve disc type	Short Lever / Push Lever type				
8. Disc Material	Carbon steel				
9. Body Matl	Carbon Steel				
10. Seat Matl	Vendor to specify				
11. Stem Size / Matl	Vendor to specify / SS				
12. Seat Matl	Vendor to specify				
13. Seat Leak Class	Bubble tight shut-off as per API-598				
14. Bonnet / packing	Std / Extended Specify				
15. Noise Level	< 85 dBA				
16. Valve Internals	Shall not vibrate				
17. Mating flange, non asbestos gaskets & fastners	To suit valve end & stated line size				
BHEL		VENDOR			
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



PART - II : VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE

**COG Boiler Isolation Valve (Tag: COG31) &
COG Main trip Valve (Tag: COG40)**

BHEL MATERIAL CODE: L143014220010001

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION		VENDOR CONFIRMATION	
B. ACTUATOR ASSY		Spring return piston type (rotary)			
1. Make/Type No		Vendor to specify			
2. Style		Vendor to specify			
3. Size/Volume		Vendor to specify			
4. Spring No/Range		Vendor to specify			
5. Spring to		Close			
6. Air to		Open			
7. Signal pr		Vendor to specify			
8. Pr port Conn		Vendor to specify			
09. On Air Failure		Stay Put			
10. Lockup Valve type No		Vendor to specify			
11. Lockup Valve Set pr		Vendor to specify			
C.SOLENOID PILOT		3Way Single coil 24 V DC			
1. Make / Type No		Vendor to specify			
2. Style		Vendor to specify			
3. To Open Main Valve		Energise Solenoid coil			
4. To Close Main Valve		De-Energise Solenoid coil			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6. Coil Duty		Continuous, for 100° C ambient			
7. Coil Rating		24 V DC; SINGLE COIL			
8. Insulation Class		Class H			
9. Inrush / Hold Wattage		Vendor to specify			
10. Valve Flow Cv		Vendor to specify			
11. Body Matl		Forged Brass			
12. Wetted parts		Stainless Steel			
13. Seating		Resilient for tight shut			
14. Valve End sizes		To suit open/close time. Vendor to specify			
15. Cable entry		1/2 " conduit			
D. QUICK EXHAUST VALVE		To meet O.13			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
E.FLOW RESTRICTOR		To meet O.14			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
3. Adjustable Time Range		Vendor to specify			
F. AIRSET		Type No – Make & Model			
1. Airset set pr	End Conn.	Vendor to specify			
G.LIMIT SWITCHES		2 NOS 1 no Open, 1no Close			
1. Make/Type No		Vendor to specify			
2. Mounted For		Full open	Full close	% Open	
3. Contacts		DPDT			
4. Contact Rating		240Ac 10Amp	220 Dc 0.25 Amp		
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6.Cable Entry		1/2" - 14 NPSM			
H. PNEUMATIC TERMINAL		To suit 1/2" SS tube. Vendor to specify.			
BHEL				VENDOR	
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



PART - II : VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE

**COG Boiler Isolation Valve (Tag: COG31) &
COG Main trip Valve (Tag: COG40)**

BHEL MATERIAL CODE: L143014220010001

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION	VENDOR CONFIRMATION			
I. JUNCTION BOX						
1. Enclosure		NEMA 7 & 9 Explosion Proof				
2. No. of Terminals		Vendor to specify				
3. Spares offer		commissioning / Customer				
REFERENCE DOCUMENTS: (SPECIFY DWG/MANUAL REF. NOS. BELOW)						
1. Assy Dimensional Dwg		Vendor to furnish				
2. Assy Hookup Dwg		Vendor to furnish				
3. Spares Catalogue/DRG No		Vendor to specify				
J. MARKING						
1. S S name plate		Vendor to specify				
2. Spares individually tagged		Vendor to specify				
K. PAINTING		Epoxy coated				
L. PACKING		Land worthy				
M. TEST CERTIFICATES						
1. Hydraulic test						
2. Seat leak test		Vendor to specify				
3. Material certificates		Vendor to specify				
4. Std. test on Actuator		Vendor to specify				
5. Dimensional test		Vendor to specify				
N. OPR. & INSTRN. MANUALS						
1. 6 Hard copies & 1 soft form		Vendor to confirm				
IIB SPECIAL CONTRACT REQUIREMENT, IF ANY						
1. Enclosures for all accessories shall be explosion proof suitable for COG - Class -I, Zone -II, Group-II B T2 to the extent of IS-5572. 2. All counter flanges, fasteners and gaskets shall be in vendor's scope. 3. Valve mounting position shall be suitable for both horizontal and vertical pipe mounting. (USE AN ANNEXURE IF THIS SPACE IS INADEQUATE)						
BHEL			VENDOR			
PREPARED BY		APPROVED BY	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N		MCHS Gangadhar	27/02/19			



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 05 OF 28**

**PART - I: DATASHEET FOR BUTTERFLY TRIP VALVE
COG C-Header Vent Valve (Tag: COG42A-B)**

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-° C
BHEL Material Code: L143014220010002

O.FLOW DATA		C.SOLENOID PILOT	
1. Line Fluid		1. Make / Type No	
2. Flow Max		2. Style	
3. Normal in pr		3. To Open Main Valve	Energise Solenoid coil
4. Allowable DP		4. To Close Main Valve	De-Energise Solenoid coil
5. Actuator Sizing DP		5. Enclosure	
6. Temp Max		6. Coil Duty	Continuous, for 100° C ambient
7.Flow Temp		7. Coil Rating	24 V DC
8. Flow Sp Gravity		8. Insulation Class	
9. Flow Viscosity		9. Inrush / Hold Wattage	
10. Max Flow Cv		10. Valve Flow Cv	
11. Flap rotation %		11. Body Material	Forged Brass
12. Valve Cv		12. Wetted parts	Stainless Steel
13. Valve Closing Time	Sec.	13. Seating	Resilient for tight shut
14. Valve Opening Time	Sec. Adjustable	14. Valve Ends	
		15. Cable entry	
A. VALVE BODY		16. Terminal Block	Provided
1. Make/Type No		D. QUICK EXHAUST VL	To meet O.13
2. Line Size	ODxT mm	1. Make/type No	
3. Body/port Size	Nb mm	2. Port Conn	
4. Flap rotation	degrees		
5. Body Style / Rating	NP	E. FLOW RESTRICTOR	To meet O.14
6. Ends	Flanged to :	1. Make/Type No	
7. Valve Disc type		2. Port Conn	
8. Disc Material		3. Adjustable Time Range	
9. Body Matl	Carbon Steel		
10. Seat Material		F. AIRSET	Type No
11. Stem Size /Material		1. Airset set pressure	
12.Seat, Matl		2. End Connection	
13. Seat Leak Class	Bubble tight shut off as per API 598	G. LIMIT SWITCHES	off
14. Bonnet / packing		1. Make/Type No	
15. Noise Level		2. Mounted For	Full open Full close % Open
16. Mating flanges	To suit valve & line size	3. Contacts	Off
17. Fastners for flanges	Qty	4. Contact Rating	240Ac 10Amp 110 Dc 0.5 Amp
18. Non-asbestos gaskets	Specify	5. Enclosure	
		6.Cable Entry	
		H. JUNCTION BOX	Provided
		1.Enclosure	
		2. No. of Terminals	
		I.SUPPLY CONDITION	
		1. Assembly – 1	
		2. Assembly – 2	
		3. Pneumatic Terminal	To suit 3/8" SS tubing. Vendor to specify.
		4. Spares	Individually tagged and packed
B. ACTUATOR ASSY		IBR	NO
1. Make/Type No		REF. DOCUMENTS:(SPECIFY DWG/MANUAL REF.NO.s. BELOW)	
2. Style		1.Assy Dimensional Dwg	
3. Size/Volume		2.Assy Hookup Dwg	
4. Spring No/Range		S.No	ITEM
5. Spring to	Open	O & M Manual	Spares identifier
6. Air to	Close	Catalog&Spec	
7. Signal pr		3	A
8. Pr port Conn		4	B
9. On Air Failure	Stay Put	5	B 11
10. Lockup Valve type No		6	C
11. Lockup Valve Set pr		7	D
		8	E
		9	F
		10	G
PREPARED BY (VENDOR)		DATE	
APPROVED BY (BHEL)		DATE	



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 06 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG C-Header Vent Valve (Tag: COG42A-B)**

BHEL MATERIAL CODE: L143014220010002

ENQUIRY No.:

UNITS: Flow-Liquid Cu m / hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIB	BHEL SPECIFICATION		VENDOR CONFIRMATION		
J.APPLICABLE STANDARDS:					
1.Control valve sizing equations	ANSI / ISA S75.01				
2. Control valve capacity test procedure	ANSI / ISA S75.02				
3. Seat leakage	API 598				
4. Face to face dimensions.	Manufacturer's standards				
5. Flange dimensions & drilling	ANSI B 16.5				
O.FLOW DATA					
1. Line Fluid	Coke Oven Gas (COG)				
2. Flow Max	23000 NM ³ /hr				
3. Normal in pr	1200 mm wc				
4. Allowable DP	5 mm wc				
5. Actuator Sizing DP	2000 mm wc				
6. Temp Max	50°C				
7.Flow Temp	27°C				
8. Flow Sp Gravity	0.449				
9. Flow Viscosity	16.492 x 10 ⁻⁶ Ns/Sq.m				
10. Max Flow Cv	Vendor to specify				
11. Flap rotation (%)	Full				
12. Valve Cv	Vendor to specify				
13. Valve Closing Time	< 3 Sec.				
14. Valve Opening Time	6 to 10 Sec. Adjustable				
A. VALVE BODY					
1. Make/Type No	Vendor to specify				
2. Line Size mm	OD 323.9 X 6.4 t				
3. Body / port Size mm	NB 300 mm				
4. Flap rotation	Vendor to specify				
5. Body Style / Rating	Flanged PN 6 or higher				
6. Ends	Flanged				
7. Valve disc type	Short Lever / Push Lever type				
8. Disc Material	Carbon steel				
9. Body Matl	Carbon Steel				
10. Seat Matl	Vendor to specify				
11. Stem Size / Matl	Vendor to specify / SS				
12.Seat Matl	Vendor to specify				
13. Seat Leak Class	Bubble tight shut-off as per API 598				
14. Bonnet / packing	Std / Extended Specify				
15. Noise Level	< 85 dBA				
16. Valve Internals	Shall not vibrate				
17. Mating flange, non asbestos gaskets & fastners	To suit valve end & stated line size				
BHEL			VENDOR		
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 07 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG C-Header Vent Valve (Tag: COG42A-B)**

BHEL MATERIAL CODE: L143014220010002

ENQUIRY No.:

