HeatKal Technologies

...heat exchanger hub

ISO 9001:2015 Company

www.HeatKal.com

History

- HeatKal Technologies started in July 2014 as a Engineering company in Pune, mainly focused on Heat Exchangers and process equipment's.

- Company is lead by CEO – Mr. Pankaj Kalaskar and team of 10 people, catering the engineering solutions to customers in Chemical, Food, Pharma, automobile and Petrochemicals.

- Company has developed the products for special applications with process designs.

Team Lead

Pankaj R. Kalaskar

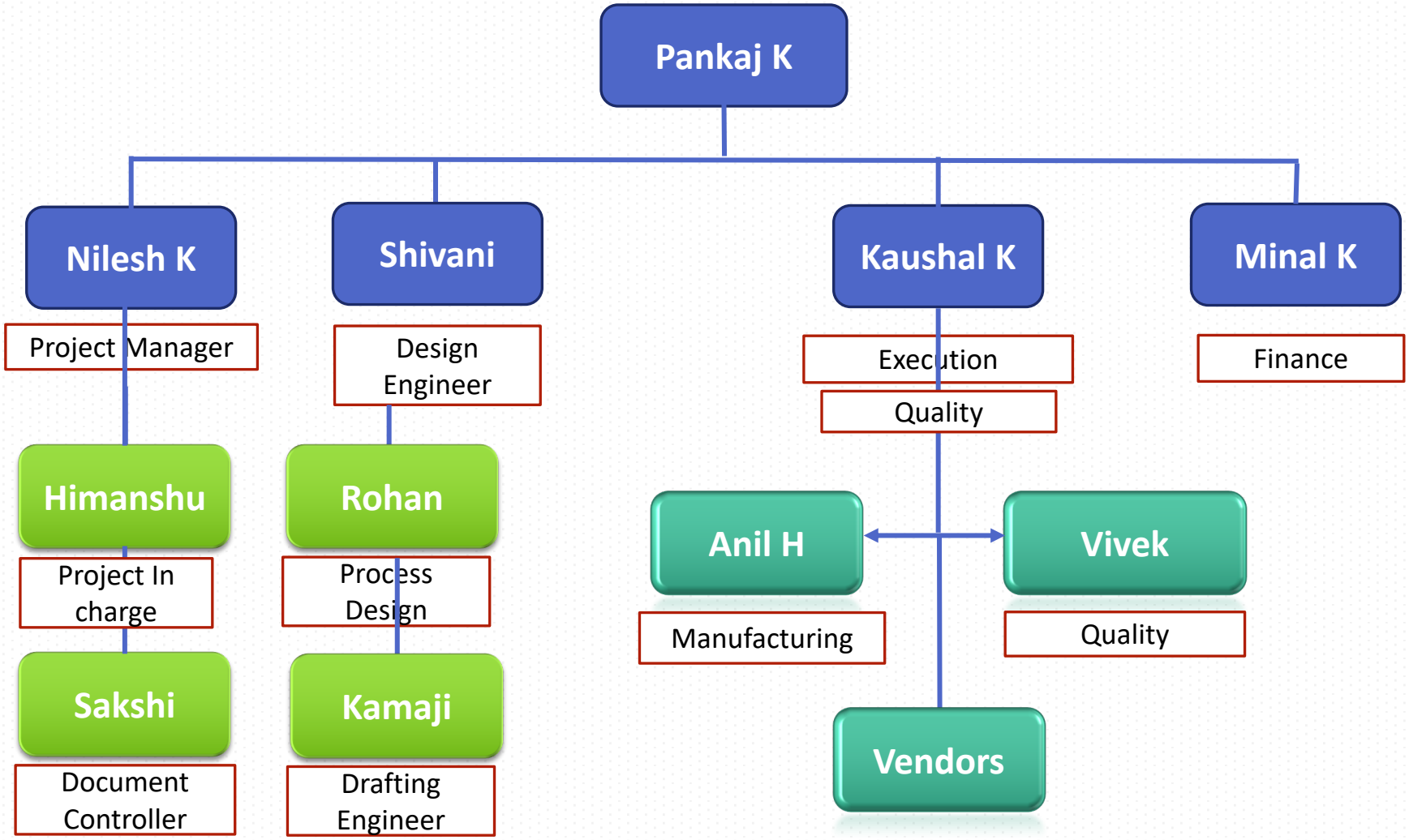
Education:

B.Tech (Chemical)
PGD (Boiler, Heat Exchangers, Pressure Vessels, VIT Pune.

