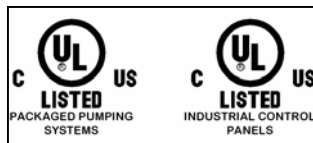


**Model #
HTS-VF**

Heat Transfer System Variable Flow



U Unfired Pressure Vessels
PP Pressure Piping

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-VF, Variable Flow Heat Transfer System provides significant *power savings* by automatically controlling pump(s) speed based on the actual building system demand. Typically, Differential Pressure Transmitters are placed across the building heating system zone loops, signaling the Variable Speed Controller to operate the pumps at the appropriate conditions to meet demand. The **Model HTS-VF** may be controlled by other system variables, such as Total System Load (BTU/hr), System Pressure, or System Temperature via a customized Controller. **Variable Frequency Drives** may be incorporated with Manual or Automatic Bypasses. A User-friendly, Color Touch Screen Operator Interface and Non-proprietary, PLC-based Controller is utilized for simple operation. The **Model HTS-VF** Controller may be furnished with Interface to any Building Management System. This fully integrated turn-key system speeds installation and start-up which provides significant, initial-investment savings to contractors, engineers, and building owners.

Standard Features:

- ASME, Shell & Tube Heat Exchanger - U-tube, with U-stamp
- Base-mounted, End-suction Pumps
- Variable Frequency Drives & Controller
- Differential Pressure Transmitters
- 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, if required



Model HTS-VF Savings

Pump Speed (%)	Potential Annual Savings	Pump Speed (%)	Potential Annual Savings
100	\$0	60	\$15,006
90	\$5,195	50	\$16,738
80	\$9,427	40	\$18,084
70	\$12,697	30	\$18,661

1. Savings are based on max. potential savings at max. pump capacity on 8600 hr/yr of continuous operation
2. Power Cost at \$ 0.12/kwh
3. Savings assume operation of One (1) 25 Hp Pump

Options:

- Internet Connectivity for Remote System Monitoring
- Interface w/ Building Management System
- NEMA 3R/4/4X Rating
- Seismic or Vibration Isolators
- Combination Air & Dirt Separator
- Specific Performance Criteria (Upon Request)

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Heat Transfer System Order Form

Specify the following parameters:

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

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

SYSTEM OPTIONS

HTS—Standard Heat Transfer System

HTS-ITC—Heat Transfer System w/ Integrated Temperature Control

HTS-NP—Heat Transfer System w/ Closed Loop Condensate Return

HTS-HWB—Heat Transfer System for Hot Water Boiler

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-VF

Furnish and install one *EnviroSep* Model HTS-VF- [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 radially 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

VARIABLE FREQUENCY DRIVE – Variable Frequency Drive shall be variable torque AC inverter enclosed in NEMA 1 or 12 enclosure. Standard features shall include circuit breaker disconnect, Hand-Off-Auto selector switch, manual potentiometer (speed pot), door-mounted keypad, run relay contacts, fault relay contacts, and top/bottom conduit entry. Drive bypass shall be provided as standard with Drive-Off-Bypass selector switch. Class 20 overloads are included.

SYSTEM CONTROLLER – Controller shall include all controls necessary to operate the system as a stand-alone system. The PLC-based controller shall be of the same manufacturer as the Packaged Pumping System. Controller shall include Remote/Local system start capability. Acceptance of up to 16 remote 4-20 ma signals shall be provided for modulation of pump speed, and other optional control functions. Enclosure shall be NEMA 12 with thru-the-door disconnect. Operator Interface shall be a color touch screen type. Controller shall include independent PID control loop for each remote signal.

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-POWERED CONDENSATE PUMP - Pump shall be low profile, steam-powered, operated by steam up to 125 psig, not requiring any electrical energy, and safe for use in flammable atmospheres. Body construction shall be cast iron or fabricated steel. The pump shall contain a float operated snap-action mechanism with no external seals or packing, stainless steel trim, and hardened bearing components. Pump shall include stainless steel Inlet and Outlet check valves, and gauge glass.

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.

