

BBCS

Boiler Blowdown Control System

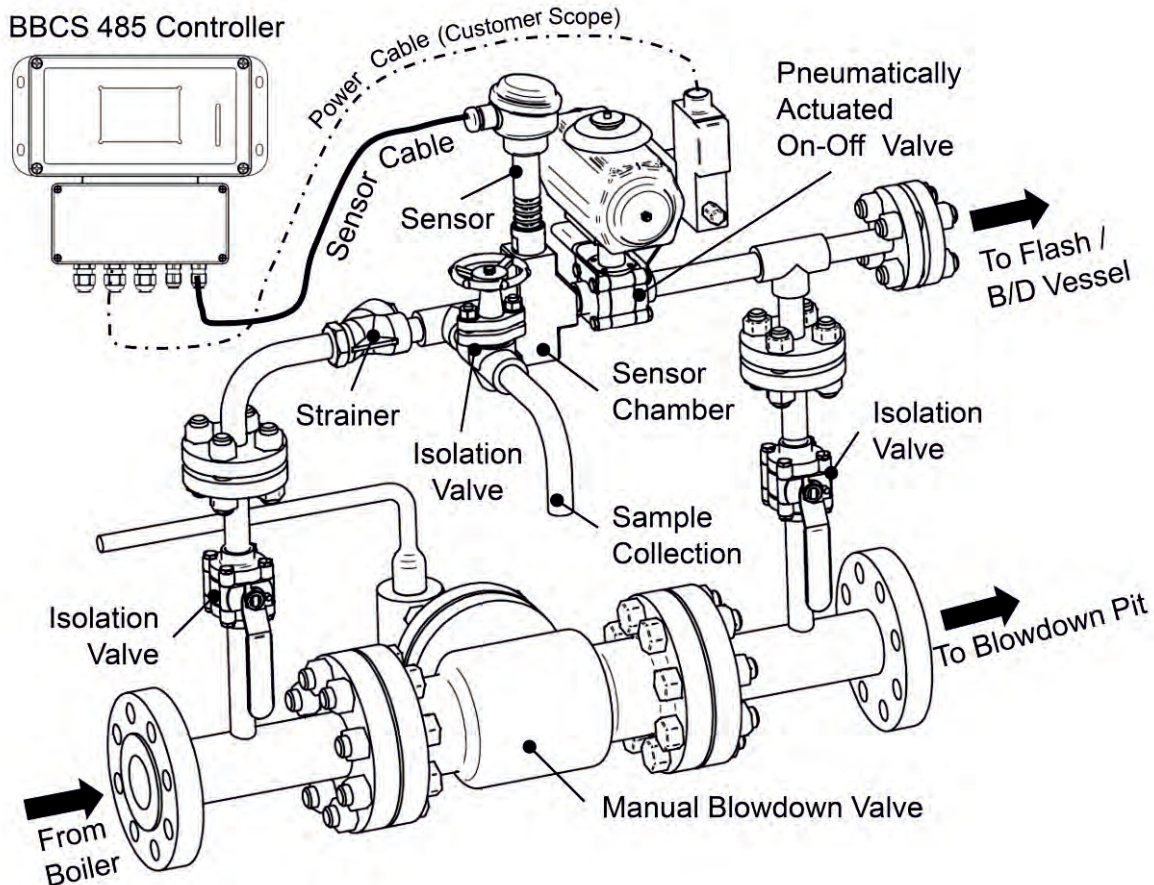
Description

The feed water used in the boiler contains varying levels of impurities that must be removed to protect the boiler and associated equipments. Various pretreatment processes such as reverse osmosis, ion exchange, filtration, softening and demineralization may be used to reduce the level of impurities, but even the best pretreatment processes will not remove them all and will continuously carry some dissolved mineral impurities into the boiler.

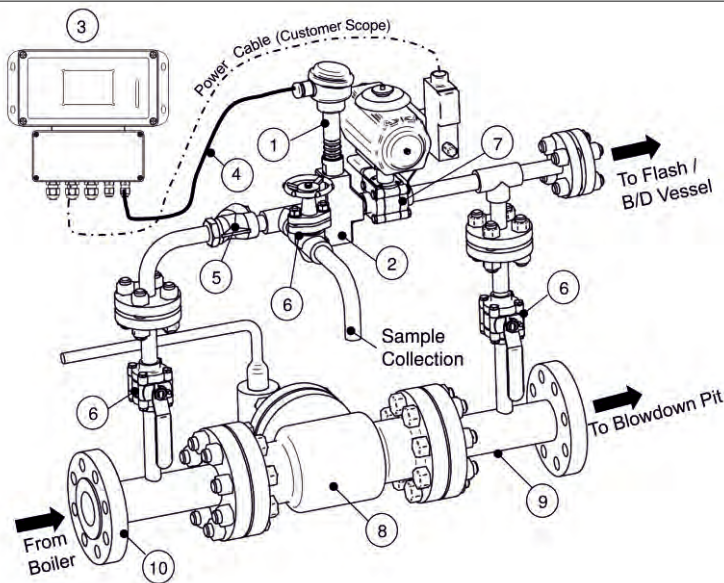
As steam generates, it leaves behind impurities in the boiler water, which will concentrate unless we remove them. The increasing concentration of dissolved solids leads to carryover of boiler water into the steam, damaging piping, steam traps and other process equipment. This boiler problem can be avoided by periodically discharging or "blowing down" water from the boiler to reduce the concentrations of suspended and total dissolved solids. While control of suspended and dissolved solids in the boiler is critical, care must be taken to avoid excessive blowdown, as this would increase the demand or make-up (feed) water, treatment chemicals and fuel.

