SECTION 23 53 00

BLOWDOWN SEPARATOR

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Blowdown Separator

1.2 REFERENCES

A. American Society of Mechanical Engineers (ASME):

1. BPVC Section VIII, Division 1 – Design and Fabrication of Pressure Vessels
2. B31.1 - Power Piping

1.3 SUBMITTALS

A. Submittals shall include:

1. Product Data: Full product description including all accessories and control settings.
2. Drawings: Submit general arrangement drawing; including dimensions, weights and ratings, wiring diagrams, and all other shop related drawings.
3. Include materials of construction of major pressure vessel parts and fittings.
4. Controls Cutsheet: Submit complete set of cutsheets for trims and controls.
5. Rigging instruction: Submit detailed instructions on manufacturers recommended lifting and unloading procedures.
6. Warranty: Submit standard form equipment warranty.

B. Closeout Submittals:

1. Operation and Maintenance Data: Submit manufacturer's descriptive literature, operating instructions, cleaning procedures, recommended spare parts list, and maintenance and repair information.
2. Manufacturer's Installation Instructions: Submit assembly, support details, connection requirements, and include start-up instructions.
3. Test Reports: Indicate Blowdown Separator meets or exceed specified performance and efficiency.
4. ASME Data Reports: Submit code paperwork required for field acceptance.

1.4 QUALITY ASSURANCE

A. The packaged blowdown separator must receive factory tests to check the construction and operation of the unit.
B. Allow witnessing of factory inspections and tests at manufacturer’s test facility.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Cover all openings, leave drain valves in open position,

B. Off load blowdown separator in accordance with rigging instructions.

1.6 WARRANTY

A. All equipment is to be guaranteed against defects in workmanship and materials for a period of 12 months from date the equipment is first placed in use, or 18 months from date of completion; whichever shall be less.

PART 2 – PRODUCTS

2.1 BLOWDOWN SEPARATOR

A. Type: Blowdown Separator (BDS) shall be designed to receive the boiler blowdown water, reduce it to atmospheric pressure, and cool it before releasing it for safe disposal.

B. Construction:
   1. Codes: Comply with ASME BPVC Section VIII, Division 1 and all other applicable sections of the current edition of the ASME code.
   2. The ASME Section VIII, Div. 1 vessel is to be made of 0.25" thick minimum pipe and 2:1 ASME code elliptical heads 0.25" thick minimum and stamped per the ASME Boiler and Pressure Vessel Code for 150 PSIG working pressure.
   3. The separator shell shall receive National Board stamping and “U” symbol.
   4. The BDS shall have a 11-gauge, 304 stainless steel strike plate at the point of inlet impingement.
   5. Floor stand: There shall be three (3) 2” x 2” angle iron support legs with 3 3/8” diameter leg pads. Leg pads shall have a 5/8” diameter hole for bolt down installation.
      a. The floor stand shall elevate the BDS to provide adequate height for aftercooler and discharge connection.

C. Connections:

1. The inlet connection shall be NPT.
2. The vent size shall be 150# flanged.
3. The drain shall be 150 # flanged. The drain shall be connected to the aftercooler.
4. There shall be two (2) inspection ports.
5. Aftercooler connections:
    a. The discharge connection shall be flanged.
    b. The water connection shall be NPT.
    c. There shall be a 1" temperature bulb connection.
    d. There shall be a ½" temperature gauge connection.

2.2 BLOWDOWN SEPARATOR TRIM

A. The following items shall be integral to the blowdown separator: Aftercooler:

1. Provide a Watson McDaniel W91 self-operating temperature regulating valve.
    a. Connection: 2" NPT
    b. Maximum inlet pressure: 250 PSIG
    c. Body: Cast Iron
    d. Housing: Die-cast aluminum, epoxy powder coated grey finish
    e. Fully Enclosed Bellows: High-pressure brass, corrosion resistant, tin plated finish.
    f. 8 ft. copper capillary with 316 SST armor
    g. Range: 155 to 255 F
        1. Temperature over-range protection: protects thermal system from damage up to 100F over high limit of range.
2. Provide a Nibco T-453B Check Valve.
    a. Type: Horizontal swing, regrinding type check valve.
    b. Body: Bronze ASTM B 61
3. Provide a Grinnell 171N shutoff valve.
    a. Body: Brass, ASTM B124, Alloy C37700

b. Ball: Brass, ASTM B124, Alloy C37700 chrome plated

4. Provide a Keckley Style B strainer.
   a. Type: Y-strainer
   b. Construction: Cast Iron (ASTM A 126, Class B)
5. Provide a Precision B3B6 temperature gauge.
   a. Type: bimetal thermometer
   b. Range: 0-250 F
   c. Accuracy: +/- 1% of full scale.
   d. 3” dial with 6” stem.

END OF SECTION