GENERAL SPECIFICATION FOR BLAST FURNACE GAS LINE & COKE OVEN 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. Preferred standard for flange drilling and dimensions of valve flange and companion flange is ASME B16.47 series B. Preferred standard for face to face dimension of the valve is ANSI B 16.10.
   c. Butterfly valves shall be of carbon steel discs, SS stem and SS seat; seal and packing materials as per service requirements.
   d. Stem polished & finished to 2-4 microns RMS in case of TFE packing.
   e. Valve internals shall not vibrate or chatter & not unduly noisy; the noise level shall be limited to 85 Db at one metre distance.
   f. 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 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 special 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.
   d. Non-Asbestos gaskets for the flanges of BF gas valves to avoid leakage shall be included in the offer.
   e. Leak tightness shall be as per API-598.
   f. All the above conditions & requirements are applicable for coke oven gas also.

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. Quick exhaust valves/ necessary accessories shall be considered to meet closing/opening time as per datasheet. 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 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. Actuator shall be selected for pneumatic air pressure of 4 kg/sq.cm(g).
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. If the input signal has to be other than 0.2 to 1.0 the maker actuator shall offer the matching controller (called for separately) with higher output; or, alternatively include a positioner with air lock valve & air set in mounted & piped up condition.
c. Positioner to be for 4 to 20 mA input, direct / reverse action, field adjustable & gauges.
d. Electronic Position Transmitter 24 Vdc input & 4-20 mA output, two wire, non-contact type.
e. Offer shall include easily operable hand-wheel with gear unit depending upon the operational torque requirements. The offer shall also include limit switches of Honeywell model or equivalent reputed makes or cam operated enclosed rotary switches with DPDT contacts (110AC 10A) & 1 / 2 inch-14 NPSM female cable entry.
f. Limit switches for open or close or both positions (refer datasheet) as asked for in the enquiry shall be suitably mounted on the valve.
g. Pneumatic actuator shall be spring return piston (rotary) rack-pinion type. Scotch yoke spring return type actuator is also acceptable. The actuators shall be of reputed make with proven track performance.
h. All accessories shall be with explosion proof enclosure to NEMA 7 & 9, suitable for outdoor installation & 70°C ambient.
i. All accessories shall be supplied in fully mounted & piped-up condition with SS tubing except for controllers.
j. Pneumatic ports on all equipment shall be sized suitably to meet timing requirements.
k. Include quick exhaust valves, if required, to limit the valve closing time.

l. Solenoid pilot valve as per data sheet & shall be provided with moulding coil class H insulation. Explosion proof housing, wired to the terminal block / junction box.
m. Limit switches and / or solenoid pilot wiring shall be terminated in an explosion proof junction box.
n. Supplier shall provide counter flanges, fasteners and non-asbestos gaskets for all butterfly valves.

6.MARKING:

a. Stainless steel nameplates with following details 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. The limit switches, positioner, position transmitter solenoid valve and such components shall be capsulated / covered properly with suitable packing 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, positioner solenoid pilot and position transmitter.
e. For proper actuation and response of transmitter & 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:
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 accs.
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.

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.

REVISION RECORD

01	01/01/2020	Specification reviewed and updated.	Sairam N	MCHSG
Rev.No.	**Date**	**Description**	**Altered**	**Checked & Approved**