UNITS: Flow-Liquid Cu m / hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION		VENDOR CONFIRMATION	
B. ACTUATOR ASSY		Spring return piston type (rotary)			
1. Make/Type No		Vendor to specify			
2. Style		Vendor to specify			
3. Size/Volume		Vendor to specify			
4. Spring No/Range		Vendor to specify			
5. Spring to		Open			
6. Air to		Close			
7. Signal pr		Vendor to specify			
8. Pr port Conn		Vendor to specify			
09. On Air Failure		Stay Put			
10. Lockup Valve type No		Vendor to specify			
11. Lockup Valve Set pr		Vendor to specify			
C.SOLENOID PILOT		3Way Single coil 24 V DC			
1. Make / Type No		Vendor to specify			
2. Style		Vendor to specify			
3. To Open Main Valve		Energise Solenoid coil			
4. To Close Main Valve		De- Energise Solenoid coil			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6. Coil Duty		Continuous, for 100° C ambient			
7. Coil Rating		24 V DC; SINGLE COIL			
8. Insulation Class		Class H			
9. Inrush / Hold Wattage		Vendor to specify			
10. Valve Flow Cv		Vendor to specify			
11. Body Matl		Forged Brass			
12. Wetted parts		Stainless Steel			
13. Seating		Resilient for tight shut			
14. Valve End sizes		To suit open/close time. Vendor to specify			
15. Cable entry		1/2 " conduit			
D. QUICK EXHAUST VALVE		To meet O.13			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
E.FLOW RESTRICTOR		To meet O.14			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
3. Adjustable Time Range		Vendor to specify			
F. AIRSET		Type No – Make & Model			
1. Airset set pr End Conn.		Vendor to specify			
G.LIMIT SWITCHES		2 NOS 1 no Open, 1no Close			
1. Make/Type No		Vendor to specify			
2. Mounted For		Full open Full close % Open			
3. Contacts		DPDT			
4. Contact Rating		240Ac 10Amp 220 Dc 0.25 Amp			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6.Cable Entry		1/2" - 14 NPSM			
H. PNEUMATIC TERMINAL		To suit 3/8" SS tube. Vendor to specify.			
BHEL				VENDOR	
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 08 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG C-Header Vent Valve (Tag: COG42A-B)**

BHEL MATERIAL CODE: L143014220010002

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION	VENDOR CONFIRMATION		
I. JUNCTION BOX					
1.Enclosure		NEMA 7 & 9 Explosion Proof			
2. No. of Terminals		Vendor to specify			
3.Spares offer		commissioning / Customer			
REFERENCE DOCUMENTS:(SPECIFY DWG/MANUAL REF.NOs.BELOW)					
1. Assy Dimensional Dwg		Vendor to furnish			
2. Assy Hookup Dwg		Vendor to furnish			
3.Spares Catalogue/DRG No		Vendor to specify			
J.MARKING					
1.S S name plate		Vendor to specify			
2. Spares individually tagged		Vendor to specify			
K. PAINTING		Epoxy coated			
L.PACKING		Land worthy			
M.TEST CERTIFICATES					
1.Hydraulic test					
2.Seat leak test		Vendor to specify			
3.Material certificates		Vendor to specify			
4.Std. test on Actuator		Vendor to specify			
5.Dimensional test		Vendor to specify			
N.OPR. & INSTRN. MANUALS					
1.6 Hard copies & 1 soft form		Vendor to confirm			
IIB		SPECIAL CONTRACT REQUIREMENT, IF ANY			
		1.Enclosures for all accessories shall be explosion proof suitable for COG - Class -I, Zone -II, Group-II B T2 to the extent of IS-5572. 2.All counter flanges, fasteners and gaskets shall be in vendor's scope. 3.Valve mounting position shall be suitable for both horizontal and vertical pipe mounting. (USE AN ANNEXURE IF THIS SPACE IS INADEQUATE)			
BHEL		VENDOR			
PREPARED BY	APPROVED BY	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 09 OF 28**

**PART - I: DATASHEET FOR BUTTERFLY TRIP VALVES
COG Burner Trip valves (COG62A-H, COG62J-R, COG63A-D)**

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-° C

BHEL Material Code: L143014220010003

O.FLOW DATA		C.SOLENOID PILOT			
1. Line Fluid		1. Make / Type No			
2. Flow Max		2. Style			
3. Normal in pr		3. To Open Main Valve	Energise Solenoid coil		
4. Allowable DP		4. To Close Main Valve	De-Energise Solenoid coil		
5. Actuator Sizing DP		5. Enclosure			
6. Temp Max		6. Coil Duty	Continuous, for 100° C ambient		
7.Flow Temp		7. Coil Rating	24V DC		
8. Flow Sp Gravity		8. Insulation Class			
9. Flow Viscosity		9. Inrush / Hold Wattage			
10. Max Flow Cv		10. Valve Flow Cv			
11. Flap rotation %		11. Body Material	Forged Brass		
12. Valve Cv		12. Wetted parts	Stainless Steel		
13. Valve Closing Time	Sec.	13. Seating	Resilient for tight shut		
14. Valve Opening Time	Sec. Adjustable	14. Valve Ends			
		15. Cable entry			
A. VALVE BODY		16. Terminal Block	Provided		
1. Make/Type No		D. QUICK EXHAUST VL	To meet O.13		
2. Line Size	ODxT mm	1. Make/type No			
3. Body/port Size	Nb mm	2. Port Conn			
4. Flap rotation	degrees				
5. Body Style / Rating	NP	E. FLOW RESTRICTOR	To meet O.14		
6. Ends	Flanged to :	1. Make/Type No			
7. Valve Disc type		2. Port Conn			
8. Disc Material		3. Adjustable Time Range			
9. Body Matl	Carbon Steel				
10. Seat Material		F. AIRSET	Type No		
11. Stem Size /Material		1. Airset set pressure			
12.Seat, Matl		2. End Connection			
13. Seat Leak Class	Bubble tight shut off as per API 598	G. LIMIT SWITCHES			
14. Bonnet / packing		1. Make/Type No			
15. Noise Level		2. Mounted For	Full open	Full close	% Open
16. Mating flanges	To suit valve & line size	3. Contacts	Off		
17. Fastners for flanges	Qty	4. Contact Rating	240Ac 10Amp	110 Dc 0.5 Amp	
18. Non-asbestos gaskets	Specify	5. Enclosure			
		6.Cable Entry			
		H. JUNCTION BOX	Provided		
		1.Enclosure			
		2. No. of Terminals			
		I.SUPPLY CONDITION			
		1. Assembly – 1			
		2. Assembly – 2			
		3. Pneumatic Terminal	To suit 3/8" SS tubing. Vendor to specify.		
		4. Spares	individually tagged and packed		
B. ACTUATOR ASSY		IBR	NO		
1. Make/Type No		REF. DOCUMENTS:(SPECIFY DWG/MANUAL REF.Nos.BELOW)			
2. Style		1.Assy Dimensional Dwg			
3. Size/Volume		2.Assy Hookup Dwg			
4. Spring No/Range		S.No	ITEM	O & M Manual	Spares identifier
5. Spring to	Close				Catalog&Spec
6. Air to	Open	3	A		
7. Signal pr		4	B		
8. Pr port Conn		5	B 11		
9. On Air Failure	Stay Put	6	C		
10. Lockup Valve type No		7	D		
11. Lockup Valve Set pr		8	E		
		9	F		
		10	G		
PREPARED BY (VENDOR)		DATE		APPROVED BY (BHEL)	
				DATE	

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**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 10 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG Burner Trip valves (COG62A-H, COG62J-R, COG63A-D)**

BHEL MATERIAL CODE: L143014220010003

ENQUIRY No.:

UNITS: Flow-Liquid Cu m / hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIB		BHEL SPECIFICATION		VENDOR CONFIRMATION	
J.APPLICABLE STANDARDS:					
1.Control valve sizing equations		ANSI / ISA S75.01			
2. Control valve capacity test procedure		ANSI / ISA S75.02			
3. Seat leakage		API 598			
4. Face to face dimensions.		Manufacturer's standards			
5. Flange dimensions & drilling		ANSI B 16.5			
O.FLOW DATA					
1. Line Fluid		Coke Oven Gas (COG)			
2. Flow Max		5750 NM ³ /hr			
3. Normal in pr		400 mm wc			
4. Allowable DP		5 mm wc			
5. Actuator Sizing DP		2000 mm wc			
6. Temp Max		50°C			
7.Flow Temp		27°C			
8. Flow Sp Gravity		0.449			
9. Flow Viscosity		16.492 x 10 ⁻⁶ Ns/Sq.m			
10. Max Flow Cv		Vendor to specify			
11. Flap rotation (%)		Full			
12. Valve Cv		Vendor to specify			
13. Valve Closing Time		< 3 Sec.			
14. Valve Opening Time		6 to 10 Sec. Adjustable			
A. VALVE BODY					
1. Make/Type No		Vendor to specify			
2. Line Size mm		OD 406.4x 6.4 t			
3. Body / port Size mm		NB 400 mm			
4. Flap rotation		Vendor to specify			
5. Body Style / Rating		Flanged PN6 or higher			
6. Ends		Flanged			
7. Valve disc type		Short Lever / Push Lever type			
8. Disc Material		Carbon steel			
9. Body Matl		Carbon Steel			
10. Seat Matl		Vendor to specify			
11. Stem Size / Matl		Vendor to specify / SS			
12.Seat Matl		Vendor to specify			
13. Seat Leak Class		Bubble tight shut-off as per API 598			
14. Bonnet / packing		Std / Extended Specify			
15. Noise Level		< 85 dBA			
16. Valve Internals		Shall not vibrate			
17. Mating flange, non asbestos gaskets & fastners		To suit valve end & stated line size			
BHEL				VENDOR	
PREPARED BY		APPROVED	DATE	PREPARED BY	APPROVED BY
Sairam N		MCHS Gangadhar	27/02/19		



**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG Burner Trip valves (COG62A-H, COG62J-R, COG63A-D)**

BHEL MATERIAL CODE: L143014220010003

ENQUIRY No.:

UNITS: Flow-Liquid Cu m / hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION		VENDOR CONFIRMATION	
B. ACTUATOR ASSY		Spring return piston type (rotary)			
1. Make/Type No		Vendor to specify			
2. Style		Vendor to specify			
3. Size/Volume		Vendor to specify			
4. Spring No/Range		Vendor to specify			
5. Spring to		Close			
6. Air to		Open			
7. Signal pr		Vendor to specify			
8. Pr port Conn		Vendor to specify			
09. On Air Failure		Stay Put			
10. Lockup Valve type No		Vendor to specify			
11. Lockup Valve Set pr		Vendor to specify			
C.SOLENOID PILOT		3Way Single coil 24 V DC			
1. Make / Type No		Vendor to specify			
2. Style		Vendor to specify			
3. To Open Main Valve		Energise Solenoid coil			
4. To Close Main Valve		De- Energise Solenoid coil			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6. Coil Duty		Continuous, for 100° C ambient			
7. Coil Rating		24 V DC; SINGLE COIL			
8. Insulation Class		Class H			
9. Inrush / Hold Wattage		Vendor to specify			
10. Valve Flow Cv		Vendor to specify			
11. Body Matl		Forged Brass			
12. Wetted parts		Stainless Steel			
13. Seating		Resilient for tight shut			
14. Valve End sizes		To suit open/close time. Vendor to specify			
15. Cable entry		1/2 " conduit			
D. QUICK EXHAUST VALVE		To meet O.13			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
E.FLOW RESTRICTOR		To meet O.14			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
3. Adjustable Time Range		Vendor to specify			
F. AIRSET		Type No – Make & Model			
1. Airset set pr End Conn.		Vendor to specify			
G.LIMIT SWITCHES		2 NOS 1 no Open, 1no Close			
1. Make/Type No		Vendor to specify			
2. Mounted For		Full open Full close % Open			
3. Contacts		DPDT			
4. Contact Rating		240Ac 10Amp 220 Dc 0.25 Amp			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6.Cable Entry		1/2" - 14 NPSM			
H. PNEUMATIC TERMINAL		To suit 3/8" SS tube. Vendor to specify.			
BHEL		VENDOR			
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG Burner Trip valves (COG62A-H, COG62J-R, COG63A-D)**

