

ABOUT Us

Zhenhai Petrochemical Jianan Engineering Co., Ltd., is a former subsidiary of Sinopec Zhenhai Refining & Chemical Company. Since 2008, ZPJE is an independent joint-stock company established in the Ningbo region in the eastern coast of China. The company has more than 700 employees specialized in pressure vessel and tube manufacturing, thermal and hydraulic calculation, R&D and project management. ZPJE owns Production License for design and manufacture of Special Equipment in China and ASME authorization certificates of U & U2. Meanwhile, it has obtained ISO 9001:2015 Quality Management System Certification, ISO 14001:2015 Environmental Management System Certification and ISO 45001:2018 Occupational Health and Safety Management System Certification.

PRODUCT FEATURES

The ZPJE Spiral Tube Heat Exchangers (STHE) are combining high efficiency and mechanical robustness thanks to the following features :

High Heat Transfer Efficiency : The spiral tube design improve the fluid flow regime by creating high turbulence inside and outside of the tubes. This allows for a low pinch point, reducing consequently the hot and cold approach temperatures of the exchanger.

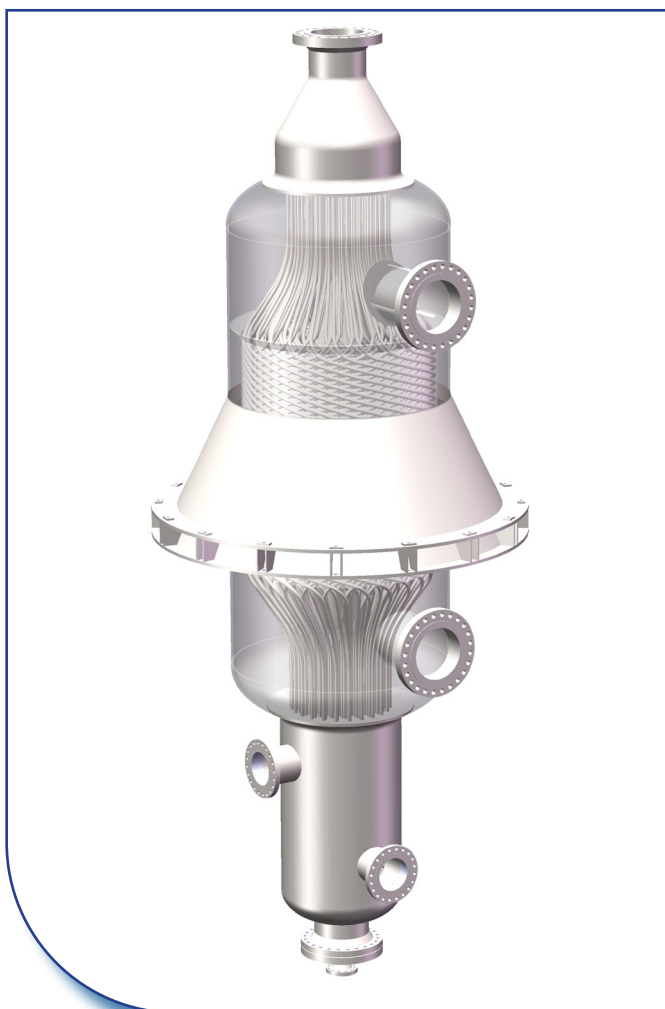
Low Pressure Drop: The unique tube bundle design optimizes significantly the fluid flow both on tube and shell side, lowering the pressure drop down to only 2-3 kPa on shell side on specific processes.

Compact Design: Only one exchanger can replace multiple horizontal or vertical exchangers, saving on installation and capital cost for both new units or revamping projects. Compared to traditional shell&tubes, STHE has smaller volume and weight due to its high heat transfer efficiency.

Mechanical Robustness: The spiral wound tube bundle offers high tolerance to thermal and pressure variations that may happen during upset conditions. The flexibility given by the spiral wound tube bundle allows

- high temperature gradients inside the exchanger,
- No limitation for cooling and heating rates during start-up, shutdown and upset conditions,
- high tolerance to thermal and/or pressure shock,
- No limits on temperature and pressure differences between shell and tube sides.

Low Fouling : On the shell side, the high turbulence created by the pulse-surge collision flow pattern and the absence of stagnant zone greatly reduces the possibility of fouling. On the tube side, the helix-pattern flow creates a secondary flow which increases the shear force. This effect, added to the very low surface roughness, gives an anti-fouling and self-cleaning design.



CUSTOMER BENEFITS

ZPJE technology can:

Save on Capex :

- Better Heat Transfer coefficient compared to S&T design
- More Surface on a single Shell
- Single structure
- Less piping, flanges, joints, instrumentation.
- Smaller Heater and Air Cooler thanks to better exchanger efficiency

Save on Opex :

- Decreased fuel consumption on the Charge Heater
- Lower Pump and Compressor consumption due to lower pressure drop
- Reduced emissions

RICH EXPERIENCE

Since 1999, ZPJE has been awarded more than 1800 ex-changers, with units operating for more than 20 years. The complete installed base cumulates 8800 years of efficient and reliable operation.

The large portfolio of applications includes high pressure and high temperature demanding processes. Its dedicated and experienced technical team has developed a unique know-how in:

- Thermal and hydraulic simulation of two-phase flow in spiral tube heat exchanger,
- Mechanical design and finite element calculation of the sensitive part of the heat exchanger.
- Calculation and simulation of various processes to offer the best thermal and hydraulic design.

Its robust and versatile design can accommodate various demanding process conditions combining very high thermal and hydraulic performances, with the robustness needed in this industry.

After 25 years of experience in China, and with the support of main international licensors, ZPJE is now ready to provide its experience to the worldwide market.

APPLICATIONS

Crude Oil Refineries

- HDT, HCK
- Reforming
- CDU
- Solvant Deasphalting

Fertilizer

- Rectisol
- Methanizer

Petrochemicals

- Aromatics
- PDH
- PP
- EOEG
- Olefins Catalytic Cracking

Others

- Process Gas Heater
- Overhead Condenser
- Low-grade heat recovery



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