Work Experience:

- Overall, 20 Years of Experience in Heat Transfer and Engineering.
- 8 Years in design and development at Tranter (A USA Based heat Exchanger company, handled by Alfa Laval).
- Represented DESCO Global as a Technical Director for handling the projects in Special Heat Exchangers
- Associated with CST Envirotech for Green Energy Projects

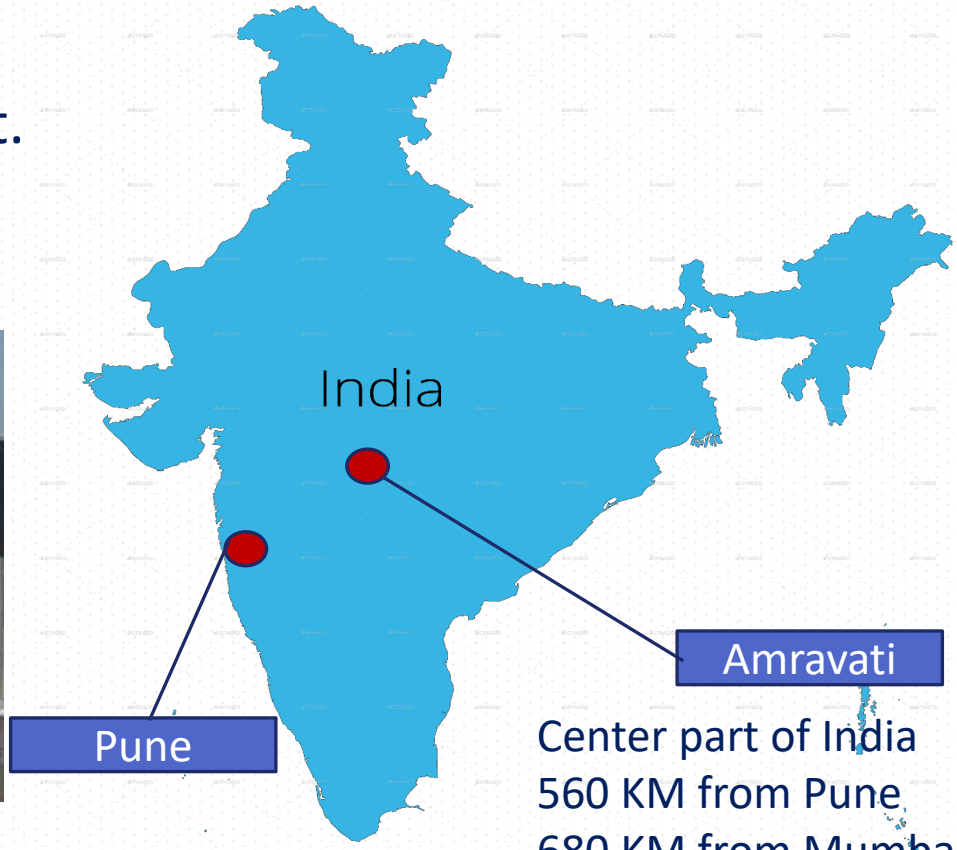
Organizational Chart



Factory in Amravati

Setup in Amravati.

- Amravati Area – 8500 SqFt.
- Pune Area - 4000 SqFt.



