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| C:\Users\colleen.johnson\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\QUO8XSCY\N-HTP-Logo.gif | Advanced Heating and Hot Water Systems | **Guide Specification Sheet** |
| 272 Duchaine Blvd ∙ New Bedford, MA 02745508-763-8071 ∙ Fax: 508-763-3769 | **Enduro TI Commercial Boiler** ®**Model # ETI-750 /ETI-1000** |

The boiler shall be an HTP, Inc. model , having a modulation input range of Btu/Hr, and shall operate on Natural gas. The boiler shall be capable of full modulation firing down to 10 percent of rated input with a turndown ratio of 10 to 1.

The boiler heat exchanger shall be certified and stamped for 80 PSI, and be National Board Listed. There shall be no banding material, bolts, gaskets, or “O” rings in the header configuration. The combustion side of the heat exchanger shall be constructed of ASTM A240 316Ti titanium stabilized stainless steel. The water side of the heat exchanger is constructed of high grade carbon steel. The combustion chamber shall be designed for reverse flame operation. The primary chamber has a stainless steel insert tube to transfer the energy into the secondary section of the heat exchanger before entering the third section of the heat exchanger where the last bit of energy is consumed and condensation from the exhaust gas is collected before exiting the flue. The complete heat exchanger assembly shall have a ten (10) year limited warranty.

The boiler shall be certified and listed by ETL under the latest edition of the harmonized ANSI Z21.13 test standard for the US and Canada. The boiler shall comply with the energy efficiency requirements of the latest edition of the ASHRAE 90.1 Standard and the minimum efficiency requirements of the latest edition of the BTS-2000. The boiler shall operate at a minimum of **92%** thermal efficiency. The boiler shall be certified for indoor installation.

The boiler shall be constructed with a heavy gauge steel jacket assembly, primed and pre-painted on both sides. The boiler jacket shall afford easy access to all components through easily removable access doors to facilitate service of all components. The combustion chamber shall be sealed and completely enclosed, independent of the outer jacket assembly, so that integrity of the outer jacket does not affect a proper seal. The combustion chamber shall have a hinged door which will allow access to the primary combustion and burner assembly for easy service access. A burner/flame observation port shall be provided to view the flame quality. The burner is constructed of **high grade Inconel metal fiber** and features an inward firing premix design. The burner shall be supplied with a gas valve designed with negative pressure regulation and be equipped with a variable speed blower and modulating outlet valve system to precisely control the fuel/air mixture to provide very high turndown ratios and modulate boiler firing rates for maximum efficiency. The combustion system will operate safely at gas pressures ranging from 3 ½” to 14” water column.

The control customer connection board shall be equipped with two screw type terminal strips. One of the terminal strips is designated for low voltage connections, including thermostat, DHW sensor/thermostat or system sensor, outdoor sensor, and 0-10VDC input signals. The other terminal strip is designated for 120 volt connections for incoming power, central heat (CH) and DHW (indirect water heater) pump operation and alarm/system pump operation. The pump outputs are 3 amp fuse protected. The control cabinet will also include two RJ-45 style jacks for cascade communication bus wiring using CAT 5 or CAT 3 cables. All of these connections and fuses are accessed from the outside of the boiler by removing an access door. The electrical supply shall be 120/60/1. Two additional electrical connections are provided internal to the boiler cabinet for the connection of optional high and low gas pressure switches. The boiler comes equipped with a certified UL-353 low water cut off (LWCO) safety with manual reset.

The boiler shall utilize a 120 VAC control circuit and components. The control system shall have an LED display for boiler setup, boiler status, and boiler diagnostics. All components shall be easily accessed and serviceable from the front, right, and left sides of the jacket. The boiler shall be supplied with a temperature/pressure gauge, optional high limit temperature control with manual reset, ASME certified pressure relief valve, outlet water temperature sensor, return water temperature sensor, blocked vent pressure switch, flue temperature sensor, built-in freeze protection, and a UL 353 LWCO. The boiler shall also be equipped with an outdoor temperature reset function.

The boiler shall include an ON/OFF power switch and feature the 928 intelligent control system with digital LED display and LED status indicators for System Pump, DHW Pump, Boiler Pump, Flame On, and Fault Indication. Pump operation and the combustion system can be manually operated to assist the installer in system commissioning. The control will have password protection for the installer to set limits and configure outdoor reset. The control will have freeze protection (which can be disabled for snowmelt applications), outdoor reset, indirect priority with operation time limits, and a 0-10V DC input for building management system (i.e. programmable to control either boiler temperature or firing). The boiler control is equipped for sequencing up to eight boilers for greater system turndown and system backup.

The boiler shall have a condensate collection system equipped with a pressure switch which will protect the boiler from condensate backing up into the combustion chamber.

The boiler will have a sealed combustion system, taking outside air for combustion and exhausting the flue gas with a stainless steel adapter for 6” Category IV Stainless Steel, PVC CPVC, or Polypropylene. The boiler's total combined equivalent vent length, including fitting allowances for both intake and exhaust, shall not exceed 140 feet. The exhaust vent connection shall be located on the back of the boiler. The intake vent connection shall be located on the front of the boiler.

The boiler can be vented in many methods, including:

**Horizontal Venting** shall be done as a balanced system only. Both intake and exhaust must terminate on the same side of the building.

**Vertical Venting** shall be done either as a balanced or unbalanced system. An unbalanced system shall ONLY be allowed when the exhaust is installed vertically and the intake horizontally. Both exhaust and intake must remain within the boiler’s combined equivalent length.

**Indoor Combustion Venting from a Confined or Unconfined Space** – Where the exhaust runs vertically and combustion air is drawn either from the mechanical room or from outdoors.

Adequate combustion air must be supplied when drawing air from the mechanical room. Avoid the room contaminates listed in the installation manual. (Refer to installation manual venting section for additional venting requirements.)

**CAUTION: Foam core pipe is NOT an approved material for either intake or exhaust piping.**

The boiler shall operate at altitudes up to 4500 feet above sea level without additional parts or adjustment.

The manufacturer shall verify proper operation of the burner, the combustion and control systems, as well as all related safety functions, to ensure the boiler will operate based on its designed parameters before shipping. Complete operating and installation instructions shall be furnished with every heater as packaged by the manufacturer for shipping.

Maximum unit dimensions shall be length inches, width inches and height inches. Maximum unit weight shall be pounds.

**NOTE:** **Due to variations in CSD-1 requirements from state to state, please consult with the factory for all controls required in your jurisdiction.**

**NOTE:** HTP reserves the right to make product changes or updates without notice and will not be held liable for typographical errors in literature.