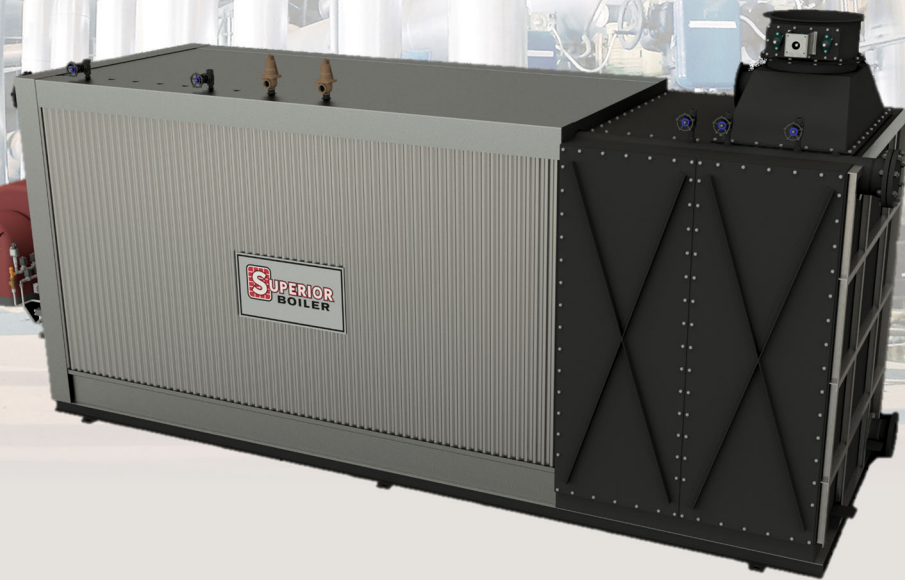




SUPERIOR BOILER

BUILT TO *OUTPERFORM*



HOT WATER GENERATOR



HOT WATER GENERATOR SPECIFICATIONS

This specification covers the requirements for an HWG-type water tube boiler with all the accessories and components that will meet the following project requirements:

Number of unit's	One
Model Number	00-HWG-000
Boiler Height	00' 0"
Boiler Width	00' 0"
Boiler Casing Length	00' 0"
Heat output	00.0 MM btu/hr
Water flow rate	00,000 PPH
Return temperature	000 ° F
Supply temperature	000 ° F
Thermal efficiency	00.0 %
Operating steam pressure	000 PSIG
Design pressure	000 PSIG
Plant elevation	<1000' ASL
Ambient temperature	70° F
Electric power available	460-3-60 (V/PH/HZ)
Fuel	Natural Gas/ #2 Fuel Oil
NOX emissions	- PPM*
CO emissions	- PPM*

*Emissions guaranteed to 4:1 turndown

The unit shall have the following minimum heating surfaces and furnace volume as shown below:

ASME Total Heating Surface 0,000 Sq. Ft.
ASME Radiant Heating Surface 0,000 Sq. Ft.
ASME Convection Heating Surface 0,000 Sq. Ft.
Furnace Volume 0,000 Cu. Ft.
Volumetric Heat Release Rate < 120,000 BTU / Cu. Ft. * Hr.

- a. Radiant Heating surfaces shall be calculated on a flat projected basis.
- b. Furnace volume shall be determined with the furnace limit being considered as not extending beyond the first row of water screen tubes. Furnace volume shall not extend beyond the center line of the lower drums.



GENERATOR

The boiler shall be a completely assembled HWG-type package water tube boiler that will be designed and constructed in strict accordance with the ASME Boiler and Pressure Vessel Code, Section I and registered with the National Board of Boiler and Pressure Vessel Inspectors.

The boiler will be assembled on a structural steel base frame that will be designed for expansion of the boiler in all directions without creating any stresses of the pressure parts.

Shop assembled HWG-type package boiler consisting of an upper and a lower header in a diagonally opposed configuration that are connected by series of boiler tubes properly bent to fit the designed configuration. The furnace shall be sized to ensure complete combustion of the fuel within the furnace proper and without flame impingement on the walls or tubes. The boiler gas outlet must be on the top to minimize the boiler footprint.

The furnace wall tubes shall be welded membrane construction. All membrane materials shall be a minimum of ¼" thick and no wider than 1". Membrane shall be attached to the boiler tubes by solid continuous seal welds on both sides of the tube.

There shall be a continuous gas tight seal between tube membranes of the upper and lower headers. This seal shall be designed to allow for proper expansion of the pressure parts without creating any cracking or distortions

The furnace wall tubes shall be a minimum of 2" OD (SA178A) with a wall thickness of no less than 0.120" MW. These tubes shall be arranged on 4-1/8" centers with 1" steel bar membranes on each tube. All convection tube return bends shall be outside of the flue gas path. Swaged tubes are not allowed.

The furnace front wall should have minimum of 10" thick pyro block insulation and the rear wall with minimum 6" thick mineral wool insulation attached to 3/8" thick plate. Designs offering a ring header on the front wall will not be accepted. Boilers that have a refractory front wall design are not acceptable.

All tube-to-header connections shall be welded. Expanded connections are not allowed

The convection section of the generator shall consist of bare and finned tubes with a minimum diameter of 2" OD (SA178A) and with a wall thickness of no less than 105" MW. The convection tubes shall be allowed to expand and contract as necessary to avoid thermal shock.

The boiler headers shall be SA106-GrB material and the diameter shall not be less than 00" OD with 0.00" minimum thickness. Both upper and lower header ends shall have flanged connections for inspection and maintenance.



The upper header must have the following connection for accessories as a minimum:

- Safety relief valve or valves
- Vent valve
- Low water cut off
- Low flow shut off
- High High temperature shut off
- High temperature shut off
- Temperature gauge
- Pressure gauge

The lower header will be fitted with drain connections.

The following is a list of boiler trim that is to be supplied and mounted on the boiler as much as possible or shipped loose for field mounting due to shipping constraints.

- Safety relief valves
- Vent valve
- Low water probes
- Low water cutoff probe
- Temperature gauge
- Pressure gauge
- Flow switch

The boiler will be assembled in a complete gas tight enclosure. Refractory use will be minimized.

The boiler side walls, floor, and roof will be fully insulated with a minimum of 4" of mineral wool or fiberglass insulation. The convection section of the boiler shall have removable access doors on either side of the boiler for tube inspection and maintenance.

The outside casing shall be 26-gauge box rib galvanized sheets.

There shall be one (1) access door 12" x 12", minimum size, to be located on the front wall of the boiler this door shall be a bolted style with insulation on the inside and arranged for a gas tight seal.

The generator must be purpose-built for the supply of hot water and not a modified steam generator designed to create high temperature hot water. All tube to header connections must be welded and not rolled. The use of an external economizer to achieve the specified efficiencies is strictly prohibited.

The boiler pressure parts shall be subject to a hydrostatic pressure test equal to 1½ times the design work steam pressure and in full accordance with the ASME Boiler and Pressure Vessel code. This test must be witnessed by a qualified inspector registered with the National Board of Boiler and Pressure Vessel Inspection. This inspector shall sign all the boiler manufactured code documents certifying that the pressure test has met all the stated code requirements.