Forbes Marshall Boiler Blowdown Control System (BBCS) is designed to maintain the boiler water TDS within the limits specified by the boiler manufacturer.

The BBCS measures the electrical conductivity of the boiler water which is directly related to the level of total dissolved solids (TDS). The conductivity of the boiler water is compared with the Set Point in the BBCS controller. If it is lower than the Set Point, the On-off blowdown valve closes at the end of the purge time and remains closed till next purge. If the conductivity is higher than the Set Point, the On-off blowdown valve will open for preset blowdown time & closes at the end of blowdown time. This Purging, Measurement & blowdown cycle is repeated until the conductivity level drops below the Set Point.



(Figure shows, BBCS with Top & Bottom piping assembly with On-Off Ball Valve for Non-Gujarat Location)



Materials:

Sr. No.	Item	Material
1	High Temperature Conductivity Sensor (Cell Constant K=1)	ASTM A479 Type 316L
2	Sensor Chamber	ASTM A182 Gr. F304
3	BBCS 485 Controller	Die-cast Aluminum with powder coating
4	Sensor Cable #	4-Core PTFE Isolated/SPC Shielded/PTFE Jacketed Cable
5	'Y' Type Strainer	ASTM A216 Gr. WCB
6	Isolation Valves	Ball Valve: ASTM A105 (For Non-Gujarat)
		Piston Valve: ASTM A105 (For Gujarat)
7	Pneumatically Actuated On-Off Valve with Solenoid Valve & AFR	Ball Valve: ASTM A105 (For Non-Gujarat)
		FM Globe Valve: ASTM A216 Gr. WCB (For Gujarat)
8	Manual Blowdown Valve	ASTM A216 Gr. WCB
9	Pipes	ASTM A106 Gr. B
10	Flanges	ASTM A105

Cable Length:
5 meter (default), 10 meter (optional extra), 30 meter (optional extra for Effimax)

Sizes:

Size	Description	Location
DN 25	DN 25 Boiler Bottom Blowdown piping with Manual Blowdown Valve & DN15 Top Piping with On- Off Ball Valve	Non-Gujarat Area
DN 40	DN40 Boiler Bottom Blowdown piping with Manual Blowdown Valve & DN15 Top Piping with On-Off Ball Valve	
DN 50	DN50 Boiler Bottom Blowdown piping with Manual Blowdown Valve & DN15 Top Piping with On- Off Ball Valve	
DN 25	DN 25 Boiler Bottom Blowdown piping with Manual Blowdown Valve & DN15 Top Piping with On- Off FM Globe Valve	Gujarat Area
DN 40	DN40 Boiler Bottom Blowdown piping with Manual Blowdown Valve & DN15 Top Piping with On-Off FM Globe Valve	
DN 50	DN50 Boiler Bottom Blowdown piping with Manual Blowdown Valve & DN15 Top Piping with On- Off FM Globe Valve	

Product Specifications

Mechanical :

- Maximum Operating Pressure : 31 barg
- Maximum Operating Temperature : 238° C
- Cold Hydraulic Test Pressure: 47 barg
- Maximum Operating Temperature : 0° C
- Instrument Air Supply : 4 to 6 barg

Electrical

- Power Supply: 110 or 230 VAC (+10%, -15%) 50/60 Hz (Factory set). (Pls specify in order)

Measurement

- TDS Range: 700 – 7000 ppm, Resolution: 10 ppm
- Temperature Range: 0 – 238 °C, Resolution: 0.1 °C

Features and Benefits:

- Reduced operating costs (less feedwater consumption; chemical treatment and higher heating efficiency)
- Reduced maintenance and repair costs (minimized carryover and deposits)
- Cleaner and more efficient steam
- Minimize energy loss from boiler blowdown
- Compact and complete boiler blowdown control solution
- High quality components requiring low maintenance
- Forbes Marshall everSENSE for automatic data logging (optional extra)

How to Order

Example:

1. For Non-Gujarat Area:

BBCS with DN40 Boiler Bottom Blowdown piping with Manual Blowdown Valve & DN15 Top piping with **On-Off Ball Valve**, BBCS 485 Controller, Sensor HTCS K=1, Sensor Cable 5 Meters, flanged to ASME B16.5, CL 300, Power Supply 230V AC / 50 Hz.

1. For Gujarat Area:

BBCS with DN50 Boiler Bottom Blowdown piping with Manual Blowdown Valve & DN15 Top piping with **On-Off FM Globe Valve**, BBCS 485 Controller, Sensor HTCS K=1, Sensor Cable 5 Meters, flanged to ASME B16.5, CL 300, Power Supply 230V AC / 50 Hz.

Available Spares

Refer BBCS Installation & Maintenance manual for spares.

How to order spares

Order spares as per code no. specified in the user manual

Piping Work:

All piping work is accurately sized for boiler bottom blowdown application and is fabricated using modern welding techniques, IBR approved welders and qualified welding procedures.

Safety information:

The products used in BBCS Assembly are designed and constructed to withstand the forces encountered during normal use.

Use of the product for any purpose other than TDS control use could cause damage to the product and may cause injury or fatality to the personnel.

Installation:

Refer Technical Information Sheet of BBCS Sensor HTCS K=1, Installation & Maintenance Manual of BBCS 485 Controller and BBCS Unit.



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