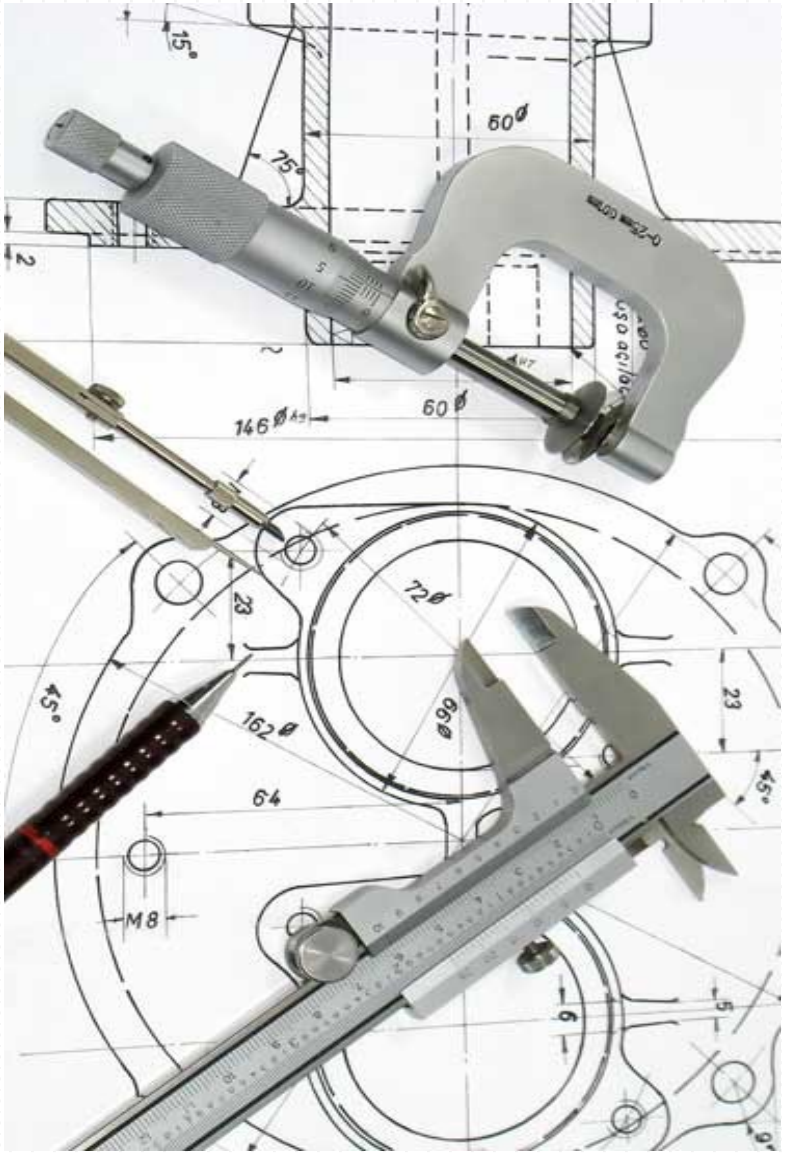
Center part of India
560 KM from Pune
680 KM from Mumbai
600 KM from Baroda
500 KM from Hyderabad
125 KM from Nagpur (✈)

Note: This is Industrial plot in MIDC area.
Additional adjacent area of 20,000 SqFt. is also proposed.

Engineering

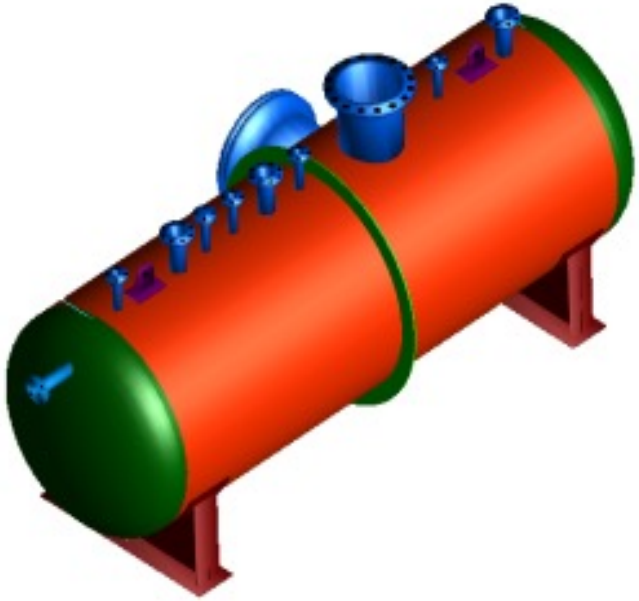
Engineering Services

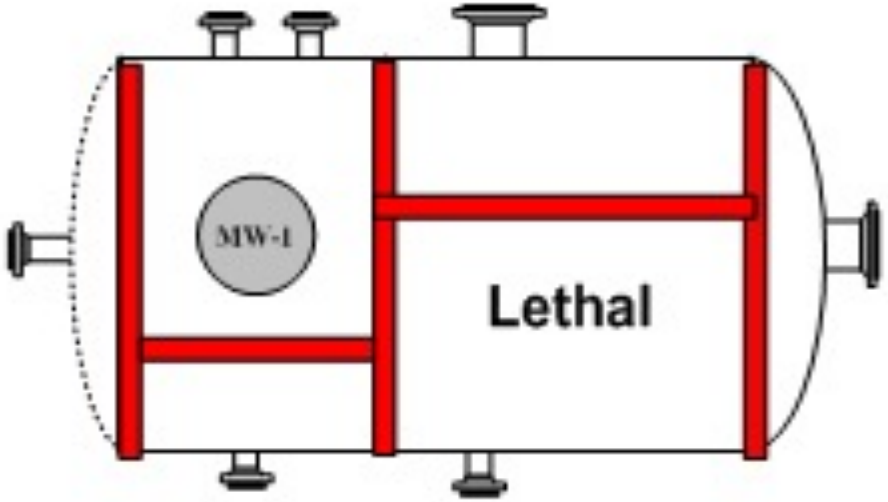
- Mechanical Designs
- Fabrication Drawings
- Pressure Vessels Designs
- Heat Exchangers Designs
- FEA and CFD
- 3D Modeling
- Piping Engineering
- Product Development
- Process Automation



