HEXONIC | HEAT EXCHANGERS

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BRAZED PLATE HEAT EXCHANGERS

CHOOSE APPLICATION

CENTRAL HEATING

CENTRAL HEATING SYSTEM

RENOVATION OF A HEAT SUPPLY SYSTEM

MAIN APPLICATION DESCRIPTION

A furniture factory planned to replace their old boiler room, used for heating the production plant, with a new, modern one, fired with wood waste they generated on-site. This was caused by the fact that the current boiler room wouldn't meet new environmental requirements that would enter into force within a few years. The planned investment was controversial among the local citizens, who expressed their environmental concerns about the new boilers. A meeting attended by three parties was organized, bringing together the city authorities, the company representatives and the local community. They all agreed that instead of building a new boiler room, a heating substation connecting the facility to the district heating system would be erected. A new heating substation was designed and installed at the plant to replace the old boilers. It covers the total heat load demand of two big production halls and the office section. The plant's emission of pollutants has been significantly reduced, to the satisfaction of the local residents.

CHALLENGES

Compact and efficient heat exchanger.

Providing a BPHE capable of achieving secondary side outlet temperature meeting the design requirements of heat receivers.

RESULTS

Selecting two 2-pass BPHEs connected in parallel allows the size of a single exchanger to be minimized, ensuring continuous efficient operation without the need to shut down the system during service works.

A single exchanger can transfer up to 70% of the total heat load demand within the range of the pump head.

Reduced emission of pollutants.
Increased electrical power savings.

