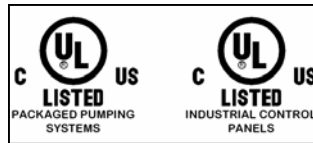


**Model #
HTS-ITC**

Heat Transfer System w/ Integrated Temperature Control



TYPICAL SPECIFICATIONS

Steam Pressure	2 to 150 psig
Hot Water Temperature	50 to 240 deg F
Standard System Flow Rate	5 to 3000 GPM
Standard Power	460 V (Other Voltages Available)
Dimensions	Based Upon Customer Requirements
Working Pressure	100 to 150 psig (6.8 to 10.2 barg)
Working Temperature	< 300 deg F (< 149 deg C)

EnviroSep HTS-ITC, Heat Transfer System with Integrated Temperature Control is a UL-Listed, ready-to-install system used in conventional building hydronic heating systems which utilizes steam as the heating source. This system is fully equipped with all of the standard features of the **Model HTS**, with the addition of Steam Control Valves and Pressure Reducing Valves, if required. Providing accurate, local control Heating Hot Water Temperature, the **Model HTS-ITC** utilizes pilot-operated or pneumatically-actuated microprocessor based control assemblies. Optional Remote Temperature Control for BAS integration is available for any protocol. The **Model HTS-ITC** is manufactured per ASME Section IX Codes and Standards, and full operational tests are conducted prior to shipment resulting in problem-free system start-ups for mechanical contractors and building owners. An ASME PP-stamp may be added for industrial applications.

Standard Features:

- ASME, Shell & Tube Heat Exchanger - U-tube, with U-stamp
- Base-mounted, End-suction Pumps
- Vortex Air Separator, with Auto Air Vent
- Bladder Expansion/Compression Tank
- Triple Duty Valves & Suction Diffusers
- UL Listed NEMA 12 Industrial Control Panel
- Float & Thermostatic Steam Trap
- Pilot-operated, Motor-operated, or Pneumatic-operated Control Valves
- Make-up Water Assembly, with Safety Relief Valve
- Microprocessor based Temperature Controller
- ASME Section IX Welding



Options:

- PLC System Controller w/ Touch Screen
- NEMA 7/9 Explosion-proof Rating
- Flexible Pump Connectors
- Seismic or Vibration Isolators
- Plate & Frame Heat Exchangers
- Vertical Inline Centrifugal Pumps
- Combination Air & Dirt Separator
- Specific Performance Criteria (Upon Request)



Unfired Pressure Vessels

Pressure Piping

EnviroSep

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Heat Transfer System Order Form

Specify the following parameters:

- | | |
|--|---|
| I. System Heat Load = _____ BTU/hr | V. Return Temperature = <u>160</u> °F |
| II. System Differential Pressure Required = _____ psid | VI. Supply Temperature = <u>180</u> °F |
| III. System Flow Rate = _____ GPM | VII. System Electrical = _____ V _____ Hz |
| IV. Steam Pressure (@ Control Valve) = _____ psig | VIII. System Volume = _____ Gal. |

Note: Tube-side medium assumed to be water, unless otherwise specified.

SYSTEM OPTIONS

Pneumatic-operated Steam Control Valve

- Electronic Positioner
- Pneumatic Positioner

Stand-by Pump

Steam Pressure Gauges

Steam Separator

Vacuum Breaker

Thermostatic Air Vent

Pump Suction Diffuser

Vertical In-line Pump

Split-coupled Vertical In-line Pump

Closed-coupled end-suction Centrifugal Pump

Auto standby pump start on lead pump failure

Auto Pump Alternation

Remote start connection

System drain valves

Flexible Connectors

Vibration Isolation

Digital Temperature Controller with PID Loop and Thermocouple

Remote Temperature Control

1/3 : 2/3 Control Valve arrangement for Variable loads

Control Valve Bypass and Isolation

Condensate Isolation and Check Valves

Condensate Y- Strainer

Single-pass Shell and Tube Heat Exchanger

Panel-mounted Differential Pressure Gauges

Pump Run-time Hour Meter

Outdoor-use Rating

Outdoor Cabinet

System Inlet/Outlet Isolation Valves

System Flow Switch

Differential Pressure Switch across Pump suction/discharge

Regardless of system size, temperature, pressure, fluid medium, or space requirements, *EnviroSep* can provide solutions to all specialized needs.



Typical Specifications for HTS-ITC

Furnish and install one *EnviroSep* Model HTS-ITC- [A] - [B] - [C] - [D] Heat Transfer System with the system capacity to heat _____ BTU/hr from 160 °F to 180 °F when _____ psig steam is available at the Control Valve.