Pressure Vessel Design

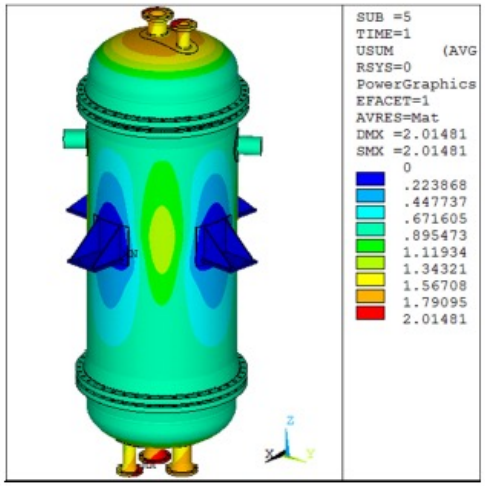
- Pressure Vessels Designs in PVElite or Compress
- Design Codes – ASME Section VIII Div 1, EN-13445



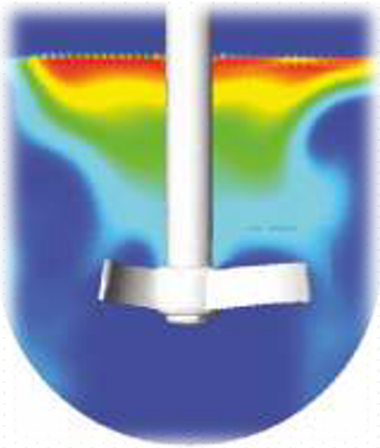


FEA, Stress Analysis and CFD

- FEA
  - Stress Calculations
  - Fatigue Loadings Calculations
  - Nozzle Load Calculations
  - Static / Dynamic analysis