BHEL MATERIAL CODE: L143014220010003

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION	VENDOR CONFIRMATION		
I. JUNCTION BOX					
1.Enclosure		NEMA 7 & 9 Explosion Proof			
2. No. of Terminals		Vendor to specify			
3.Spares offer		commissioning / Customer			
REFERENCE DOCUMENTS:(SPECIFY DWG/MANUAL REF.NO.s.BELOW)					
1. Assy Dimensional Dwg		Vendor to furnish			
2. Assy Hookup Dwg		Vendor to furnish			
3.Spares Catalogue/DRG No		Vendor to specify			
J.MARKING					
1.S S name plate		Vendor to specify			
2. Spares individually tagged		Vendor to specify			
K. PAINTING		Epoxy coated			
L.PACKING		Land worthy			
M.TEST CERTIFICATES					
1.Hydraulic test					
2.Seat leak test		Vendor to specify			
3.Material certificates		Vendor to specify			
4.Std. test on Actuator		Vendor to specify			
5.DimensionaI test		Vendor to specify			
N.OPR. & INSTRN. MANUALS					
1.6 Hard copies & 1 soft form		Vendor to confirm			
IIB SPECIAL CONTRACT REQUIREMENT, IF ANY					
		1.Enclosures for all accessories shall be explosion proof suitable for COG - Class -I, Zone -II, Group-II B T2 to the extent of IS-5572. 2.All counter flanges, fasteners and gaskets shall be in vendor's scope. 3.Valve mounting position shall be suitable for both horizontal and vertical pipe mounting.			
		(USE AN ANNEXURE IF THIS SPACE IS INADEQUATE)			
BHEL			VENDOR		
PREPARED BY	APPROVED BY	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 13 OF 28**

**PART - I: DATASHEET FOR BUTTERFLY TRIP VALVE
COG Corner Vent Valve (COG60A-H)**

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-° C

BHEL Material Code: L143014220010004

O.FLOW DATA		C.SOLENOID PILOT			
1. Line Fluid		1. Make / Type No			
2. Flow Max		2. Style			
3. Normal in pr		3. To Open Main Valve	Energise Solenoid coil		
4. Allowable DP		4. To Close Main Valve	De-Energise Solenoid coil		
5. Actuator Sizing DP		5. Enclosure			
6. Temp Max		6. Coil Duty	Continuous, for 100° C ambient		
7.Flow Temp		7. Coil Rating	24 V DC		
8. Flow Sp Gravity		8. Insulation Class			
9. Flow Viscosity		9. Inrush / Hold Wattage			
10. Max Flow Cv		10. Valve Flow Cv			
11. Flap rotation %		11. Body Material	Forged Brass		
12. Valve Cv		12. Wetted parts	Stainless Steel		
13. Valve Closing Time	Sec.	13. Seating	Resilient for tight shut		
14. Valve Opening Time	Sec. Adjustable	14. Valve Ends			
		15. Cable entry			
A. VALVE BODY		16. Terminal Block	Provided		
1. Make/Type No		D. QUICK EXHAUST VL	To meet O.13		
2. Line Size	ODxT mm	1. Make/type No			
3. Body/port Size	Nb mm	2. Port Conn			
4. Flap rotation	degrees				
5. Body Style / Rating	NP	E. FLOW RESTRICTOR	To meet O.14		
6. Ends	Flanged to :	1. Make/Type No			
7. Valve Disc type		2. Port Conn			
8. Disc Material		3. Adjustable Time Range			
9. Body Matl	Carbon Steel				
10. Seat Material		F. AIRSET	Type No		
11. Stem Size /Material		1. Airset set pressure			
12.Seat, Matl		2. End Connection			
13. Seat Leak Class	Bubble tight shut off as per API 598	G. LIMIT SWITCHES			off
14. Bonnet / packing		1. Make/Type No			
15. Noise Level		2. Mounted For	Full open	Full close	% Open
16. Mating flanges	To suit valve & line size	3. Contacts	Off		
17. Fastners for flanges	Qty	4. Contact Rating	240Ac 10Amp	110 Dc	0.5 Amp
18. Non-asbestos gaskets	Specify	5. Enclosure			
		6.Cable Entry			
		H. JUNCTION BOX	Provided		
		1.Enclosure			
		2. No. of Terminals			
		I.SUPPLY CONDITION			
		1. Assembly – 1			
		2. Assembly – 2			
		3. Pneumatic Terminal	To suit 3/8" tubing. Vendor to specify.		
B. ACTUATOR ASSY		4. Spares	individually tagged and packed		
1. Make/Type No		IBR	NO		
2. Style		REF. DOCUMENTS:(SPECIFY DWG/MANUAL REF.Nos.BELOW)			
3. Size/Volume		1.Assy Dimensional Dwg			
4. Spring No/Range		2.Assy Hookup Dwg			
5. Spring to	Open	S.No	ITEM	O & M Manual	Spares identifier
6. Air to	Close				Catalog&Spec
7. Signal pr		3	A		
8. Pr port Conn		4	B		
9. On Air Failure	Stay Put	5	B 11		
10. Lockup Valve type No		6	C		
11. Lockup Valve Set pr		7	D		
		8	E		
		9	F		
		10	G		
PREPARED BY (VENDOR)		DATE	APPROVED BY (BHEL)		DATE



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 14 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG Corner Vent Valve (COG60A-H)**

BHEL MATERIAL CODE: L143014220010004

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIB	BHEL SPECIFICATION		VENDOR CONFIRMATION		
J. APPLICABLE STANDARDS:					
1. Control valve sizing equations	ANSI / ISA S75.01				
2. Control valve capacity test procedure	ANSI / ISA S75.02				
3. Seat leakage	API 598				
4. Face to face dimensions.	Manufacturer's standards				
5. Flange dimensions & drilling	ANSI B 16.5				
O. FLOW DATA					
1. Line Fluid	Coke Oven Gas (COG)				
2. Flow Max	5750 NM ³ /Hr				
3. Normal in pr	1200 mm wc				
4. Allowable DP	5 mm wc				
5. Actuator Sizing DP	2000 mm wc				
6. Temp Max	50°C				
7. Flow Temp	27°C				
8. Flow Sp Gravity	0.449				
9. Flow Viscosity	16.492 x 10 ⁻⁶ Ns/Sq.m				
10. Max Flow Cv	Vendor to specify				
11. Flap rotation (%)	Full				
12. Valve Cv	Vendor to specify				
13. Valve Closing Time	< 3 Sec.				
14. Valve Opening Time	6 to 10 Sec. Adjustable				
A. VALVE BODY					
1. Make/Type No	Vendor to specify				
2. Line Size mm	OD 168.3 x 7.11 t				
3. Body / port Size mm	NB 150 mm				
4. Flap rotation	Vendor to specify				
5. Body Style / Rating	Flanged	PN 6 or higher			
6. Ends	Flanged				
7. Valve disc type	Short Lever / Push Lever type				
8. Disc Material	Carbon steel				
9. Body Matl	Carbon Steel				
10. Seat Matl	Vendor to specify				
11. Stem Size / Matl	Vendor to specify / SS				
12. Seat Matl	Vendor to specify				
13. Seat Leak Class	Bubble tight shut-off as per API 598				
14. Bonnet / packing	Std / Extended	Specify			
15. Noise Level	< 85 dBA				
16. Valve Internals	Shall not vibrate				
17. Mating flange, non asbestos gaskets & fasteners	To suit valve end & stated line size				
BHEL			VENDOR		
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



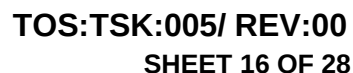
**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
COG Corner Vent Valve (COG60A-H)**

BHEL MATERIAL CODE: L143014220010004

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION		VENDOR CONFIRMATION	
B. ACTUATOR ASSY		Spring return piston type (rotary)			
1. Make/Type No		Vendor to specify			
2. Style		Vendor to specify			
3. Size/Volume		Vendor to specify			
4. Spring No/Range		Vendor to specify			
5. Spring to		Open			
6. Air to		Close			
7. Signal pr		Vendor to specify			
8. Pr port Conn		Vendor to specify			
09. On Air Failure		Stay Put			
10. Lockup Valve type No		Vendor to specify			
11. Lockup Valve Set pr		Vendor to specify			
C.SOLENOID PILOT		3Way Single coil 24 V DC			
1. Make / Type No		Vendor to specify			
2. Style		Vendor to specify			
3. To Open Main Valve		Energise Solenoid coil			
4. To Close Main Valve		De- Energise Solenoid coil			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6. Coil Duty		Continuous, for 100° C ambient			
7. Coil Rating		24 V DC; SINGLE COIL			
8. Insulation Class		Class H			
9. Inrush / Hold Wattage		Vendor to specify			
10. Valve Flow Cv		Vendor to specify			
11. Body Matl		Forged Brass			
12. Wetted parts		Stainless Steel			
13. Seating		Resilient for tight shut			
14. Valve End sizes		To suit open/close time. Vendor to specify			
15. Cable entry		1/2 " conduit			
D. QUICK EXHAUST VALVE		To meet O.13			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
E.FLOW RESTRICTOR		To meet O.14			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
3. Adjustable Time Range		Vendor to specify			
F. AIRSET		Type No – Make & Model			
1. Airset set pr End Conn.		Vendor to specify			
G.LIMIT SWITCHES		2 NOS 1 no Open, 1no Close			
1. Make/Type No		Vendor to specify			
2. Mounted For		Full open Full close % Open			
3. Contacts		DPDT			
4. Contact Rating		240Ac 10Amp 220 Dc 0.25 Amp			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6.Cable Entry		1/2" - 14 NPSM			
H. PNEUMATIC TERMINAL		To suit 3/8" SS tube. Vendor to specify.			
BHEL				VENDOR	
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION		VENDOR CONFIRMATION		
I. JUNCTION BOX						
1. Enclosure		NEMA 7 & 9 Explosion Proof				
2. No. of Terminals		Vendor to specify				
3. Spares offer		commissioning / Customer				
REFERENCE DOCUMENTS: (SPECIFY DWG/MANUAL REF. NOs. BELOW)						
1. Assy Dimensional Dwg		Vendor to furnish				
2. Assy Hookup Dwg		Vendor to furnish				
3. Spares Catalogue/DRG No		Vendor to specify				
J. MARKING						
1. S S name plate		Vendor to specify				
2. Spares individually tagged		Vendor to specify				
K. PAINTING		Epoxy coated				
L. PACKING		Land worthy				
M. TEST CERTIFICATES						
1. Hydraulic test						
2. Seat leak test		Vendor to specify				
3. Material certificates		Vendor to specify				
4. Std. test on Actuator		Vendor to specify				
5. Dimensional test		Vendor to specify				
N. OPR. & INSTRN. MANUALS						
1.6 Hard copies & 1 soft form		Vendor to confirm				
IIB SPECIAL CONTRACT REQUIREMENT, IF ANY						
		1. Enclosures for all accessories shall be explosion proof suitable for COG - Class -I, Zone -II, Group-II B T2 to the extent of IS-5572. 2. All counter flanges, fasteners and gaskets shall be in vendor's scope. 3. Valve mounting position shall be suitable for both horizontal and vertical pipe mounting.				
		(USE AN ANNEXURE IF THIS SPACE IS INADEQUATE)				
BHEL				VENDOR		
PREPARED BY		APPROVED BY	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N		MCHS Gangadhar	27/02/19			

**FUEL SYSTEMS
PE (BOILERS)****TOS:TSK:005/ REV:00
SHEET 17 OF 28****PART - I: DATASHEET FOR BUTTERFLY TRIP VALVE
BFG C-HEADER VENT VALVE (Tag: BG42A-B)**

