Guide Specification

Alliance Model FT _____ – HC

BTU/Hr Input _____ Fired _____

Fulton Fuel-Fired Alliance Horizontal Coil Design Thermal Fluid Heat Transfer Systems

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Section I. General Description

Contractor shall furnish and install a_____ fired _____BTU/Hr thermal fluid heat transfer system. The system shall be "Fulton" as manufactured by Fulton Thermal Corporation, Pulaski, New York.

The system shall be a complete package including a vertical coil design type heater; combination expansion deaerator thermal buffer tank to allow for expansion of thermal fluid during heat up to operating temperature and to prevent oxidation of the thermal fluid during operation, even when tank is vented to atmosphere; for operating temperatures up to 650°F complete with instrumentation and controls as specified in Section III. Flanged inlet and outlet shall be located at the front of the unit.

Section II. Heater Size and Operating Temperature

The heater net input shall not exceed _____ BTU/Hr. while producing a minimum of _____ BTU/Hr. output as measured at the thermal fluid outlet. The heater shall be supplied complete with control panel and all required safety devices for a maximum operating temperature of _____°F (standard 650°F max). It shall have a flow rate of _____GPM and a motor voltage of _____ with a control voltage of _____.

Section III. Heater Design

The heater shall be of a horizontal, helical coil design and the pressure vessel coil construction shall be carbon steel ASME SA-106B, Schedule 40 or equal, with a design pressure of 200 PSI standard at 700°F. Heater will be per ASME Code Section VIII Division I stamped at 150 PSIG MWP trimmed at 100 PSI unless otherwise specified. Test pressure will be per ASME Code Section VIII Division I. It shall be completely factory piped, wired, and tested.*

The heater shell is insulated using a ceramic fiber blanket insulation. The shell is welded steel construction with an integrated floor plate, bolted back door, bolt on access door (on larger heaters) for inner chamber inspection, and observation port for viewing the burner flame pattern.

The following instrumentation/controls/safety devices shall be supplied as a minimum requirement: **

A. High temperature safety switch interlock at heater outlet shutdown and alarm signal at terminal strip - Yokogawa
B. Heater operation interlock with circulation pump
C. Low differential pressure switch to shut down the pump and heater due to a low flow condition - U.E.
D. Thermal fluid temperature control
E. High System Pressure Switch for Complete Shutdown - Danfoss
F. Low System Pressure Switch for Complete Shutdown – Danfoss
G. Expansion Tank Low Level Switch for Shutdown – Square D
H. Heater Outlet Pressure Gauge - by Fulton
I. Heater Inlet Pressure Gauge - by Fulton
J. Pump Supply (Vacuum) Gauge - by Fulton
K. Flame safety relay
L. Magnetic starters for burner and pump motors
M. Three Position Selector Switch: Off/Pump On/Heater On
N. Four Indicating Lights:
    1. Pressure & Flow
    2. Pilot
    3. Main Flame
    4. Alarm
O. ASME Certified Safety Relief Valve-Kunkle Model 910
P. Non-fused disconnect
Q. Single source power connection

*** Units may be built and stamped to ASME Code Section I upon request.**

**** Controls/Instrumentation brands may be different for NEMA 4 or hazardous duty applications.**

Section IV. Burner

The burner shall be manufactured by _____. The burner shall be forced draft and shall be an integral part of the heater, but designed for easy removal and maintenance. Burner control method shall be modulation. Burner control shall be completely automatic, including flame supervision, fluid flow monitoring, and heater cycling.

Section V. Combination Expansion/Deaerator Thermal Buffer Tank Size

The combination expansion/deaerator thermal buffer tank shall have _____gallon capacity and be supplied complete with liquid level switch. It shall be suitable for a maximum total system fluid content of _____gallons, including heater and expansion/ deaerator tank capacities (based on a _____% expansion rate of the hot oil - to be verified by the client).

Section VI. Combination Expansion/Deaerator Thermal Buffer Tank Design

The combination expansion/deaerator thermal buffer tank will be constructed of carbon steel. It shall be supplied with expansion tank liquid level switch and 300# ANSI flanged connections. The tank may be built to ASME Code Section VIII Division I upon request.

Section VII. Thermal Fluid Circulating Pump Size

The thermal fluid circulating pump shall be air cooled with mechanical seal design for 650°F maximum operating temperature, _____GPM at _____PSI, _____HP motor, RPM motor, complete with motor starter, _____voltage. Water cooled pumps will be supplied upon request or for operating temperatures above 650°F.

Section VIII. Thermal Fluid Circulating Pump Design

The thermal fluid circulating pump shall be of centrifugal design, with a mechanical seal air cooled for temperatures up to 650°F or water cooled for operating temperatures above 650°F and shall be supplied complete with motor starter for proper motor HP, voltage and cycles.

Section IX. Tests

A. Shall include a hydrostatic test of the pressure vessel in the presence of an inspector having a National Board Commission. Inspector shall certify a Data Report which shall be delivered with the heater as evidence of ASME Code compliance. In addition to ASME symbol, the heater shall bear a National Board Registration Number.
B. Full electrical checks will be performed including testing of all controls and circuitry.
C. Test fire with combustion check.

Section X. Operating Manual

A. Instructions for installation, operation, and maintenance of the heat transfer system shall be contained in a manual provided with each unit.
B. A complete wiring diagram, corresponding to the equipment supplied, shall be included inside the heater's panel box.

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