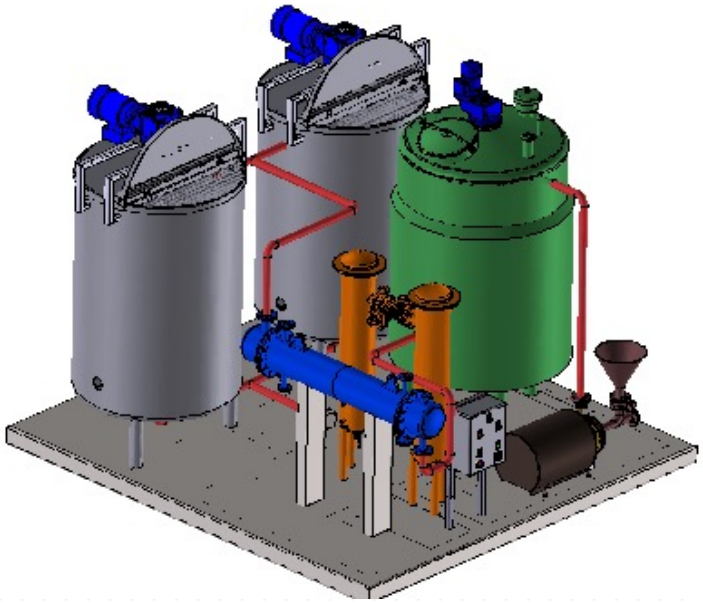


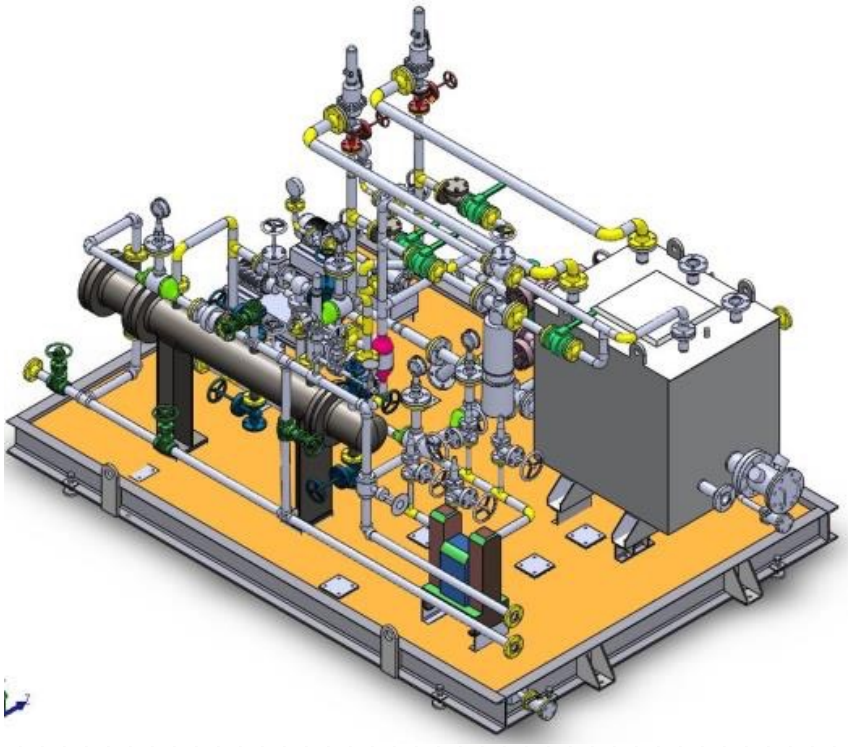
- CFD
  - Process Validation
  - Agitated Vessel simulations
  - Fluid Flow path of Heat Transfer plates