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-° C

BHEL Material Code: L143014220010005

O.FLOW DATA		C.SOLENOID PILOT			
1. Line Fluid		1. Make / Type No			
2. Flow Max		2. Style			
3. Normal in pr		3. To Open Main Valve	De-Energise Solenoid coil		
4. Allowable DP		4. To Close Main Valve	Energise Solenoid coil		
5. Actuator Sizing DP		5. Enclosure			
6. Temp Max		6. Coil Duty	Continuous, for 100° C ambient		
7.Flow Temp		7. Coil Rating	24V DC		
8. Flow Sp Gravity		8. Insulation Class			
9. Flow Viscosity		9. Inrush / Hold Wattage			
10. Max Flow Cv		10. Valve Flow Cv			
11. Flap rotation %		11. Body Material	Forged Brass		
12. Valve Cv		12. Wetted parts	Stainless Steel		
13. Valve Closing Time	Sec.	13. Seating	Resilient for tight shut		
14. Valve Opening Time	Sec. Adjustable	14. Valve Ends			
		15. Cable entry			
A. VALVE BODY		16. Terminal Block	Provided		
1. Make/Type No		D. QUICK EXHAUST VL	To meet O.13		
2. Line Size	ODxT mm	1. Make/type No			
3. Body/port Size	Nb mm	2. Port Conn			
4. Flap rotation	degrees				
5. Body Style / Rating	NP	E. FLOW RESTRICTOR	To meet O.14		
6. Ends	Flanged to :	1. Make/Type No			
7. Valve Disc type		2. Port Conn			
8. Disc Material		3. Adjustable Time Range			
9. Body Matl	Carbon Steel				
10. Seat Material		F. AIRSET	Type No		
11. Stem Size /Material		1. Airset set pressure			
12.Seat, Matl		2. End Connection			
13. Seat Leak Class	Bubble tight shut off as per API 598	G. LIMIT SWITCHES			off
14. Bonnet / packing		1. Make/Type No			
15. Noise Level		2. Mounted For	Full open	Full close	% Open
16. Mating flanges	To suit valve & line size	3. Contacts	Off		
17. Fasteners for flanges	Qty	4. Contact Rating	240Ac 10Amp	110 Dc 0.5 Amp	
18. Non-asbestos gaskets	Specify	5. Enclosure			
		6.Cable Entry			
		H. JUNCTION BOX	Provided		
		1.Enclosure			
		2. No. of Terminals			
		I.SUPPLY CONDITION			
		1. Assembly – 1			
		2. Assembly – 2			
		3. Pneumatic Terminal	To suit 3/8" tubing. Vendor to specify.		
		4. Spares	individually tagged and packed		
B. ACTUATOR ASSY		IBR	NO		
1. Make/Type No		REF. DOCUMENTS:(SPECIFY DWG/MANUAL REF.Nos.BELOW)			
2. Style		1.Assy Dimensional Dwg			
3. Size/Volume		2.Assy Hookup Dwg			
4. Spring No/Range		S.No	ITEM	O & M Manual	Spares identifier
5. Spring to	Open				Catalog&Spec
6. Air to	Close				
7. Signal pr		3	A		
8. Pr port Conn		4	B		
9. On Air Failure	Stay Put	5	B 11		
10. Lockup Valve type No		6	C		
11. Lockup Valve Set pr		7	D		
		8	E		
		9	F		
		10	G		
PREPARED BY (VENDOR)		DATE	APPROVED BY (BHEL)		DATE



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 18 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG C-HEADER VENT VALVE (Tag: BG42A-B)**

BHEL MATERIAL CODE: L143014220010005

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIB		BHEL SPECIFICATION		VENDOR CONFIRMATION		
J.APPLICABLE STANDARDS:						
1.Control valve sizing equations		ANSI / ISA S75.01				
2. Control valve capacity test procedure		ANSI / ISA S75.02				
3. Seat leakage		API 598				
4. Face to face dimensions.		Manufacturer's standards				
5. Flange dimensions & drilling		ANSI B 16.5				
O.FLOW DATA						
1. Line Fluid		Blast Furnace Gas (BFG)/BOF gas				
2. Flow Max		112500 Nm³/hr				
3. Normal in pr		650 mm wc				
4. Allowable DP		5 mm wc				
5. Actuator Sizing DP		1800 mm wc				
6. Temp Max		50°C				
7.Flow Temp		27°C				
8. Flow Sp Gravity		1.011				
9. Flow Viscosity		18.882 x 10 ⁻⁶ Ns/Sq.m				
10. Max Flow Cv		Vendor to specify				
11. Flap rotation (%)		Full				
12. Valve Cv		Vendor to specify				
13. Valve Closing Time		< 3 Sec.				
14. Valve Opening Time		6 to 10 Sec. Adjustable				
A. VALVE BODY						
1. Make/Type No		Vendor to specify				
2. Line Size mm		OD 711.2 x 8 t				
3. Body / port Size mm		NB700 mm				
4. Flap rotation (degrees)		Vendor to specify				
5. Body Style / Rating		Flanged PN 6 or higher				
6. Ends		Flanged				
7. Valve disc type		Short Lever / Push Lever				
8. Disc Material		Carbon Steel				
9. Body Matl		Carbon Steel				
10. Seat Matl		Vendor to specify				
11. Stem Size / Matl		Vendor to specify / SS				
12.Seat Matl		Vendor to specify				
13. Seat Leak Class		Bubble tight shut-off as per API 598				
14. Bonnet / packing		Std / Extended Specify				
15. Noise Level		< 85 dBA				
16. Valve Internals		Shall not vibrate				
17. Mating flange, non asbestos gaskets &Fasteners		To suit valve end & stated line size				
BHEL				VENDOR		
PREPARED BY		APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N		MCHS Gangadhar	27/02/19			



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 19 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG C-HEADER VENT VALVE (Tag: BG42A-B)**

BHEL MATERIAL CODE: L143014220010005 ENQUIRY No.:

UNITS: Flow-Liquid Cu m / hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION		VENDOR CONFIRMATION	
B. ACTUATOR ASSY		Spring return piston type (rotary)			
1. Make/Type No		Vendor to specify			
2. Style		Vendor to specify			
3. Size/Volume		Vendor to specify			
4. Spring No/Range		Vendor to specify			
5. Spring to		Open			
6. Air to		Close			
7. Signal pr		Vendor to specify			
8. Pr port Conn		Vendor to specify			
09. On Air Failure		Stay Put			
10. Lockup Valve type No		Vendor to specify			
11. Lockup Valve Set pr		Vendor to specify			
C.SOLENOID PILOT		3Way Single coil 24 V DC			
1. Make / Type No		Vendor to specify			
2. Style		Vendor to specify			
3. To Open Main Valve		De-Energise Solenoid coil			
4. To Close Main Valve		Energise Solenoid coil			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6. Coil Duty		Continuous, for 100° C ambient			
7. Coil Rating		24V DC; SINGLE COIL			
8. Insulation Class		Class H			
9. Inrush / Hold Wattage		Vendor to specify			
10. Valve Flow Cv		Vendor to specify			
11. Body Matl		Forged Brass			
12. Wetted parts		Stainless Steel			
13. Seating		Resilient for tight shut			
14. Valve End sizes		To suit open/close time. Vendor to specify			
15. Cable entry		1/2 " conduit			
D. QUICK EXHAUST VALVE		To meet O.13			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
E.FLOW RESTRICTOR		To meet O.14			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
3. Adjustable Time Range		Vendor to specify			
F. AIRSET		Type No – Make & Model			
1. Airset set pr End Conn.		Vendor to specify			
G.LIMIT SWITCHES		2 NOS 1 no Open, 1no Close			
1. Make/Type No		Vendor to specify			
2. Mounted For		Full open Full close % Open			
3. Contacts		DPDT			
4. Contact Rating		240Ac 10Amp 220 Dc 0.25 Amp			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6.Cable Entry		1/2" - 14 NPSM			
H. PNEUMATIC TERMINAL		To suit 3/8" SS tube. Vendor to specify.			
BHEL				VENDOR	
PREPARED BY		APPROVED	DATE	PREPARED BY	APPROVED BY DATE
Sairam N		MCHS Gangadhar	27/02/19		



**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG C-HEADER VENT VALVE (Tag: BG42A-B)**

BHEL MATERIAL CODE: L143014220010005

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m / hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION	VENDOR CONFIRMATION		
I. JUNCTION BOX					
1.Enclosure		NEMA 7 & 9 Explosion Proof			
2. No. of Terminals		Vendor to specify			
3.Spares offer		commissioning / Customer			
REFERENCE DOCUMENTS:(SPECIFY DWG/MANUAL REF.NOs.BELOW)					
1. Assy Dimensional Dwg		Vendor to furnish			
2. Assy Hookup Dwg		Vendor to furnish			
3.Spares Catalogue/DRG No		Vendor to specify			
J.MARKING					
1.S S name plate		Vendor to specify			
2. Spares individually tagged		Vendor to specify			
K. PAINTING		Epoxy coated			
L.PACKING		Land worthy			
M.TEST CERTIFICATES					
1.Hydraulic test					
2.Seat leak test		Vendor to specify			
3.Material certificates		Vendor to specify			
4.Std. test on Actuator		Vendor to specify			
5.Dimensional test		Vendor to specify			
N.OPR. & INSTRN. MANUALS					
1.6 Hard copies & 1 soft form		Vendor to confirm			
IIB SPECIAL CONTRACT REQUIREMENT, IF ANY					
		1.Enclosures for all accessories shall be explosion proof suitable for BFG area Class-I, Zone- II, Group- II A, T2 to the extent of IS- 5572. 2.All counter flanges, fasteners and gaskets shall be in vendor's scope. 3.Valve mounting position shall be suitable for both horizontal and vertical pipe mounting.			
		(USE AN ANNEXURE IF THIS SPACE IS INADEQUATE)			
BHEL			VENDOR		
PREPARED BY	APPROVED BY	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 21 OF 28**

**PART - I: DATASHEET FOR BUTTERFLY TRIP VALVE
BFG BURNER TRIP VALVE (Tag: BG62A--H)**

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-° C

BHEL Material Code: L143014220010006

O.FLOW DATA		C.SOLENOID PILOT	
1. Line Fluid		1. Make / Type No	
2. Flow Max		2. Style	
3. Normal in pr		3. To Open Main Valve	Energise Solenoid coil
4. Allowable DP		4. To Close Main Valve	De-Energise Solenoid coil
5. Actuator Sizing DP		5. Enclosure	
6. Temp Max		6. Coil Duty	Continuous, for 100° C ambient
7.Flow Temp		7. Coil Rating	24V DC
8. Flow Sp Gravity		8. Insulation Class	
9. Flow Viscosity		9. Inrush / Hold Wattage	
10. Max Flow Cv		10. Valve Flow Cv	
11. Flap rotation %		11. Body Material	Forged Brass
12. Valve Cv		12. Wetted parts	Stainless Steel
13. Valve Closing Time	Sec.	13. Seating	Resilient for tight shut
14. Valve Opening Time	Sec. Adjustable	14. Valve Ends	
		15. Cable entry	
A. VALVE BODY		16. Terminal Block	Provided
1. Make/Type No		D. QUICK EXHAUST VL	To meet O.13
2. Line Size	ODxT mm	1. Make/type No	
3. Body/port Size	Nb mm	2. Port Conn	
4. Flap rotation	degrees		
5. Body Style / Rating	NP	E. FLOW RESTRICTOR	To meet O.14
6. Ends	Flanged to :	1. Make/Type No	
7. Valve Disc type		2. Port Conn	
8. Disc Material		3. Adjustable Time Range	
9. Body Matl	Carbon Steel		
10. Seat Material		F. AIRSET	Type No
11. Stem Size /Material		1. Airset set pressure	
12.Seat, Matl		2. End Connection	
13. Seat Leak Class	Bubble tight shut off as per API 598	G. LIMIT SWITCHES	off
14. Bonnet / packing		1. Make/Type No	
15. Noise Level		2. Mounted For	Full open Full close % Open
16. Mating flanges	To suit valve & line size	3. Contacts	Off
17. Fasteners for flanges	Qty	4. Contact Rating	240Ac 10Amp 110 Dc 0.5 Amp
18. Non-asbestos gaskets	Specify	5. Enclosure	
		6.Cable Entry	
		H. JUNCTION BOX	Provided
		1.Enclosure	
		2. No. of Terminals	
		I.SUPPLY CONDITION	
		1. Assembly – 1	
		2. Assembly – 2	
		3. Pneumatic Terminal	To suit ½” SS tubing. Vendor to specify.
		4. Spares	individually tagged and packed
B. ACTUATOR ASSY		IBR	NO
1. Make/Type No		REF. DOCUMENTS:(SPECIFY DWG/MANUAL REF.Nos.BELOW)	
2. Style		1.Assy Dimensional Dwg	
3. Size/Volume		2.Assy Hookup Dwg	
4. Spring No/Range		S.No	ITEM
5. Spring to	Close	O & M Manual	Spares identifier
6. Air to	Open		Catalog&Spec
7. Signal pr		3	A
8. Pr port Conn		4	B
9. On Air Failure	Stay Put	5	B 11
10. Lockup Valve type No		6	C
11. Lockup Valve Set pr		7	D
		8	E
		9	F
		10	G
PREPARED BY (VENDOR)		DATE	
APPROVED BY (BHEL)		DATE	



