Steam heat exchangers

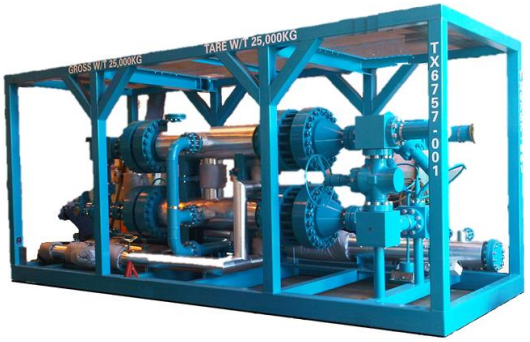
Steam heat exchangers provide maximum versatility in well flow temperature control prior to the separation process.

A heat exchanger is used to raise the temperature of well effluents for hydrate prevention, viscosity reduction and breakdown of emulsions to improve the separation of gas, oil and water.

Shell and tube steam heat exchangers consist of a pressure vessel that contains a set of high process coils. The vessel receives the steam medium from an external steam generator to heat the well effluent that passes through the process coil.

A multi-tube steam heat exchanger consists of a series of tubes contained within a steam pressure shell. Steam is delivered to the shell and is passed around the tube bundles. Heat is conducted through the tube bundles into the flowing well effluent.

Shell and tube steam heat exchanger



Multi-tube steam heat exchanger

Features and benefits

- Automatic temperature control is an integral part of the design
- Combines the latest adjustable choke technology
- Electronic monitoring of process parameters available
- Comply with applicable industry standards

Applications

- Ideal for heavy oil and high rate well test operations
- Prevents hydrate formation
- Improves separation of oil/water emulsions by reducing surface tension and viscosity
- Dissolves paraffin and asphaltenes thus preventing deposits from forming on the interior components of the separation equipment
- Reduces oil viscosity for improved burner efficiency

Technical specifications

	Shell and tube				Multi-tube			
Working pressure (process)	10,000 psi (690 bar)		15,000 psi (1,035 bar)		5,000 psi (345 bar)		10,000 psi (690 bar)	
Working pressure (steam)	350 psi (24 bar)		350 psi (24 bar)		350 psi (24 bar)		350 psi (24 bar)	
Service	H2S		H2S		H2S		H2S	
Coil size	3” & 4”		4”		55 tubes 1.625” OD x 0.165” wall		95 tubes 1.0” OD x 0.203” wall	
Working temperature	-20°F – 350°F (-29 – 177°C)		-20°F – 350°F (-29° – 177°C)		-40° – 350°F (-40 – 177°C)		-40° – 350°F (-40 – 177°C)	
Heating capacity	4.33 MMbtu/hr		6.0 MMbtu/hr		4.33 MMbtu/hr		8 MMbtu/hr	
Choke type	One adjustable		One adjustable		N/A		One adjustable	
Dimensions	3.5 x 5.7 x 10 ft (1 x 1.7 x 3.1 m)		4.6 x 6.6 x 7.0 ft (1.4 x 2 x 2.1 m)		4.0 x 4.0 x 20 ft (1.2 x 1.2 x 6.1 m)		6.0 x 6.0 x 20 ft (1.8 x 1.8 x 6.1 m)	
Connections	Effluent inlet Effluent outlet Steam inlet Steam outlet	3” 1502 3” 1502 2” 206 2” 206	Effluent inlet Effluent outlet Steam inlet Steam outlet	H4” 27 H4” 27 2” 206 2” 206	Effluent inlet Effluent outlet Steam inlet Steam outlet	H4” 31 H4” 31 2” 206 2” 206	Effluent inlet Effluent outlet Steam inlet Steam outlet	H6” 46 H6” 46 2” 206 2” 206
Applicable codes	ASME VIII Div.1 ANSI B31.3 API6A DNV 2.7-1 (skid and frame) NACE MR-10-75		ASME VIII Div.1 ANSI B31.3 API6A DNV 2.7-1 (skid and frame) NACE MR-10-75		ASME VIII Div.1 ANSI B31.3 API6A, API 660 DNV 2.7-1 (skid and frame) NACE MR-10-75		ASME VIII Div.1 ANSI B31.3 API6A, API660 DNV 2.7-1 (skid and frame) NACE MR-10-75	

Note: Other sizes, configurations and pressure ratings are available to meet most applications. For more information contact your local Expro representative or email welltesting@exprogroup.com