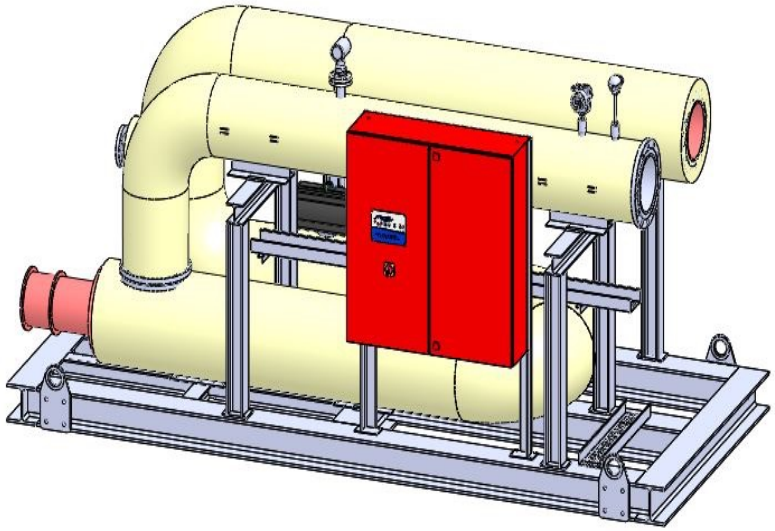


3D modeling

- 3D Modeling
  - 3D Modeling
  - Skid Structure Design
  - Equipment Layout

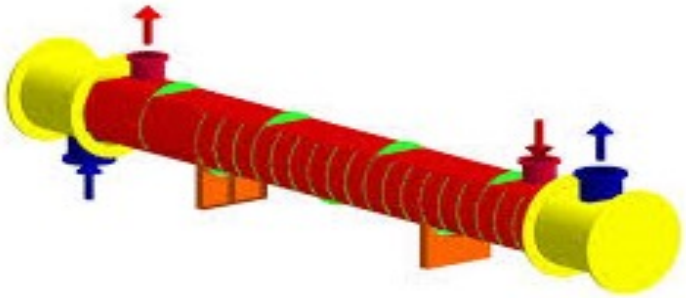


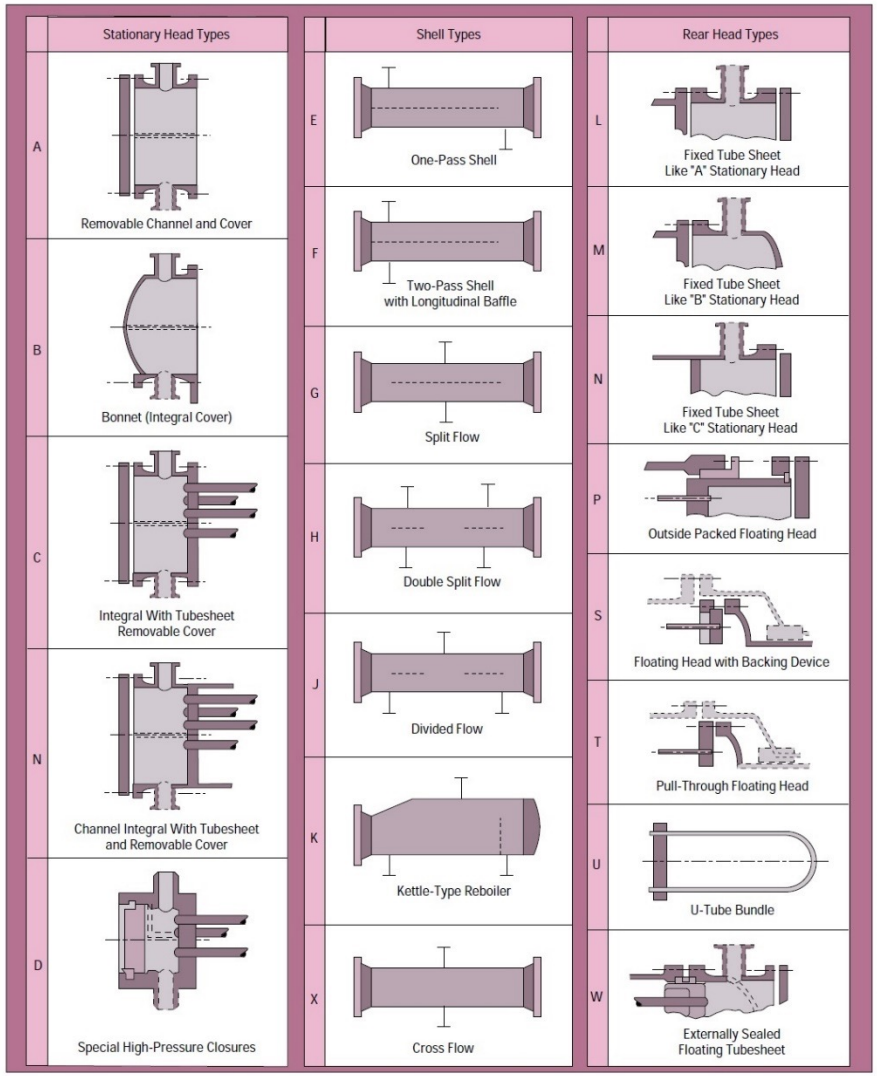




Heat Exchanger Engineering

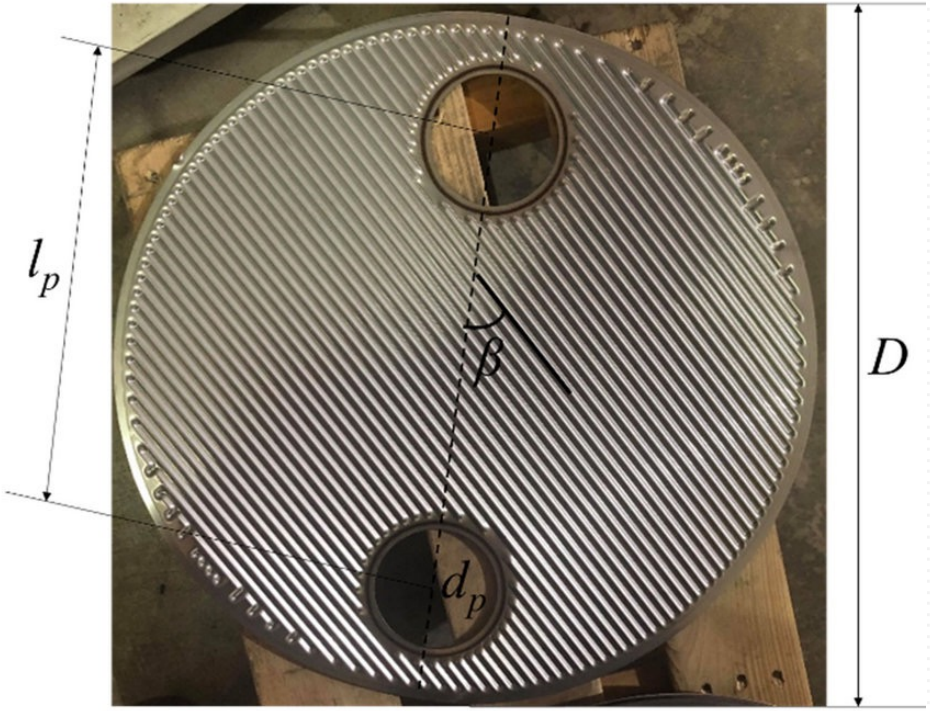
Type BEM		Orientation Horizontal		Connected In 1 Parallel 1 Series	
Surf/Unit (Gross/Eff) 2301.18 / 2263.61 ft2		Shell/Unit 1		Surf/Shell (Gross/Eff) 2301.18 / 2263.61 ft2	
PERFORMANCE OF ONE UNIT					
Fluid Allocation		Shell Side		Tube Side	
Fluid Name		Freon-22		Water	
Fluid Quantity, Total	1000-lb/hr	37.8309		330.690	
Vapor (In/Out)	wt%	100.0	0.0	0.0	0.0
Liquid	wt%	0.0	100.0	100.0	100.0
Temperature (In/Out)	F	185.00	114.86	100.40	110.24
Density	lb/ft3	3.9242	68.927	62.000	61.868
Viscosity	cP	0.0173	0.1073	0.6781	0.6126
Specific Heat	Btu/lb-F	0.2440	0.3252	0.9985	0.9985
Thermal Conductivity	Btu/hr-ft-F	0.0091	0.0467	0.3621	0.3661
Critical Pressure	psia				
Inlet Pressure	psia	261.255		72.710	
Velocity	ft/sec		1.10		4.13
Pressure Drop, Allow/Calc	psi		0.378		25.071
Average Film Coefficient	Btu/ft2-hr-F	264.31		1117.42	