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 22 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG BURNER TRIP VALVE (Tag: BG62A--H)**

BHEL MATERIAL CODE: L143014220010006

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIB	BHEL SPECIFICATION		VENDOR CONFIRMATION		
J.APPLICABLE STANDARDS:					
1.Control valve sizing equations	ANSI / ISA S75.01				
2. Control valve capacity test procedure	ANSI / ISA S75.02				
3. Seat leakage	API 598				
4. Face to face dimensions.	Manufacturer's standards				
5. Flange dimensions & drilling	ANSI B 16.5				
O.FLOW DATA					
1. Line Fluid	Blast Furnace Gas (BFG)/BOF gas				
2. Flow Max	56250 Nm ³ /hr				
3. Normal in pr	400 mm wc				
4. Allowable DP	5 mm wc				
5. Actuator Sizing DP	1800 mm wc				
6. Temp Max	50° C				
7.Flow Temp	27° C				
8. Flow Sp Gravity	1.011				
9. Flow Viscosity	18.882 x 10 ⁻⁶ Ns/Sq.m				
10. Max Flow Cv	Vendor to specify				
11. Flap rotation (%)	Full				
12. Valve Cv	Vendor to specify				
13. Valve Closing Time	< 5 Sec.				
14. Valve Opening Time	6 to 10 Sec. Adjustable				
A. VALVE BODY					
1. Make/Type No	Vendor to specify				
2. Line Size mm	OD 1016 X 9.53 t				
3. Body / port Size mm	NB 1000 mm				
4. Flap rotation (degrees)	Vendor to specify				
5. Body Style / Rating	Flanged PN 6 or higher				
6. Ends	Flanged				
7. Valve disc type	Short Lever / Push Lever				
8. Disc Material	Carbon Steel				
9. Body Matl	Carbon Steel				
10. Seat Matl	Vendor to specify				
11. Stem Size / Matl	Vendor to specify / SS				
12.Seat Matl	Vendor to specify				
13. Seat Leak Class	Bubble tight shut-off as per API 598				
14. Bonnet / packing	Std / Extended Specify				
15. Noise Level	< 85 dBA				
16. Valve Internals	Shall not vibrate				
17. Mating flange, non asbestos gaskets &Fasteners	To suit valve end & stated line size				
BHEL			VENDOR		
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG BURNER TRIP VALVE (Tag: BG62A--H)**

BHEL MATERIAL CODE: L143014220010006

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION			VENDOR CONFIRMATION		
B. ACTUATOR ASSY		Spring return piston type (rotary)					
1. Make/Type No		Vendor to specify					
2. Style		Vendor to specify					
3. Size/Volume		Vendor to specify					
4. Spring No/Range		Vendor to specify					
5. Spring to		Close					
6. Air to		Open					
7. Signal pr		Vendor to specify					
8. Pr port Conn		Vendor to specify					
09. On Air Failure		Stay Put					
10. Lockup Valve type No		Vendor to specify					
11. Lockup Valve Set pr		Vendor to specify					
C.SOLENOID PILOT		3Way Single coil 24 V DC					
1. Make / Type No		Vendor to specify					
2. Style		Vendor to specify					
3. To Open Main Valve		Energise Solenoid coil					
4. To Close Main Valve		De- Energise Solenoid coil					
5. Enclosure		NEMA 7 & 9 Explosion Proof					
6. Coil Duty		Continuous, for 100° C ambient					
7. Coil Rating		24 V DC ; SINGLE COIL					
8. Insulation Class		Class H					
9. Inrush / Hold Wattage		Vendor to specify					
10. Valve Flow Cv		Vendor to specify					
11. Body Matl		Forged Brass					
12. Wetted parts		Stainless Steel					
13. Seating		Resilient for tight shut					
14. Valve End size		To suit open/close time. Vendor to specify					
15. Cable entry		1/2 “ conduit					
D. QUICK EXHAUST VALVE		To meet O.13					
1. Make/type No		Vendor to specify					
2. Port Connection		Vendor to specify					
E.FLOW RESTRICTOR		To meet O.14					
1. Make/type No		Vendor to specify					
2. Port Connection		Vendor to specify					
3. Adjustable Time Range		Vendor to specify					
F. AIRSET		Type No – Make & Model					
1. Airset set pr	End Conn.	Vendor to specify					
G.LIMIT SWITCHES		2 NOS		1 no Open, 1no Close			
1. Make/Type No		Vendor to specify					
2. Mounted For		Full open	Full close	% Open			
3. Contacts		DPDT					
4. Contact Rating		240Ac 10Amp		220 Dc 0.25 Amp			
5. Enclosure		NEMA 7 & 9 Explosion Proof					
6.Cable Entry		1/2” - 14 NPSM					
H. PNEUMATIC TERMINAL		To suit 1/2” SS tube. Vendor to specify.					
BHEL					VENDOR		
PREPARED BY		APPROVED		DATE	PREPARED BY	APPROVED BY	DATE
Sairam N		MCHS Gangadhar		27/02/19			



**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG BURNER TRIP VALVE (Tag: BG62A--H)**

BHEL MATERIAL CODE: L143014220010006

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION	VENDOR CONFIRMATION		
I. JUNCTION BOX					
1.Enclosure		NEMA 7 & 9 Explosion Proof			
2. No. of Terminals		Vendor to specify			
3.Spares offer		commissioning / Customer			
REFERENCE DOCUMENTS:(SPECIFY DWG/MANUAL REF.NOs.BELOW)					
1. Assy Dimensional Dwg		Vendor to furnish			
2. Assy Hookup Dwg		Vendor to furnish			
3.Spares Catalogue/DRG No		Vendor to specify			
J.MARKING					
1.S S name plate		Vendor to specify			
2. Spares individually tagged		Vendor to specify			
K. PAINTING		Epoxy coated			
L.PACKING		Land worthy			
M.TEST CERTIFICATES					
1.Hydraulic test					
2.Seat leak test		Vendor to specify			
3.Material certificates		Vendor to specify			
4.Std. test on Actuator		Vendor to specify			
5.Dimensional test		Vendor to specify			
N.OPR. & INSTRN. MANUALS					
1.6 Hard copies & 1 soft form		Vendor to confirm			
IIB SPECIAL CONTRACT REQUIREMENT, IF ANY					
		1.Enclosures for all accessories shall be explosion proof suitable for BFG area Class-I, Zone- II, Group- II A, T2 to the extent of IS- 5572. 2.All counter flanges, fasteners and gaskets shall be in vendor's scope. 3.Valve mounting position shall be suitable for both horizontal and vertical pipe mounting.			
		(USE AN ANNEXURE IF THIS SPACE IS INADEQUATE)			
BHEL			VENDOR		
PREPARED BY	APPROVED BY	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 25 OF 28**

**PART - I: DATASHEET FOR BUTTERFLY TRIP VALVE
BFG CORNER VENT VALVE (BG60A-D)**

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-° C
BHEL Material Code: L143014220010007

O.FLOW DATA		C.SOLENOID PILOT			
1. Line Fluid		1. Make / Type No			
2. Flow Max		2. Style			
3. Normal in pr		3. To Open Main Valve	De-Energise Solenoid coil		
4. Allowable DP		4. To Close Main Valve	Energise Solenoid coil		
5. Actuator Sizing DP		5. Enclosure			
6. Temp Max		6. Coil Duty	Continuous, for 100° C ambient		
7.Flow Temp		7. Coil Rating	24V DC		
8. Flow Sp Gravity		8. Insulation Class			
9. Flow Viscosity		9. Inrush / Hold Wattage			
10. Max Flow Cv		10. Valve Flow Cv			
11. Flap rotation %		11. Body Material	Forged Brass		
12. Valve Cv		12. Wetted parts	Stainless Steel		
13. Valve Closing Time	Sec.	13. Seating	Resilient for tight shut		
14. Valve Opening Time	Sec. Adjustable	14. Valve Ends			
		15. Cable entry			
A. VALVE BODY		16. Terminal Block	Provided		
1. Make/Type No		D. QUICK EXHAUST VL		To meet O.13	
2. Line Size	ODxT mm	1. Make/type No			
3. Body/port Size	Nb mm	2. Port Conn			
4. Flap rotation	degrees				
5. Body Style / Rating	NP	E. FLOW RESTRICTOR		To meet O.14	
6. Ends	Flanged to :	1. Make/Type No			
7. Valve Disc type		2. Port Conn			
8. Disc Material		3. Adjustable Time Range			
9. Body Matl	Carbon Steel				
10. Seat Material		F. AIRSET		Type No	
11. Stem Size /Material		1. Airset set pressure			
12.Seat, Matl		2. End Connection			
13. Seat Leak Class	Bubble tight shut off as per API 598	G. LIMIT SWITCHES		off	
14. Bonnet / packing		1. Make/Type No			
15. Noise Level		2. Mounted For	Full open	Full close	% Open
16. Mating flanges	To suit valve & line size	3. Contacts			Off
17. Fasteners for flanges	Qty	4. Contact Rating	240Ac 10Amp	110 Dc 0.5 Amp	
18. Non-asbestos gaskets	Specify	5. Enclosure			
		6.Cable Entry			
		H. JUNCTION BOX		Provided	
		1.Enclosure			
		2. No. of Terminals			
		I.SUPPLY CONDITION			
		1. Assembly – 1			
		2. Assembly – 2			
		3. Pneumatic Terminal	To suit 3/8" SS tubing. Vendor to specify.		
		4. Spares	individually tagged and packed		
B. ACTUATOR ASSY		IBR		NO	
1. Make/Type No		REF. DOCUMENTS:(SPECIFY DWG/MANUAL REF.Nos.BELOW)			
2. Style		1.Assy Dimensional Dwg			
3. Size/Volume		2.Assy Hookup Dwg			
4. Spring No/Range		S.No	ITEM	O & M Manual	Spares identifier
5. Spring to	Open				Catalog&Spec
6. Air to	Close				
7. Signal pr		3	A		
8. Pr port Conn		4	B		
9. On Air Failure	Stay Put	5	B 11		
10. Lockup Valve type No		6	C		
11. Lockup Valve Set pr		7	D		
		8	E		
		9	F		
		10	G		
PREPARED BY (VENDOR)		DATE		APPROVED BY (BHEL)	
				DATE	