KEY:

[A] = Model # (BTU/hr)
[B] = # of pumps (1,2,3,etc.)
[C] = Parallel (P) or Stand-by (S) pump designation
[D] = Manual (M) or Automatic (A) alternation for multiple pumps

GENERAL - This package shall be factory assembled with pump(s), heat exchanger, hydronic accessories, shell and tube heat exchanger, fabricated steel frame, interconnection piping(welded per ASME Section IX certified welders), UL-listed Industrial Control Panel factory wired for single-point field connection per NEC, (and including Condensate Steam Trap).

PUMPS-Pump(s) shall be single, end-suction type with radically split, top center-line discharge, self-venting casing. Pump construction shall be cast iron, bronze fitted and shall be fitted with a long-life, product lubricated, drip tight mechanical seal, with O-ring seat retainer. Impeller shaft to be 416SS fitted with a SS shaft sleeve and be supported by two heavy duty ball bearings. The design shall allow back pull out servicing, enabling the complete rotating assembly to be removed without disturbing casing piping connections. The pump shall be mounted on a rigid, single base plate and by flexible with guard to the motor. Seal shall be rated for continuous duty at 270°F, motor shall be open drip proof, NEMA MG-1 with 1.15 service factor

HEAT EXCHANGER - Heat exchanger shall be shell and tube type with removable tube bundle. Shell is carbon steel with cast iron heads and tube sheets. Tubes are ¾" OD copper. Unit is rated for 150 psig at 375 °F. Shell-side connections 4" and larger are 150 lb. ANSI flanges and all 3" and smaller are NPT connection. Unit shall carry U-1 form and have ASME stamp for 150 psig operation.

AIR REMOVAL EQUIPMENT- System shall include one tangential air separator with internal stainless steel collector tube. Connections to be flanged with a rating of 150 psig. System shall be equipped with ¾" Pressure Relief Valve, ¾" Pressure Regulating Valve, ASME Compression / Expansion Tank (sized by or provide system volume and temperature difference), and tank fitting, sight glass, and tank drain connections to tank.

TRIPLE DUTY VALVE- System shall include, on the discharge of each pump, a combination valve incorporating three functions in one body: tight shut-off, spring closure type silent non-slam check, and flow measured/throttling. Valve body shall be ductile iron

with two ¼" NPT connections on each side of the valve seat. The valve disc shall be bronze plug disc type with high impact engineered resin seat to ensure tight shut-off and silent check valve operation. Valve stem shall be SS with flat surfaces provided for adjustment with open end wrench.

SUCTION DIFFUSER- System shall include, on the suction of each pump a suction diffuser with cast iron body, outlet guide vanes and removable SS strainer.

CONTROL PANEL - System shall include one (1) UL - Listed, NEMA 12, Industrial Control Panel with single-point power connection, pre-wired to all electrical components. Panel shall have thru-the-door fused disconnect; magnetic circuit breaker supplementary motor protector with fast-closing contacts, non-reversing 3-pole contactor, and variable setting, bi-metallic overload relay for each motor; 30 mm Foundry-duty switches; 30 mm Corrosion Resistant pilot lights; control transformer; Automatic Alternator (if required). Operation of each pump shall be Hand-Off-Auto with external connection to terminal blocks. When standby pump(s) are used, the standby pump(s) shall manually/automatically (customer specified) start on primary pump failure. All internal wiring shall be placed in conduit.

STEAM TRAP - Steam trap shall be of the mechanical ball float type with cast iron body, NPT connections, and all stainless steel internals. A stainless steel balanced pressure thermostatic air vent shall be incorporated into the trap body withstanding 45 °F of superheat and resisting water-hammer without sustaining damage. Internals shall be serviceable without disturbing piping

PILOT-OPERATED STEAM CONTROL VALVE - The control valve shall be pilot-actuated, diaphragm-operated, and shall be single-seated, with hardened stainless steel trim and cast iron body. The pilot shall be bolted directly to the valve body and shall be removable without disturbing control connections. The temperature setting shall be adjustable and indicated on a calibrated dial. Temperature sensor shall be solid fill.

PNEUMATIC ACTUATED STEAM CONTROL VALVE - The control valve shall be pneumatically actuated with valve body constructed of cast iron and having stainless steel plug, seat, and stem. The pneumatic actuator shall be of the spring-closed design and shall have a fabric reinforced nitrile rubber diaphragm. Actuator yoke shall incorporate electro-pneumatic, intrinsically safe positioner requiring a 4-20 ma input signal, and compressed air connection for valve operation. The positioner shall compare the electrical signal from a controller with the valve position feedback to overcome varying differential pressure, stem friction, and diaphragm hysteresis.

MANUFACTURER - Shall assume system liability, and performance guarantee and warranty all equipment on system for 12 months after initial start-up.

