

# Endurance Hydronic Boilers

Date:

Bid Date:

Project #:

Location:

Project Name:

Engineer:

Model EDN 0175

Contractor:

Prepared By:

## **Specification**

1. Contractor shall supply and install one (1) or more Laars Heating Systems, non-ferrous hydronic heating boiler(s).
2. Boiler(s) shall be Laars Heating Systems, Endurance, Model No. EDN 175, fully modulating, sealed combustion, low mass, Direct Vent (concentric vent) or sealed vent boiler(s) with a modulating input of between 102.9 MBTU/Hr (30.1 kW) and 175.3 MBTU/Hr (51.4 kW) and have an efficiency of 86.1 % AFUE. Boiler(s) shall conform to ANSI Z21.13 – Current Edition, “Gas-Fired Low Pressure Steam and Hot Water Boilers” and be designed and constructed in accordance with the “ASME Boiler & Pressure Vessel Code, Sections II, IV and IX”.
3. Boiler(s) water tube heat exchanger shall be a cylindrical tube design with eight (8) tubes. The tubes shall be 0.420” inside diameter integral finned copper tubes with 11 extruded fins per inch. The tubes shall be brazed directly into ASME bronze headers rated at 30 psi and hydrostatically tested to 60 psi. This heat exchanger shall be mounted in a sealed combustion chamber constructed of 409 stainless steel.
4. Boiler(s) combustion system shall be pre-mixed, forced draft, combustion and contain a variable speed fan, stainless steel burner, negative pressure regulated gas valve and hot surface igniter with independent flame sensing electrode.
5. An on-board PID controller shall use thermistors to sense various water temperatures. The controller shall modulate the fan based on the temperatures and the setpoint, which will modulate the gas input to better match the BTU/hr output requirements.
6. The boiler(s) shall have a NOx level of less than 25ppm.
7. Boiler(s) shall be capable of being Direct Vented. When Direct Vented it shall be with a concentric, 3" Ø, AL29-4C stainless steel vent pipe inside a 5" Ø, 409 stainless steel combustion air duct (Max. length - 15 linear feet with 3 sets of elbows). Alternate venting shall be permitted with a 3" Ø, AL29-4C stainless steel vent pipe (Max. length - 50 equivalent feet), with combustion air entering the boiler either through a separate, non-concentric, 4 or 5" Ø duct or directly into the boiler through the 5" Ø collar at the top of the jacket. All vent pipe attached to the boiler(s) shall be certified to UL 1738/ULC-S636.
8. The boiler(s) shall have a 3-character alphanumeric display of temperatures and fault codes. Displayed temperatures shall be supply water, return water, heat exchanger water temperature rise, outdoor air temperature (when outdoor reset is used), and calculated setpoint (when outdoor reset is used). Displayed fault codes shall be for supply sensor, return sensor, outdoor air sensor (when outdoor reset is used), internal control, and boiler lockout. Temperature control LED's shall indicate pump energized, attempt to ignite and gas valve energized. Ignition control LED's shall indicate erroneous flame signal, internal control error and ignition control lockout.
9. The boiler shall have the ability to reset the boiler temperature based on outside air temperature, but shall keep the boiler temperature high enough at all times to keep the unit in non-condensing operation.
10. Boiler(s) shall have an internal bronze circulating pump, stainless steel mixing chamber and a non-ferrous thermostatic union that prevents internal condensing. Internal waterways shall be non-ferrous. The boiler control shall aid in freeze protection by attempting to run the boiler pump for 5 minutes if the control senses supply water temperature below 39°F (4°C). The boiler shall also provide a pump exerciser to energize the internal pump when the boiler has not called the pump to run in a user-selected amount of time.
11. Boiler(s) shall be design certified for installation directly on a combustible floor (except carpeting) with 1" clearance from combustibles from all four (4) sides. Clearance from combustibles for the vent shall be 0" when Direct Vented with concentric system.
12. Boiler(s) outer jacket shall be finished with a textured epoxy finish.
13. Boiler(s) shall have a twenty-(20) year limited warranty.