

# FLUID HEAT TRANSFER SYSTEMS

## RM 550 SERIES

### SPECIFICATIONS

- Electrically operated
- Temperatures to 550°F
- 20 to 240 Kw
- Centrifugal pump
- 150 lb. flanged construction
- 208 volts thru 575 volts, 3 phases
- NEMA 12, 4, or 7



### DESCRIPTION

The RM550 Series Fluid Heat Transfer System is designed for closed loop temperature control of common heat transfer fluids. The RM550 is a completely packaged system designed for a maximum operating temperature of 550°F. Standard units consist of an electric heater, centrifugal oil circulation pump with mechanical seal, thermal expansion tank (shipped separately), and a complete control center all mounted on a drip proof base. The unit is furnished completely wired, insulated, and factory tested prior to shipment. In addition to the standard models described in this brochure, the RM550 can be customized with a wide range of options, including systems designed for heating and cooling operations.

### FEATURES

- All welded construction
- Closed cell insulation
- Drip proof base under system
- Sheet metal panels on 3 sides and top of system
- Discharge pressure gauge
- Water cooled mechanical seal on pump
- Digital temperature controller
- High limit device with manual reset on heater circuit
- Expansion tank shipped loose for mounting at the highest point of the piping system
- Operating test of system prior to shipment



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# CONSTRUCTION FEATURES

## PIPING SYSTEM

The RM550 piping system is designed and constructed in accordance with the ASME B.31.1 Power Piping Code for high temperature oil piping systems. Piping consists of ASTM A106, Sch. 40 seamless carbon steel pipe with all welded fittings and 150 lb. pressure class ANSI flanged connections. All units include: 150lb. raised face flanged inlet and outlet ports, supply and return gate valves, return line strainer, fill/drain port, air bleed lines, and a supply pressure gauge. All hot fluid lines are insulated with closed cell foam glass insulation. The insulation is wrapped in glass mesh and coated with a liquid proof mastic to protect the insulation.

## EXPANSION TANK

The RM550 system is equipped with an expansion tank which must be mounted without piping restriction at the highest point in the piping system. The standard carbon steel tank is designed for atmospheric operation and is rated for a maximum blanket pressure of 15 psig. The tank comes equipped with a liquid level sight glass, vent line, 2" refill port, and sufficient auxiliary porting for a customer supplied inert blanketing system. The tank operates at ambient temperature and is piped to the suction side of the pump. Tanks are sized to be 1/4 full when cold and 3/4 full when the system is at operating temperature.

## PUMP

The standard RM550 system is equipped with a Dean Brothers centrifugal process pump, Model #DL202, designed to provide high flow rates at low operating pressures. This pump is designed for pumping heat transfer fluids at temperatures up to 550°F. The pump is equipped with a TEFC motor, mechanical seal, water cooled backhead, and seal flush line.

## HEATER

The RM550 system utilizes 150 lb. design, flanged circulation heater assemblies. The heater is constructed of "U" bend tubular heating elements welded into a flange. The elements have stainless steel sheaths with a heat flux of 20 watts/sq. in. Baffling is incorporated into the heater design to improve fluid velocities and heat transfer. Heater bussing is contained in a standard NEMA 12 terminal housing. Vertical orientation of the heater chamber reduces floor space requirements and allows for heater removal without draining all of the fluid from the system. All HEAT, Inc. flanged heaters carry a limited one year warranty.

## CONTROLS

All control centers are designed per the National Electric Code. Each control center includes: digital programmable temperature controller, high limit device with manual reset, main circuit breaker, individually fused heater circuits, fused motor starter circuit, control voltage transformer, power indicating lights, heater selector switches, and pump start/stop switches all mounted in a NEMA 12 enclosure.

