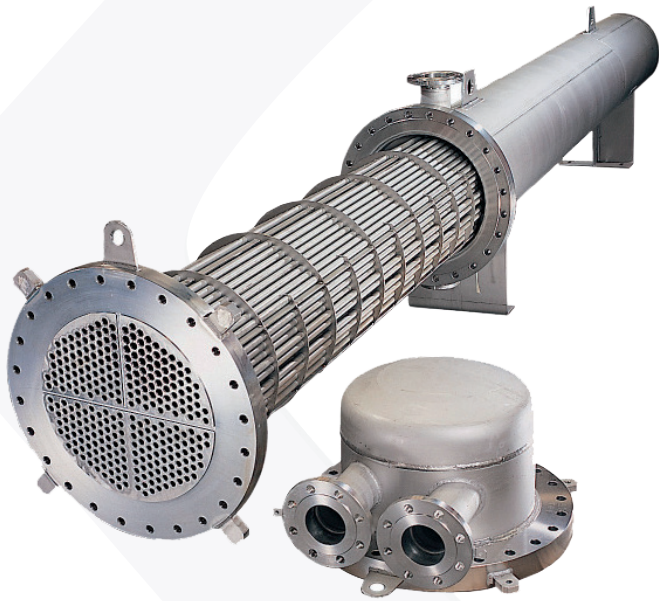


# TUBULAR EXCHANGER

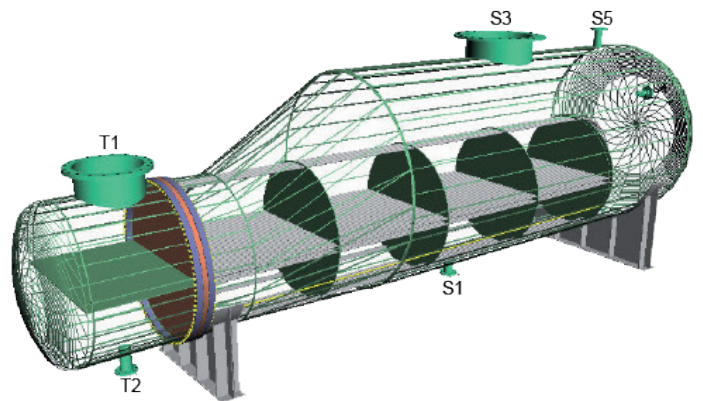
## Robustness and reliability

- Large range of pressure and temperature
- Wide-spread and recognized technology in all industrial processes

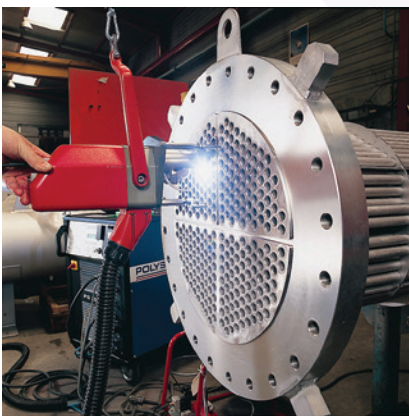


## Design and manufacturing

- Thermal sizing : HTFS Aspen
- Mechanical sizing : Microprotol
- Drawings : SolidWorks, Autocad

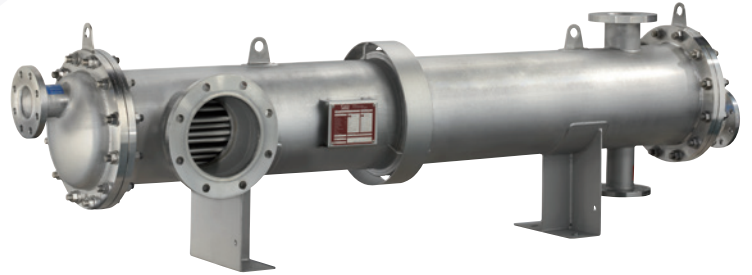


- Tubes assembly on tubesheets by tube expanding, manual or orbital weld TIG



## In straight tubes :

- Two tubesheets
- Shell with expanding joint if necessary
- Accessibility on tubes side
- Tube in tube exchanger



## In U tubes :

- One tubesheet
- Removable bundle
- Accessibility on 2 circuits
- Traditional or Kettle



## In corrugated tubes:

- Corrugation obtained by grooving of the external wall of tube
- Improvement of turbulence
- Increase of the thermal efficiency
- Reduction of the fouling
- Standard range available on stock (0,5 to 6 m<sup>2</sup>)



## Pharmaceutical design :

- In compliance with cGMP recommendations
- No retention areas
- Double tubesheets to avoid the cross-contamination and to detect leakages
- Surface of low roughness : Ra 0,6 µm or less on request

## Selection criteria :

*Conditions of service* : Pressure : full vacuum to 500 bars  
Temperatures : -50°C to 1 000° C maxi

*Maximum flow* : 7 500 m<sup>3</sup>/h

*Materials* : Stainless steel, Duplex, Nickel alloy, Titanium

*Design codes* CODAP / AD-MERKBLATT / ASME VIII / TEMA/ other one on request

*Certification* ISO 9001 – V2015, PED 2014/68/EU, TÜV Approval