Fouling Resistance (min)	ft2-hr-F/Btu			0.00102	
Heat Exchanged	3.2483 MM Btu/hr	MTD (Corrected) 10.2 F		Overdesign 14.23 %	
Transfer Rate, Service	140.93 Btu/ft2-hr-F	Calculated 160.99 Btu/ft2-hr-F		Clean 197.26 Btu/ft2-hr-F	
CONSTRUCTION OF ONE SHELL				Sketch (Bundle/Nozzle Orientation)	
		Shell Side	Tube Side		
Design Pressure	psig	284.460	142.230		
Design Temperature	F	212.00	212.00		
No Passes per Shell		1	4		
Flow Direction		Downward	Upward		
Connections	In inch	1 @ 6.0650	1 @ 2.4690		
Size &	Out inch	1 @ 6.0650	1 @ 2.4690		
Rating	Liq. Out inch	@	@		
Tube No. 586 OD 0.7500 inch		Thk(Avg) 0.0394 inch		Length 20.000 ft	Pitch 1.0000 inch Layout 30
Tube Type Plain		Material TITANIUM-GRADE 2		Pairs seal strips 2	
Shell ID 27.5590 inch		Kettle ID inch		Passlane Seal Rod No. 5	
Cross Baffle Type PARALLEL SINGLE-SEG.		%Cut (Diam) 20.00		Impingement Plate None	

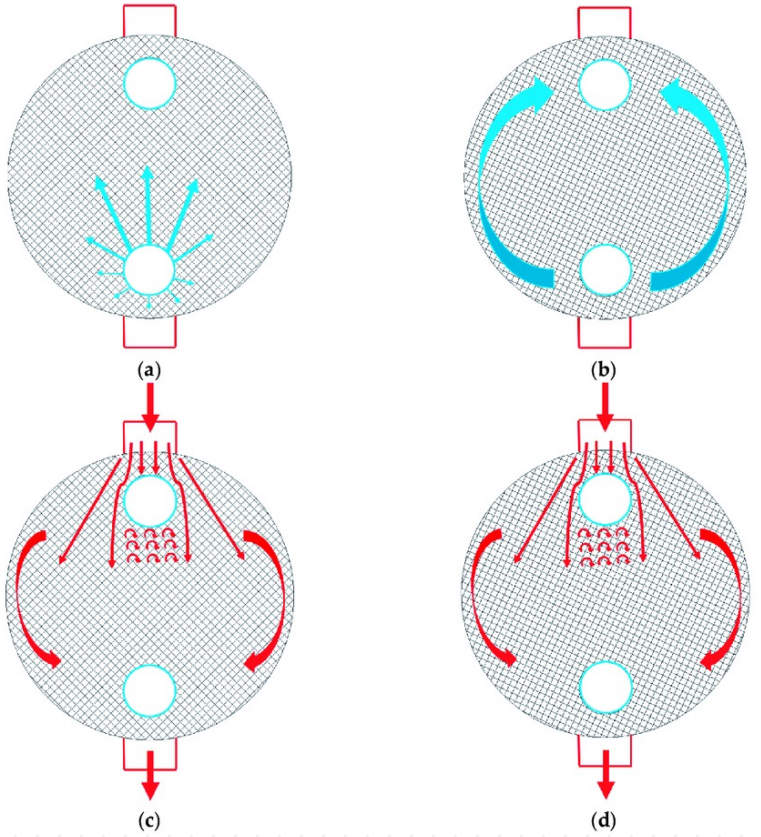




Heat Exchanger Development

- Plate Design and Validation in FEA
- Thermal Design and CFD Validation for flow and velocities
- Mechanical Design as per ASME and PED
- Burst Test for Pressure Capacities