**FUEL SYSTEMS
PE (BOILERS)**

**TOS:TSK:005/ REV:00
SHEET 26 OF 28**

**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG CORNER VENT VALVE (BG60A-D)**

BHEL MATERIAL CODE: L143014220010007

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIB	BHEL SPECIFICATION		VENDOR CONFIRMATION		
J.APPLICABLE STANDARDS:					
1. Control valve sizing equations	ANSI / ISA S75.01				
2. Control valve capacity test procedure	ANSI / ISA S75.02				
3. Seat leakage	API 598				
4. Face to face dimensions.	Manufacturer's standards				
5. Flange dimensions & drilling	ANSI B 16.5				
O.FLOW DATA					
1. Line Fluid	Blast Furnace Gas (BFG)/BOF gas				
2. Flow Max	56250 Nm³/hr				
3. Normal in pr	400 mm wc				
4. Allowable DP	5 mm wc				
5. Actuator Sizing DP	1800 mm wc				
6. Temp Max	50°C				
7.Flow Temp	27°C				
8. Flow Sp Gravity	1.011				
9. Flow Viscosity	18.882 x 10 ⁻⁶ Ns/Sq.m				
10. Max Flow Cv	Vendor to specify				
11. Flap rotation (%)	Full				
12. Valve Cv	Vendor to specify				
13. Valve Closing Time	< 3 Sec.				
14. Valve Opening Time	6 to 10 Sec. Adjustable				
A. VALVE BODY					
1. Make/Type No	Vendor to specify				
2. Line Size mm	OD 406.4 x 6.4 t				
3. Body / port Size mm	NB 400 mm				
4. Flap rotation (degrees)	Vendor to specify				
5. Body Style / Rating	Flanged	PN 6 or higher			
6. Ends	Flanged				
7. Valve disc type	Short Lever / Push Lever				
8. Disc Material	Carbon Steel				
9. Body Matl	Carbon Steel				
10. Seat Matl	Vendor to specify				
11. Stem Size / Matl	Vendor to specify / SS				
12.Seat Matl	Vendor to specify				
13. Seat Leak Class	Bubble tight shut-off as per API-598				
14. Bonnet / packing	Std / Extended	Specify			
15. Noise Level	< 85 dBA				
16. Valve Internals	Shall not vibrate				
17. Mating flange, non asbestos gaskets & fasteners	To suit valve end & stated line size				
BHEL			VENDOR		
PREPARED BY	APPROVED	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG CORNER VENT VALVE (BG60A-D)**

BHEL MATERIAL CODE: L143014220010007

ENQUIRY No.:

UNITS: Flow-Liquid Cu M / hr, Steam-Kg / hr, Gas-NCu / hr, Pr-kg / cmSq (g), Temp-°C

IIA	BHEL SPECIFICATION	VENDOR CONFIRMATION
B. ACTUATOR ASSY	Spring return piston type (rotary)	
1. Make/Type No	Vendor to specify	
2. Style	Vendor to specify	
3. Size/Volume	Vendor to specify	
4. Spring No/Range	Vendor to specify	
5. Spring to	Open	
6. Air to	Close	
7. Signal pr	Vendor to specify	
8. Pr port Conn	Vendor to specify	
09. On Air Failure	Stay Put	
10. Lockup Valve type No	Vendor to specify	
11. Lockup Valve Set pr	Vendor to specify	
C.SOLENOID PILOT	3Way Single coil 24 V DC	
1. Make / Type No	Vendor to specify	
2. Style	Vendor to specify	
3. To Open Main Valve	De-Energise Solenoid coil	
4. To Close Main Valve	Energise Solenoid coil	
5. Enclosure	NEMA 7 & 9 Explosion Proof	
6. Coil Duty	Continuous, for 100° C ambient	
7. Coil Rating	24V DC ; SINGLE COIL	
8. Insulation Class	Class H	
9. Inrush / Hold Wattage	Vendor to specify	
10. Valve Flow Cv	Vendor to specify	
11. Body Matl	Forged Brass	
12. Wetted parts	Stainless Steel	
13. Seating	Resilient for tight shut	
14. Valve End size	To suit open/close time. Vendor to specify	
15. Cable entry	1/2 " conduit	
D. QUICK EXHAUST VALVE	To meet O.13	
1. Make/type No	Vendor to specify	
2. Port Connection	Vendor to specify	
E.FLOW RESTRICTOR	To meet O.14	
1. Make/type No	Vendor to specify	
2. Port Connection	Vendor to specify	
3. Adjustable Time Range	Vendor to specify	
F. AIRSET	Type No – Make & Model	
1. Airset set pr End Conn.	Vendor to specify	
G.LIMIT SWITCHES	2 NOS 1 no Open, 1no Close	
1. Make/Type No	Vendor to specify	
2. Mounted For	Full open Full close % Open	
3. Contacts	DPDT	
4. Contact Rating	240Ac 10Amp 220 Dc 0.25 Amp	
5. Enclosure	NEMA 7 & 9 Explosion Proof	
6.Cable Entry	1/2" - 14 NPSM	
H. PNEUMATIC TERMINAL	To suit 3/8" SS tube. Vendor to specify.	
BHEL	VENDOR	
PREPARED BY	APPROVED	DATE
PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19



**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG CORNER VENT VALVE (BG60A-D)**

BHEL MATERIAL CODE: L143014220010007

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION	VENDOR CONFIRMATION		
I. JUNCTION BOX					
1.Enclosure		NEMA 7 & 9 Explosion Proof			
2. No. of Terminals		Vendor to specify			
3.Spares offer		commissioning / Customer			
REFERENCE DOCUMENTS:(SPECIFY DWG/MANUAL REF.NOs.BELOW)					
1. Assy Dimensional Dwg		Vendor to furnish			
2. Assy Hookup Dwg		Vendor to furnish			
3.Spares Catalogue/DRG No		Vendor to specify			
J.MARKING					
1.S S name plate		Vendor to specify			
2. Spares individually tagged		Vendor to specify			
K. PAINTING		Epoxy coated			
L.PACKING		Land worthy			
M.TEST CERTIFICATES					
1.Hydraulic test					
2.Seat leak test		Vendor to specify			
3.Material certificates		Vendor to specify			
4.Std. test on Actuator		Vendor to specify			
5.Dimensional test		Vendor to specify			
N.OPR. & INSTRN. MANUALS					
1.6 Hard copies & 1 soft form		Vendor to confirm			
IIB SPECIAL CONTRACT REQUIREMENT, IF ANY					
		1.Enclosures for all accessories shall be explosion proof suitable for BFG area Class-I, Zone- II, Group- II A, T2 to the extent of IS- 5572. 2.All counter flanges, fasteners and gaskets shall be in vendor's scope. 3.Valve mounting position shall be suitable for both horizontal and vertical pipe mounting.			
		(USE AN ANNEXURE IF THIS SPACE IS INADEQUATE)			
BHEL			VENDOR		
PREPARED BY	APPROVED BY	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	MCHS Gangadhar	27/02/19			



**PART - I: DATASHEET FOR BUTTERFLY TRIP VALVE
BFG MAIN TRIP VALVE (Tag: BG40)**

UNITS: Flow-Liquid Cu m / hr, Steam-Kg / hr, Gas-NCu m / hr, Pr-kg / cmSq (g), Temp-° C
BHEL Material Code: L143014220016001

O.FLOW DATA		C.SOLENOID PILOT			
1. Line Fluid		1. Make / Type No			
2. Flow Max		2. Style			
3. Normal in pr		3. To Open Main Valve	Energise Solenoid coil		
4. Allowable DP		4. To Close Main Valve	De-Energise Solenoid coil		
5. Actuator Sizing DP		5. Enclosure			
6. Temp Max		6. Coil Duty	Continuous, for 100° C ambient		
7.Flow Temp		7. Coil Rating	24 V DC		
8. Flow Sp Gravity		8. Insulation Class			
9. Flow Viscosity		9. Inrush / Hold Wattage			
10. Max Flow Cv		10. Valve Flow Cv			
11. Flap rotation %		11. Body Material	Forged Brass		
12. Valve Cv		12. Wetted parts	Stainless Steel		
13. Valve Closing Time	Sec.	13. Seating	Resilient for tight shut		
14. Valve Opening Time	Sec. Adjustable	14. Valve Ends			
		15. Cable entry			
A. VALVE BODY		16. Terminal Block	Provided		
1. Make/Type No		D. QUICK EXHAUST VL			
2. Line Size	ODxT mm	1. Make/type No			To meet O.13
3. Body/port Size	Nb mm	2. Port Conn			
4. Flap rotation	degrees				
5. Body Style / Rating	NP	E. FLOW RESTRICTOR			
6. Ends	Flanged to :	1. Make/Type No			To meet O.14
7. Valve Disc type		2. Port Conn			
8. Disc Material		3. Adjustable Time Range			
9. Body Matl	Carbon Steel				
10. Seat Material		F. AIRSET			
11. Stem Size /Material		1. Airset set pressure	Type No		
12.Seat, Matl		2. End Connection			
13. Seat Leak Class	Bubble tight shut off as per API 598	G. LIMIT SWITCHES			
14. Bonnet / packing		1. Make/Type No			off
15. Noise Level		2. Mounted For	Full open	Full close	% Open
16. Mating flanges	To suit valve & line size	3. Contacts			Off
17. Fasteners for flanges	Qty	4. Contact Rating	240Ac 10Amp	110 Dc 0.5 Amp	
18. Non-asbestos gaskets	Specify	5. Enclosure			
		6.Cable Entry			
		H. JUNCTION BOX			
		1.Enclosure	Provided		
		2. No. of Terminals			
		I.SUPPLY CONDITION			
		1. Assembly – 1			
		2. Assembly – 2			
		3. Pneumatic Terminal	To suit 8 mm or ½” tubing. Vendor to specify.		
		4. Spares	Individually tagged and packed		
B. ACTUATOR ASSY		IBR			
1. Make/Type No		NO			
2. Style		REF. DOCUMENTS:(SPECIFY DWG/MANUAL REF.Nos.BELOW)			
3. Size/Volume		1.Assy Dimensional Dwg			
4. Spring No/Range		2.Assy Hookup Dwg			
5. Spring to	Close	S.No	ITEM	O & M Manual	Spares identifier
6. Air to	Open				Catalog&Spec
7. Signal pr		3	A		
8. Pr port Conn		4	B		
9. On Air Failure	Stay Put	5	B 11		
10. Lockup Valve type No		6	C		
11. Lockup Valve Set pr		7	D		
		8	E		
		9	F		
		10	G		
PREPARED BY (VENDOR)		DATE		APPROVED BY (BHEL)	
				DATE	

PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG MAIN TRIP VALVE (Tag: BG40)

BHEL MATERIAL CODE: L143014220016001

ENQUIRY No.:

UNITS: Flow-Liquid Cu m/ hr, Steam-Kg / hr, Gas-NCu m/ hr, Pr-kg / cmSq (g), Temp-°C

IIB		BHEL SPECIFICATION		VENDOR CONFIRMATION	
J.APPLICABLE STANDARDS:					
1.Control valve sizing equations		ANSI / ISA S75.01			
2. Control valve capacity test procedure		ANSI / ISA S75.02			
3. Seat leakage		API 598			
4. Face to face dimensions		Manufacturer's standards			
5. Flange dimensions & drilling		ANSI B 16.5			
O.FLOW DATA					
1. Line Fluid		Blast Furnace Gas (BFG)/BOF gas			
2. Flow Max		225000+5% Nm³/hr			
3. Normal in pr		850 mm wc			
4. Allowable DP		5 mm wc			
5. Actuator Sizing DP		1800 mm wc			
6. Temp Max		50°C			
7.Flow Temp		27°C			
8. Flow Sp Gravity		1.011			
9. Flow Viscosity		18.882 x 10 ⁻⁶ Ns/Sq.m			
10. Max Flow Cv		Vendor to specify			
11. Flap rotation (%)		Full			
12. Valve Cv		Vendor to specify			
13. Valve Closing Time		< 5 Sec.			
14. Valve Opening Time		6 to 10 Sec. Adjustable			
A. VALVE BODY					
1. Make/Type No		Vendor to specify			
2. Line Size mm		OD 2620 x 10 t			
3. Body / port Size mm		NB 2600 mm			
4. Flap rotation (degrees)		Vendor to specify			
5. Body Style / Rating		Flanged PN 6 or higher			
6. Ends		Flanged			
7. Valve disc type		Short Lever / Push Lever			
8. Disc Material		Carbon Steel			
9. Body Matl		Carbon Steel			
10. Seat Matl		Vendor to specify			
11. Stem Size / Matl		Vendor to specify / SS			
12.Seat Matl		Vendor to specify			
13. Seat Leak Class		Bubble tight shut-off as per API 598			
14. Bonnet / packing		Std / Extended Specify			
15. Noise Level		< 85 dBA			
16. Valve Internals		Shall not vibrate			
17. Mating flange, non asbestos gaskets & fasteners		To suit valve end & stated line size			



**PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG MAIN TRIP VALVE (Tag: BG40)**

BHEL MATERIAL CODE: L143014220016001

ENQUIRY No.:

UNITS: Flow-Liquid Cu m / hr, Steam-Kg / hr, Gas-NCu m / hr, Pr-kg / cmSq (g), Temp-°C

IIA		BHEL SPECIFICATION		VENDOR CONFIRMATION	
B. ACTUATOR ASSY		Spring return piston type (rotary)			
1. Make/Type No		Vendor to specify			
2. Style		Vendor to specify			
3. Size/Volume		Vendor to specify			
4. Spring No/Range		Vendor to specify			
5. Spring to		Close			
6. Air to		Open			
7. Signal pr		Vendor to specify			
8. Pr port Conn		Vendor to specify			
09. On Air Failure		Stay Put			
10. Lockup Valve type No		Vendor to specify			
11. Lockup Valve Set pr		Vendor to specify			
C.SOLENOID PILOT		3Way Single coil 24 V DC			
1. Make / Type No		Vendor to specify			
2. Style		Vendor to specify			
3. To Open Main Valve		Energise Solenoid coil			
4. To Close Main Valve		De-Energise Solenoid coil			
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6. Coil Duty		Continuous, for 100° C ambient			
7. Coil Rating		24V DC; SINGLE COIL			
8. Insulation Class		Class H			
9. Inrush / Hold Wattage		Vendor to specify			
10. Valve Flow Cv		Vendor to specify			
11. Body Matl		Forged Brass			
12. Wetted parts		Stainless Steel			
13. Seating		Resilient for tight shut			
14. Valve End sizes		To suit open/close time. Vendor to specify			
15. Cable entry		1/2 " conduit			
D. QUICK EXHAUST VALVE		To meet O.13			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
E.FLOW RESTRICTOR		To meet O.14			
1. Make/type No		Vendor to specify			
2. Port Connection		Vendor to specify			
3. Adjustable Time Range		Vendor to specify			
F. AIRSET		Type No – Make & Model			
1. Airset set pr	End Conn.	Vendor to specify			
G.LIMIT SWITCHES		2 NOS 1 no Open, 1no Close			
1. Make/Type No		Vendor to specify			
2. Mounted For		Full open	Full close	% Open	
3. Contacts		DPDT			
4. Contact Rating		240Ac 10Amp	220 Dc 0.25 Amp		
5. Enclosure		NEMA 7 & 9 Explosion Proof			
6.Cable Entry		1/2" - 14 NPSM			
H. PNEUMATIC TERMINAL		To suit 8 mm or 1/2" tube. Vendor to specify.			
BHEL				VENDOR	
PREPARED BY		APPROVED	DATE	PREPARED BY	APPROVED BY DATE
Sairam N		Gangadhar MCHS	27/02/19		

PART - II: VENDOR CHECK LIST FOR BUTTERFLY TRIP VALVE
BFG MAIN TRIP VALVE (Tag: BG40)

BHEL MATERIAL CODE: L143014220016001

ENQUIRY No.:

UNITS: Flow-Liquid Cu m / hr, Steam-Kg / hr, Gas-NCu m / hr, Pr-kg / cmSq (g), Temp-°C

IIA	BHEL SPECIFICATION	VENDOR CONFIRMATION
I. JUNCTION BOX		
1. Enclosure	NEMA 7 & 9 Explosion Proof	
2. No. of Terminals	Vendor to specify	
3. Spares offer	commissioning / Customer	
REFERENCE DOCUMENTS: (SPECIFY DWG/MANUAL REF. NOs. BELOW)		
1. Assy Dimensional Dwg	Vendor to furnish	
2. Assy Hookup Dwg	Vendor to furnish	
3. Spares Catalogue/DRG No	Vendor to specify	
J. MARKING		
1. S S name plate	Vendor to specify	
2. Spares individually tagged	Vendor to specify	
K. PAINTING		
Epoxy coated		
L. PACKING		
Land worthy		
M. TEST CERTIFICATES		
1. Hydraulic test		
2. Seat leak test	Vendor to specify	
3. Material certificates	Vendor to specify	
4. Std. test on Actuator	Vendor to specify	
5. Dimensional test	Vendor to specify	
N. OPR. & INSTRN. MANUALS		
1.6 Hard copies & 1 soft form	Vendor to confirm	

IIB	SPECIAL CONTRACT REQUIREMENT, IF ANY				
	1.Enclosures for all accessories shall be explosion proof suitable for BFG area Class-I, Zone- II, Group- II A, T2 to the extent of IS-5572. 2.All counter flanges, fasteners and gaskets shall be in vendor's scope. 3.Valve mounting position shall be suitable for both horizontal and vertical pipe mounting.				
	(USE AN ANNEXURE IF THIS SPACE IS INADEQUATE)				
BHEL			VENDOR		
PREPARED BY	APPROVED BY	DATE	PREPARED BY	APPROVED BY	DATE
Sairam N	Gangadhar MCHS	27/02/19			

A. BLAST FURNACE GAS (BFG)#

	Units	BFG FOR BOILER DESIGN	BFG FOR PERFORMANCE GUARANTEE
Hydrogen	% vol	1-6	5.1
Carbon monoxide	% vol	20-24	22.05
Carbon dioxide	% vol	20-23	21.86
Oxygen	% vol	1.0	1.0
Nitrogen	% vol	BALANCE	45.69
Methane (CH ₄)	% vol	-	-
Ethane (C _m H _n)	% vol	-	-
Water Vapor	% vol	4.3	4.3
Density	kg /Nm ³	1.332	1.332
GCV	kcal/Nm ³	820	820
NCV	kcal/Nm ³	797	797
Dust content	mg/Nm ³	10	10
Fuel temperature	°C	30-60	30- 35
Available Pressure at Battery Limit	mmwc	250-800	300-350*

B. COKE OVEN GAS (COG) #

	Units	COG FOR BOILER DESIGN	COG FOR PERFORMANCE GUARANTEE
Hydrogen	% vol	52-56	52
Carbon monoxide	% vol	6-9	6
Carbon dioxide	% vol	3-4	3.22
Oxygen	% vol	0.4-0.6	0.6
Nitrogen	% vol	BALANCE	9.7
Methane (CH ₄)	% vol	22-26.5	22
Ethane (C _m H _n)	% vol	2-2.6	2.18
Water Vapor	% vol	4.3	4.3
Density	kg /Nm ³	0.537	0.537
GCV	kcal/Nm ³	4200	4200
NCV	kcal/Nm ³	3737	3737
Dust content	mg/Nm ³	-	-
Fuel temperature	°C	30-60	30- 35
Available Pressure at Battery Limit	mmwc	350-1200	350

BANK GUARANTEE FOR PERFORMANCE SECURITY

(Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s))

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

IFSC AND MICR CODE

Dear Sirs,

1. In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) (VENDOR CODE) with its registered office at _____² hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated³ valued at Rs.....⁴ (Rupees -----)/FC.....(in words.....) for⁵ (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to% (... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

2. we,, (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs -----⁶ (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

3. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

4. We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

5. The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

6. We thebank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

7. We.....BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

8. The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier's liabilities.

9. This Guarantee shall remain in force upto and including.....⁷ and shall be extended from time to time for such period as may be desired by Employer.

10. This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

11. Unless a demand or claim under this guarantee is made on us in writing on or before the⁸we shall be discharged from all liabilities under this guarantee thereafter.

12. Any claim or dispute arising under the terms of this document shall only be enforced or settled in the Courts at Tiruchirappalli.

13. We..... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

a) The liability of the Bank under this Guarantee shall not exceed.....⁶

- b) This Guarantee shall be valid up to⁷
- c) Unless the Bank is served a written claim or demand on or before (minimum 3 to 6 months from the expiry date)⁸ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

14. We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

BANK EMAIL ID:

BANK PHONE NO:

AUTHORISED SIGNATORIES CELL PHONE NO:

BANK FAX NO:

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ PROJECT/SUPPLY DETAILS

⁶ BG AMOUNT IN FIGURES AND WORDS

⁷ VALIDITY DATE

⁸ DATE OF EXPIRY OF CLAIM PERIOD

List of Consortium Banks *			
	Nationalised Banks		Nationalised Banks
1	Allahabad bank	19	Vijaya Bank
2	Andhra bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign banks
5	Corporation bank	21	CITI Bank N.A
6	Central bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Limited
8	Indian Oversea Bank	24	Standard Chartered Bank
9	Oriental bank of Commerce	25	J P Morgan
10	Punjab National Bank		
11	Punjab & Sindh Bank		Private banks
12	State Bank of India	26	Axis Bank
13	State Bank of Hyderabad	27	The Federal Bank Limited
14	Syndicate Bank	28	HDFC
15	State Bank of Travancore	29	Kotak Mahindra Bank
16	UCO Bank	30	ICICI
17	Union Bank of India	31	Indusind Bank
18	United Bank of India	32	Yes Bank

* wef 22.03.2016

 BHEL - TRICHY	THIRD PARTY NON-DISCLOSURE AGREEMENT	Doc.No. : ISMS-04/TP/011	
		Ver. No: 3.0	Rev. No: 00
		Date : 27 - 10 - 14	

THIRD PARTY NON-DISCLOSURE AGREEMENT

I, _____, on behalf of the _____ (Name of Company), acknowledge that the information received or generated, directly or indirectly, while working with BHEL, Trichy on contract is confidential and that the nature of the business of the BHEL, Trichy is such that the following conditions are reasonable, and therefore:

I warrant and agree as follows:

I, or any other personnel employed or engaged by our company, agree not to disclose, directly or indirectly, any information related to the BHEL, Trichy Without restricting the generality of the foregoing, it is agreed that we will not disclose such information consisting but not necessarily limited to:

- Technical information: Methods, drawings, processes, formulae, compositions, systems, techniques, inventions, computer programs/data/configuration and research projects.
- Business information: Customer lists, project schedules, pricing data, estimates, financial or marketing data,

On conclusion of contract, I, or any other personnel employed or engaged by our company shall return to BHEL, Trichy all documents and property of BHEL, Trichy, including: drawings, blueprints, reports, manuals, computer programs/data/configuration, and all other materials and all copies thereof relating in any way to BHEL, Trichy 's business, or in any way obtained by me during the course of contract. I further agree that I, or any others employed or engaged by our company shall not retain copies, notes or abstracts of the foregoing.

This obligation of confidence shall continue after the conclusion of the contract also.

I acknowledge that the aforesaid restrictions are necessary and fundamental to the business of the BHEL, Trichy and are reasonable given the nature of the business carried on by the BHEL, Trichy I agree that this agreement shall be governed by and construed in accordance with the laws of country.

I enter into this agreement totally voluntarily, with full knowledge of its meaning, and without duress.

Dated at _____, this ____ day of _____, 20__.

Name

Company

Signature

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for _____

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions:

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to

demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher.