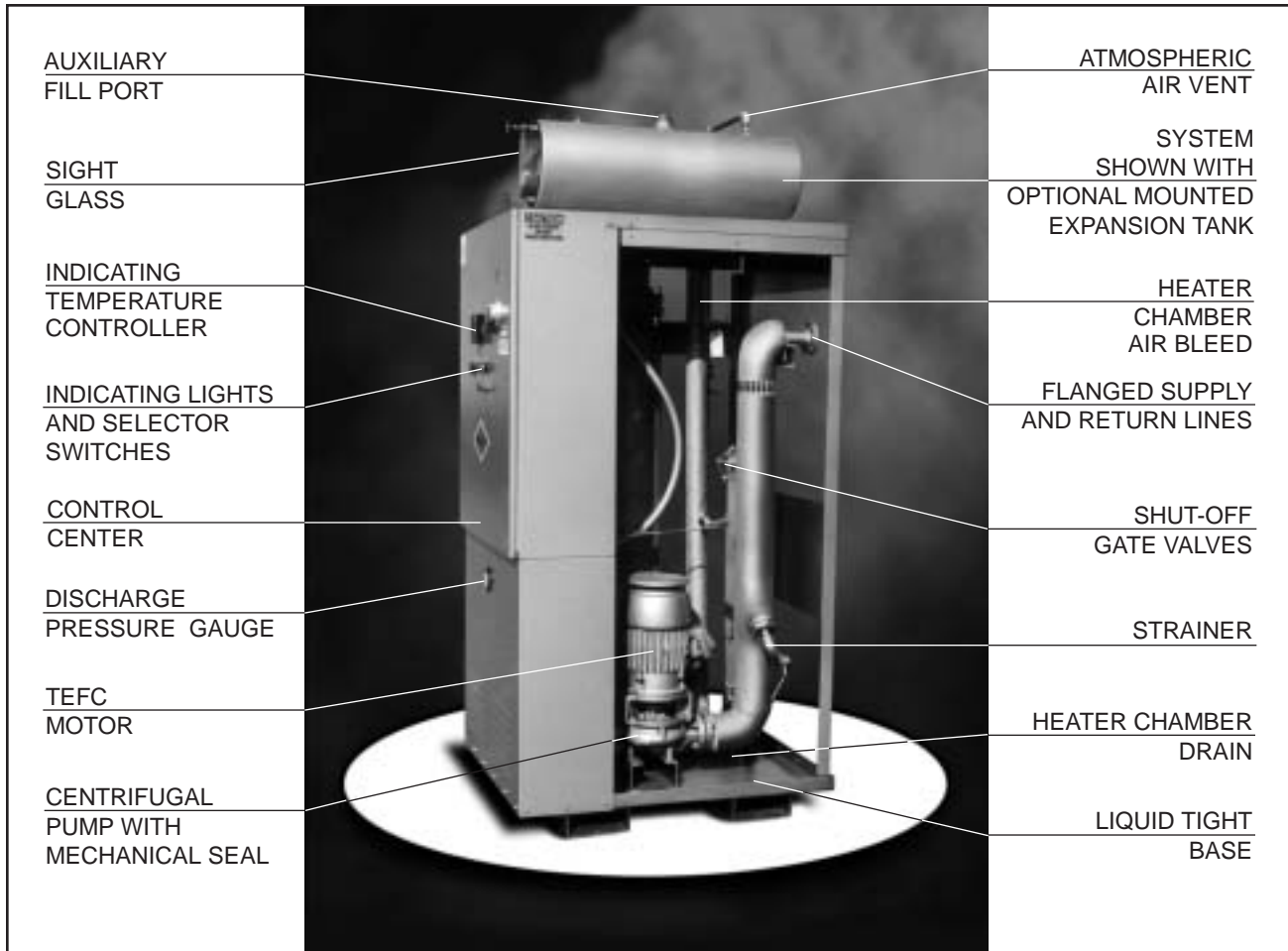
## GENERAL

The entire system is pre-wired and skid mounted on a drip proof base. Three sides of the unit are sheet metal enclosed with the back open for piping access. Self tapping hex screws allow the panels to be quickly removed for maintenance. Each system is fluid filled, energized, and fully tested at the factory prior to shipment. The customer is invited to the factory to witness the testing of their new equipment. The system is designed for minimum field installation, requiring only process piping and utility connections.

