

## 1. CODE REQUIREMENTS

- A. The Packaged Unfired Hot Water Generator(s), its installation, and all equipment associated with the operation of the unit(s) shall comply with all applicable codes. The Contractor is cautioned that all aspects of the installation shall meet the requirements of: ASME latest revision, The National Electrical Code (NEC), Local Authorities Codes.
- B. The installation and any modifications shall be in accordance with the practices recommended by the American Society of Heating, Refrigeration, and Air Conditioning Engineers.
- C. Unit(s) shall be ASME code constructed and stamped in accordance with Section VIII, Division 1.
- D. Unfired Hot Water Generator(s) shall be registered with the National Board of Boiler and Pressure Vessel Inspectors, and signed copy of shop inspection report shall be furnished.

## 2. PERFORMANCE

- A. Furnish and install The Alstrom Corporation Series "ASH" Horizontal (Vertical) Model \_\_\_\_\_ Packaged Unfired Hot Water Generator(s), to heat \_\_\_\_\_ GPM water from \_\_\_\_\_ deg F to \_\_\_\_\_ deg F using High Temperature Liquid, entering @ \_\_\_\_\_ psig and \_\_\_\_\_ deg F in the tubes, \_\_\_\_\_ psig pressure drop in the tube bundle.
- B. Design pressure and temperature:  

Tube and tank side \_\_\_\_\_ psig, \_\_\_\_\_ deg F.  
Shell of heat exchanger side \_\_\_\_\_ psig, \_\_\_\_\_ deg F.
- C. The tank shall be \_\_\_\_\_ " x \_\_\_\_\_ " and shall contain \_\_\_\_\_ gallons of water.

## 3. GENERAL DESIGN

- A. Unfired Hot Water Generator(s) shall be furnished as a complete package ready for installation including all necessary components for operation.

**Unfired Hot Water Generator Series "ASH"  
Suggested Specification  
- Heating Medium - High Temp. Liquid -**

- B.** Unit(s) shall have tube bundle with 316L stainless steel tubes expanded into and seal welded to 304 stainless steel tube sheet with fabricated carbon steel head and confined metallic gasket. Generator(s) with not seal welded tube bundle will be not accepted.
- C.** Each tube bundle shall be capable of being disassembled and removed for inspection and service without breaking water connection and without draining the water from the tank.
- D.** Tube bundle shall have stainless shell (when the consumption of hot water stops, the heat losses are compensated by natural convection heat transfer between the external surface of the heat exchanger's shell and stored water). Head and shell of heat exchangers shell have #300 flanges.
- E.** Unfired Hot Water Generator(s) vessel shall be 316L stainless steel and shall be constructed with a flanged stainless steel supply connection. The vessel shall be supplied with lifting lugs.
- F.** All Unfired Hot Water Generator(s) components subject to the generated Hot Water side shall be of stainless steel construction. Component piping on generated Hot Water side shall be stainless steel or bronze.
- G.** Unit(s) shall have re-circulating line with check valve. The heated water is circulating between the heat exchanger and the storage tank by natural convection, eliminating the need for re-circulating pump.
- H.** Unfired Hot Water Generator(s) shall be equipped also with check valves on cold water inlet and hot water return lines.
- I.** Field piping of supplied water to the unit's valve and venting from the unit shall be the responsibility of the contractor in the field.
- J.** Unfired Hot Water Generator(s) shall be factory mounted, wired, piped, and hydrostatically tested prior to the shipment.
- K.** Hot Water Generator shall be furnished with 2" fiberglass thermal insulation and enameled metal not less than 20ga jacket, and mounted on a suitable support skid, which shall be permanently welded to the shell. A label on the generator should indicate compliance.

#### **4. CONTROLS AND ACCESSORIES:**

- A.** Unfired Clean Steam Generator(s) shall be furnished with:
  - Modulating Temperature 3-way control valve with self acting control system.

- Swing check valves
- High Temperature liquid Temperature and Pressure Gauge
- Well for temperature regulator
- Hot water pressure gauge 4"
- Pressure Relief Valve (or P&T Relief Valve-Optional)
- Air Vent
- Drain and Blow-off Valve
- Hot Water Thermometer with well
- Circulating Line Gate Valves
- By-Pass Gate Valve
- Tube Side Drain Valve (Optional)
- Cold Water Strainer
- High Temperature Liquid Strainer (Optional)
- Manhole ( Optional)
- Tempering valve plus aquastat and solenoid valve (Optional for stores water above 140 deg. F.)

## **5. QUALITY ASSURANCE**

- A.** All equipment or components of this specification section shall meet or exceed the requirements and quality of the items herein specified, or as denoted on the drawings.
- B.** Ensure equipment pressure ratings are at least equal to system's maximum operating pressure at point where installed, but not less than specified.
- C.** Equipment manufacturer shall be a company specializing in manufacture, assembly, and field performance of provided equipment with a minimum of 5 years experience.
- D.** Equipment provider shall be responsible for providing certified equipment start-up and, when noted, an in the field certified training session. New equipment start-up shall be for the purpose of determining equipment operation.

## **6. WARRANTY**

- A.** In addition to one (1) year standard equipment warranty Manufacturer shall provide an extended (3) three year warranty for pressure vessel and tube bundle.