Section 5 - Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders/ Contractors / Sub-contractors

- 6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain responsible for any default by his sub-contractors.
- 6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 - Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non- disclosure agreement.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

- 8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organisation.
- 8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.
- 8.12 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty / guarantee etc. should be outside the purview of IEMs.
- 9.2 If any claim is made/ lodged during currency of IP, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

- 10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

- 10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- 10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those bidders / contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.



For & On behalf of the Principal
S. KANNAN
Dy. Manager
Materials Management / BOI
BHEL, TRICHY - 620 014
(Office Seal)

For & On behalf of the Bidder/
Contractor

(Office Seal)

Place Trichy.

Date 05.06.2019.

Witness: 
05/06/19
(Name & Address) P. Ramgundham
mm/BOI
BHEL / Trichy - 14

Witness: _____
(Name & Address) _____



An ISO 9001 Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli-620 014, Tamil Nadu, India

Dept.: PURCHASE-MATERIALS MANAGEMENT/BOI

ENQUIRY TERMS AND CONDITIONS

1. QUOTATIONS:

a. The bidder shall submit his response through bid submission to the tender on e-Procurement platform at <https://bhel.abcprocure.com>. The bidder would be required to register on the e-procurement market place and submit their bids online. **Sealed cover bids / e-Mails / FAX / Manual offers will NOT be accepted.**

b. Price should be sent **F.O.R. dispatching station for indigenous vendors and CFR Chennai SEA PORT BASIS / FOB Nearest Airport (Gateway) for import vendors as per the Enquiry commercial terms** inclusive of risk in transit and remain valid for days (as specified in the tender) from the due date. For Import vendors - Port of loading should be indicated in the offer without fail.

c. If any tax is payable as extra to the quoted price is should be specifically stated in quotations along with GSTIN and ARN falling which the purchaser will not be liable for payment of such taxes. **Our GSTIN is 33AAACB4146P2ZL and ARN is AA3306170074586.**

d. Manufacturer's name trademark or patent number, if any should be specified. Illustrative leaflets giving technical particulars are required along with quotation wherever necessary.

e. The Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept in Part or full without assigning any reason whatsoever.

f. The bidder has to keep track of any changes by viewing the addendum / Corrigendum's issued by the Purchaser on time-to- time basis in the E-Procurement platform. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.

g. The user should complete all the processes and steps required for bid submission. The successful bid submission can be ascertained once acknowledgement is given by the system through bid submission number after completing all the processes and steps. BHEL and Mjunction Services Ltd. will not be responsible for incomplete bid submission by users. Users may also note that the incomplete bids will not be saved by the system and are not available for the Purchaser for processing.

h. Before uploading scanned documents, the bidders shall sign on all the statements, documents, certificates uploaded by him, owning responsibility for their correctness / authenticity.

2. GST COMPLIANCE TERMS:

a. Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration Number which should be clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.



An ISO 9001 Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli-620 014, Tamil Nadu, India

Dept.: PURCHASE-MATERIALS MANAGEMENT/BOI

b. In case of order placement,

(i) Supplier shall mention their GSTN registration number in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice number, commercial invoice number etc., then the Invoice number which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc.

(ii) All invoices shall bear the HSN Code (Harmonized System of Nomenclature) for each item separately or SAC code (Services Accounting Code) as the case may be.

(iii) A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.

(iv) All dispatch and quality documents like Test Certificate, LR copy, Guarantee/Warranty certificate and any other document mentioned in PO, shall be sent along with the vehicle/consignment. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so.

(v) In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL.

(vi) For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.

(vii) Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.

3. PACKING AND MARKING: The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.



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4. TERMS OF PAYMENT: Payment terms as per **Commercial terms of enquiry**. Any deviation from the enquiry payment term, any other condition in the payment term or any other payment term will not be accepted and will not be considered.

6. LIQUIDATED DAMAGES PENALTY FOR DELAY IN DELIVERY: If the supplier fails to deliver the raw material equipment components within the period specified in the contract the purchaser shall deduct liquidated damages a sum equivalent to is 0.5% of the total order value per week of delay or part thereof from delivery period subject to a maximum of 10% of total order value.

7. RISK PURCHASE: Alternatively, the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitutes therefore. The supplier shall be liable for any loss, which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in clause 6 above.

8. PREFERENTIAL DELIVERY: It should be noted if a contract is placed on a higher tenderer as a result of this invitation to tender in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R. destination, including all eliminates of freights, tax, duties and other incidents, incidental in case of failure to complete suppliers in terms of such contract within the date of delivery specified in the tender and incorporated in the contract.

9. INPUT TAX CREDIT: For availing ITC, the chapter head / Sub-head reference and the rate of the duty should be quoted in the techno-commercial offer itself. Tenderer under '**INPUT TAX CREDIT**' shall be preferred.

10. LOADING FACTORS: (As applicable as per enquiry Comm1 terms)

BHEL will evaluate the offers and consider the ranking after the loading is applied as referred below wherever deviations are observed.

- a) **Payment term:** No deviation is acceptable and the deviated offers are liable for Non-consideration.
- b) **Loading factor for Liquidated damages:** Any deviation from the enquiry LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).
- c) **Guarantee / Warranty:** No deviation permitted and the deviated offers are liable for rejection.
- d) If foreign supplier insists for LC, only Usance LC with 60 days credit will be opened one month prior to material readiness, further loading @ 1.5% on the offered value will be considered. If Hence supplier shall intimate the material readiness accordingly for



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opening of L.C. LC validity period will be 90 days and for any extension, applicable charges will be to supplier's account.

In case new foreign suppliers not registered with BHEL, Trichy for the product, first lot of mutually agreed quantity shall be supplied with payment as CAD basis after 60 days from the date of receipt & acceptance of material. If insisted for LC, after acceptance of first lot, only Usance LC with 60 days credit will be opened one month prior to material readiness.

- e) BHEL will evaluate the offers and consider the ranking after the loading is applied as referred above wherever deviations are observed.

11. NOTE TO IMPORT VENDORS:

I. Indian Customs has imposed a penalty on late filing of Bill of Entries (Air/Sea Shipments) by the importer. The maximum free time allowed is 24 hrs from the time of arrival of cargo at final port of discharge. Rs.5000/- per day (for Initial 03 days) & Rs.10000/- per day (thereafter)

1) The vendor should furnish the Non-Negotiable Documents (Air Way Bill/Bill of Lading, Commercial Invoice, Packing List, Certificate of Origin) either by email or post/courier to BHEL well before the landing of cargo at final port of discharge.

2) Vendor will be held responsible for the penalty arises against the late filing of Bill of entry due to: a. Non availability of Non-Negotiable Documents (NNDs) before the cargo arrival.

b. Discrepancy in documents

c. Short landing of Consignments (For shipments on CFR/CPT/CIF/CIP – Chennai Port)

II) All the shipments for the contracts (POs) finalized on CFR/CPT -Chennai Port, CIF/CIP-Chennai Port, DDU/DDP Chennai Port basis

1) Delivery Orders involving multiple agencies like liners/freight forwarders are not allowed. There must be a single agency office at the final discharge Port (Chennai) for issuing the Delivery Order to BHEL.

2) The detention/demurrage charges arises due to the delay in collection of Delivery Orders from multiple agencies of liner/freight forwarder also whose offices are not at available Chennai, the same amount will be deducted from Vendor's bills only.

3) Apart from the normal charges like Terminal Handling Charges, Container cleaning Charges, Delivery Order Charges at final port of discharge will not be borne by BHEL.

4) The liner/freight forwarders should be properly communicated by the Vendor for not to claim such charges for issuing Delivery Order. If the liner/freight forwarder claims such charges in their invoices, the same amount will be deducted from the Vendor bills without any prior intimation in order to avoid the delay in Customs clearance. The likely additional/hidden costs or charges are:



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- a. CIC - Container Imbalance Charges/Surcharges
- b. EIC - Equipment Imbalance Charge/Surcharges
- c. CAF - Container/Currency Adjustment Factor
- d. BAF - Bunker adjustment Factor
- e. RDS - Rupee Depreciation Surcharge
- f. CDS - Currency Depreciation Surcharge

III) CONTAINERIZED CARGO

1. For CFR terms, moved through CONTAINERS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis including extra charges, if any, like Container Imbalance Charges, Trade Imbalance charges or any other charges payable to the Liner. No other charges other than the quoted Freight rate will be paid by BHEL excepting applicable Terminal Handling Charges, Container cleaning Charges, DO charges to Shipping Liner at Discharge Port. 14 FREE DAYS FOR Container detention shall be provided. If any deviation is taken by Tenderer, a loading of 22% on the freight rate per MT shall be considered by BHEL for arriving at the Total Landed Cost.

2. In case of shipment through Containers on CFR basis, the BL should bear the endorsement that "14 free days for Container Detention is applicable".

IV) BREAKBULK CARGO

1. For CFR terms, moved through BREAK BULK BASIS (Suppliers should clearly specify this in their offer) it would be presumed by BHEL that the freight charges quoted is on LILO (LINER IN LINER OUT) basis.

V) TRANSPORT CONDITIONS FOR IMPORT:

The Original Documents (Bill of Lading, Invoice, Packing List, Certificate of Origin & Test Certificate) shall reach BHEL well in advance before the vessel arrival. The soft copies of the above shall be forwarded to BHEL immediately after shipment.

- a. In the event of delayed submission of documents by the supplier, an amount up to 5% of the invoice value will be retained towards demurrage & other charges and the difference if any between actual charges and recovery will be settled separately through supplementary invoice.
- b. In such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a "Surrender Bill of Lading".
- c. Otherwise, No-objection Certificate shall be issued to the Liner, authorizing BHEL to get the Delivery Order without producing the Original Bill of Lading.
- d. This is required to ensure avoidance of demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller.

12. Special provision for MSE vendors:



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- a) In case MSE vendor participating in the tender quotes within the price band of L1+15% where the L1 is Non-MSE vendor, MSE vendor will be allowed to supply the
- i) Package in case of package-wise evaluation Or
 - ii) Full quantity (in case item-wise package evaluation) Or
 - iii) 25% of tender quantity
- as per enquiry commercial terms** subject to acceptance of L1 price by MSE vendor as per Gazette Notification issued by Ministry of MSME. Payment for MSE indigenous vendor will be as per MSMED Act, 2006.
- b) In case of more than one such MSE, the counter offering will be to the lowest quoted MSE vendor subject to fulfilment of Point No.a)
- c) MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Udyog Aadhar also has to be submitted for availing the special provision for MSE. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.

13. Public procurement (Preference to make in India): For this procurement, Public Procurement (Preference to Make in India), order 2017 dated 15.06.2017 & 28.05.2018 and subsequent orders issued by the respective Nodal ministry shall be applicable. In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable. Default margin of purchase preference shall be 20% to local suppliers with default minimum local content of 50%. Vendor claiming the benefit under this provision, to submit (along with offer) the self-certification that the item offered meets the minimum local content and shall give details of location at which the local value addition is made.

14. Exchange Rate for evaluation: For evaluation, the exchange rate (TT selling rate of SBI) shall be taken as date of part – I opening / tender opening. If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

15. GENERAL: Any other conditions quoted by the seller that is in contravention to the terms agreed by them in Commercial terms & Conditions of enquiry and conditions that have not been specifically accepted by purchaser will not be applicable to the contract.

16. Disclaimer Clause: The Organization (Bharat Heavy Electricals Ltd.) nor the service provider is responsible for any failure of submission of bids due to failure of internet or other connectivity problems or reasons thereof.

17. Fraud prevention Policy: The bidder along with its associate/ collaborators/sub-contractors sub-vendors/consultants/service providers shall strictly adhere to BHEL fraud prevention policy



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displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

18. Offers of bidders who are on the banned list as also the offers of bidders, who engages the services of banned firms, shall be rejected. List of banned firms is available on website www.bhel.com.

Vendor's Seal and Signature.