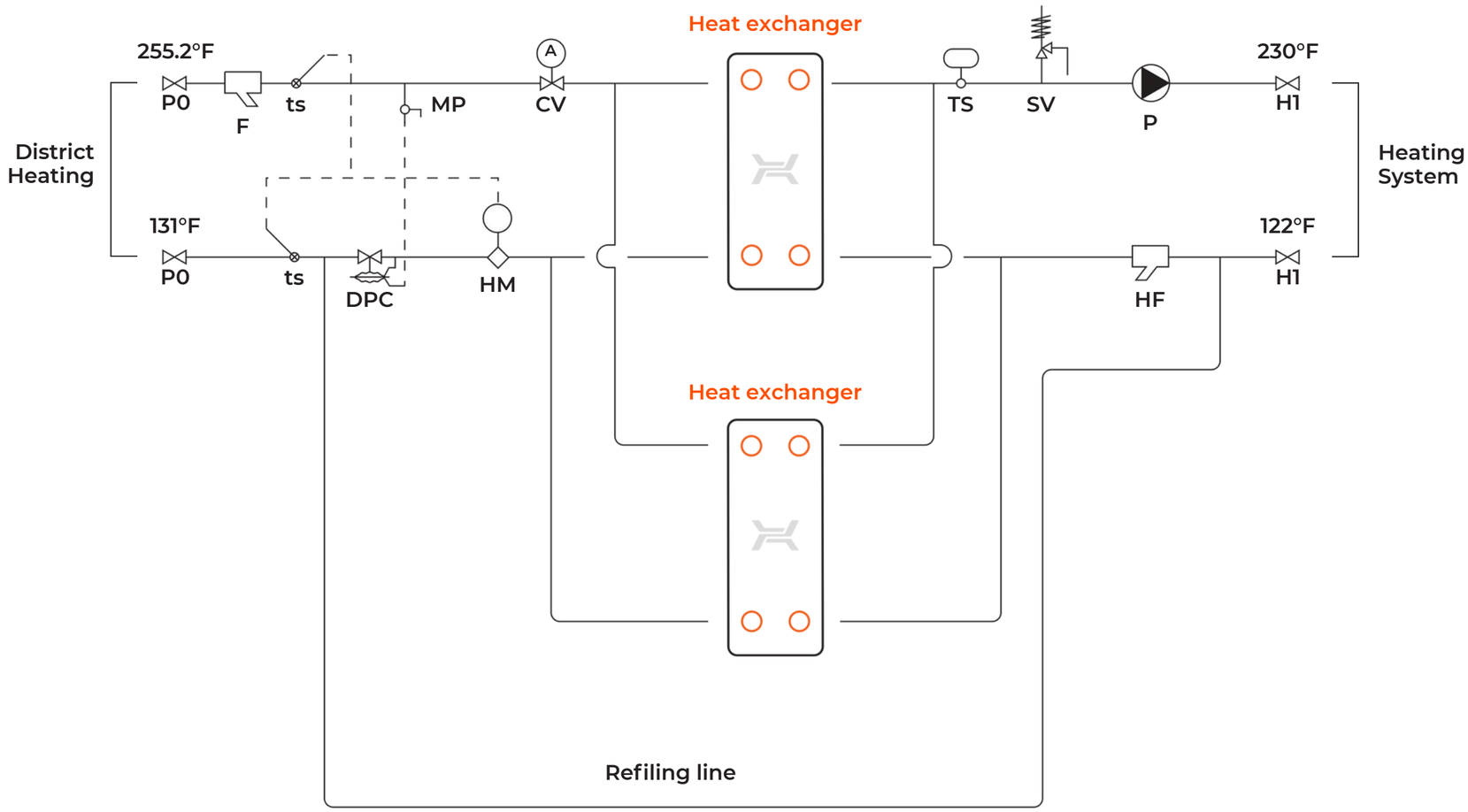
SOLUTIONS

Several thermodynamic calculations have been executed to establish the final size of the heat exchangers.

Low pressure resistant heat transfer plates were used to maximize heat transfer and optimize pressure drops.

High efficiency in a small footprint is made possible with 2-pass BPHEs.

Heat is sourced from the district heating system. Hot water is delivered at the temperature of up to 255.2°F, transferring up to 35.8 MBTU/h of heat required to supply all the heat consumers through 2 BPHEs connected in parallel.
The primary side temperature varies along with the outside temperature. The hotter it is outside, the less heat needs to be transferred and the lower the system temperatures. The weather controller reads the value of outside temperature using an outdoor sensor and compares it to the uploaded values. Using a heating curve that shows the primary side supply temperature at the given outdoor temperature, it sets the duty points for a heating pump and a control valve to obtain the secondary side temperature setpoint, monitored by a temperature sensor.



OPERATING CONDITIONS

CAIRO

WINTER MODE

Fluid side 1	Water		
Fluid side 2	Water		
Heat load	35.827.487,1		BTU/h
Auto performance			
Flow type	Side 1	Side 2	
Inlet temperature	255,2000	122,0000	°F
Mass flow	4.799,51	5.531,94	lb/min
Inlet volume flow	611,27	671,77	USGal/min
Outlet temperature	131,0000	230,0000	°F
Outlet volume flow	584,15	696,54	USGal/min
Max pressure drop	3,6	3,6	psi
Min oversizing	5,00		%
Fouling factor	0,00000000		ft²h°F/BTU
No. of units in series	1		
No. of units parallel	2		

OPERATING CONDITIONS

CAIRO

WINTER MODE

SINGLE UNIT EFFICIENCY

Fluid side 1	Water		
Fluid side 2	Water		
Heat load	25.079.241,0		BTU/h
Auto performance			
Flow type	Side 1	Side 2	
Inlet temperature	255,2000	122,0000	°F
Mass flow	3.359,66	3.872,36	lb/min
Inlet volume flow	427,89	470,24	USGal/min
Outlet temperature	131,0000	230,0000	°F
Outlet volume flow	408,90	487,58	USGal/min
Max pressure drop	7,3	7,3	psi
Min oversizing	5,00		%
Fouling factor	0,00000000		ft²h°F/BTU
No. of units in series	1		
No. of units parallel	1		

HEAT EXCHANGER DETAILS

PRODUCT

BRAZED PLATE HEAT EXCHANGERS

RANGE PARAMETERS

MAXIMUM OPERATING PARAMETERS FOR THIS HEAT EXCHANGER TYPE

MAX. TEMPERATURE – 446°F

MIN. TEMPERATURE – -150°F

MAX. PRESSURE – 435 PSI

MATERIAL
STAINLESS
STEEL — COPPER
BRAZING

EXEMPLARY MEDIA
— WATER
— PROPYLENE GLYCOL SOLUTIONS
— OTHER (CONSULT THE MANUFACTURER)

STANDARD – ASME SEC VIII, DIV.1 or PED 2014/68/EU

ADVANTEGES OF OUR SOLUTION

A SHORTER EXCHANGER
IS EASIER TO OPERATE

POSSIBILITY TO MAINTAIN CONTINUOUS SYSTEM OPERATION IN CASE OF PARTIAL SHUTDOWNS

REDUCED RELIANCE ON CONVENTIONAL HEATING FUELS AND LOWER CARBON EMISSIONS THROUGH THE USE OF RELIABLE DISTRICT HEATING

OTHER APPLICATIONS

CHEMICAL INDUSTRY

FOOD & BEVERAGES INDUSTRY

HVAC-R

IRON AND STEEL INDUSTRY

PULP & PAPER INDUSTRY

MARINE INDUSTRY

POWER

PHARMACEUTICAL INDUSTRY

HEXONIC

BACK HOME