## APPLICATIONS

- REACTORS
- KETTLES
- DRYERS
- PLATENS
- MOLDS
- DIES
- EXTRUDERS
- TANKS
- EXCHANGERS
- LINE TRACING
- ROLLS
- PRESSES

# CONSTRUCTION FEATURES



AUXILIARY  
FILL PORT

SIGHT  
GLASS

INDICATING  
TEMPERATURE  
CONTROLLER

INDICATING LIGHTS  
AND SELECTOR  
SWITCHES

CONTROL  
CENTER

DISCHARGE  
PRESSURE GAUGE

TEFC  
MOTOR

CENTRIFUGAL  
PUMP WITH  
MECHANICAL SEAL

ATMOSPHERIC  
AIR VENT

SYSTEM  
SHOWN WITH  
OPTIONAL MOUNTED  
EXPANSION TANK

HEATER  
CHAMBER  
AIR BLEED

FLANGED SUPPLY  
AND RETURN LINES

SHUT-OFF  
GATE VALVES

STRAINER

HEATER CHAMBER  
DRAIN

LIQUID TIGHT  
BASE

# SAFETY FEATURES

- HIGH LIMIT DEVICE**  
This controller protects system by automatically shutting down power to the heater circuits in case of excessive temperature. Manual resetting is required.
- PUMP TO HEATER INTERLOCK**  
Control interlock between the motor starter and heater contactors prevents the heater from being activated when pump is not energized.
- THROUGH THE DOOR HANDLE**  
Handle interlock between the main circuit breaker and the enclosure door prevents door from being opened when power is on.
- CABINETY AND INSULATION**  
Protects operator and personnel from accidental contact with the high temperature surfaces of the system.
- NO BYPASS RELIEF VALVE REQUIRED**  
A centrifugal pump delivers high flow at predictable pressures. Unrestricted access between heater chamber and expansion tank through the pump eliminates need for bypass relief valve.

# RM 550 SERIES

## STANDARD MODELS

kW	BTU/Hr Output	Centrifugal Pump Data			Piping Connection (150# flange)	Expansion Tank		Overall Dimensions (inches)			Approx. Weight (lbs.)	Model No.
		gpm	hp	Total Delivery Head (feet**)		gal.	Line Size (in.)	W	D	H*		
20	68,280	20	5	146	1½	18	¾	36	42	78	1000	RM 550-20
30	102,420	30	5	145	1½	18	¾	36	42	78	1200	RM 550-30
40	136,560	40	5	144	1½	24	¾	36	42	78	1400	RM 550-40
60	204,840	60	5	138	2	30	¾	36	42	78	1500	RM 550-60
60	204,840	60	10	144	2	30	¾	36	42	78	1600	RM 550-60
80	273,120	80	5	124	2	30	¾	36	42	78	1600	RM 550-80
80	273,120	80	10	142	2	30	¾	36	42	78	1700	RM 550-80
100	341,400	100	10	138	3	40	1	36	42	78	1800	RM 550-100
120	409,680	120	10	136	3	40	1	36	42	78	1800	RM 550-120
140	477,960	140	10	130	3	60	1	48	48	78	1900	RM 550-140
160	546,240	160	10	124	3	60	1	48	48	78	1900	RM 550-160
180	614,520	160	10	124	3	60	1	48	48	78	2000	RM 550-180
200	682,200	160	10	124	3	80	1	48	48	78	2400	RM 550-200
240	819,360	160	10	124	3	80	1	48	48	78	2500	RM 550-240

\* Height dimension does not include expansion tank.  
 \*\* TDH (Ft.) = (psi x 2.31) / SG

## OPTIONS

**TOP MOUNTED EXPANSION TANK** is mounted on top of the system frame when remote mounting is undesirable. **Note:** Refer to service Manual SM-100 for additional information needed for reliable operation.

**LOW LEVEL FLUID ALARM**, which is mounted on the expansion tank, automatically shuts the system down and turns an alarm light "ON", if the expansion tank fluid drops below the desired level.

**HIGH PRESSURE ALARM** automatically shuts the system down and turns an alarm light "ON", if the system pressure rises above the desired level.

**HEAT TRANSFER FLUID LOW FLOW ALARM** automatically turns the heater "OFF" and turns an alarm light "ON" if the heat transfer fluid flow drops below the alarm limit.

**SCR POWER CONTROLLER** will proportionally control the heater output depending upon the difference between the actual temperature and the system controller set point.

### X OR Z PURGE FOR A HAZARDOUS AREA

Air purging is a less expensive method than using a cast NEMA-7 enclosures in a hazardous area. X purge is used in Division 1 areas. Z purge is used in Division 2 areas.

**ASME DESIGN & STAMP** the heating chambers and expansion tank can be stamped in accordance with the requirements of the ASME Boiler and Pressure Vessel Code.

**PUMP COOLING WATER FLOW SWITCH** will automatically turn the heater "OFF" and turn an alarm light "ON", if the pump cooling water drops below 0.5 gpm.

**MODEL WC250-9-121 SEAL COOLING SYSTEM** eliminates the need for a separate supply of cooling water to high temperature process pump cooling circuit. The package circulates a cooling fluid (water/glycol mixture) in a closed loop to the pump's seal cooling cavity. The Pump Cooling Water Flow Switch is included with this option. Request Bulleting SO-1.

### MODEL PFS-1 PORTABLE PUMPING

**AND FILTERING SYSTEM** is a compact, self contained, portable unit. It is equipped with high efficiency, high capacity disposable filtering elements capable of removing both particulate contaminants and water from oil. Maximum fluid temperature is 200° F. Request Bulletin SO-1.