Heat Exchanger Development

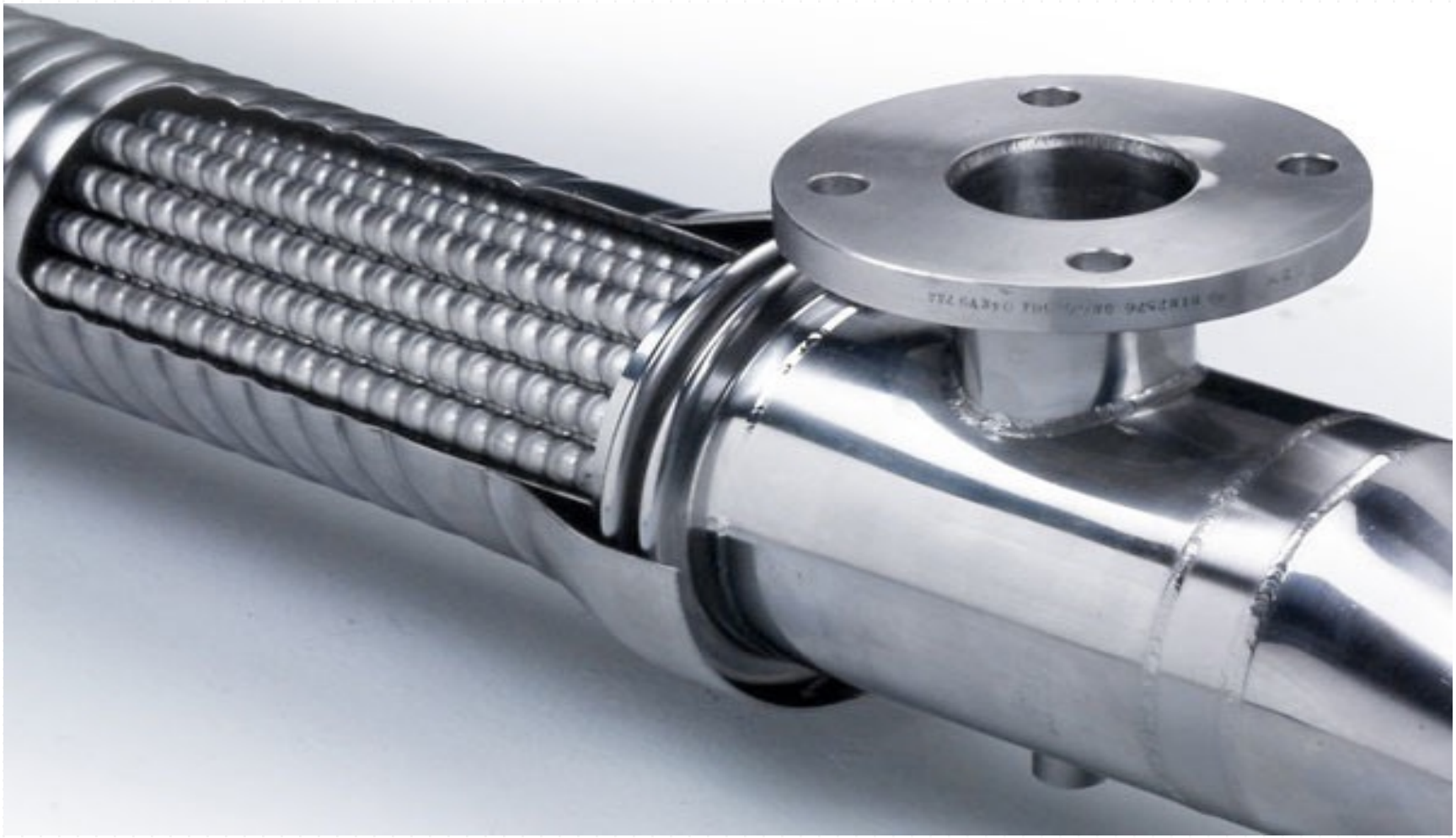
- Plate and tools Development.
- Die Designing.
- Plate Assembly and Welding.
- Setup Manufacturing Line.

Products

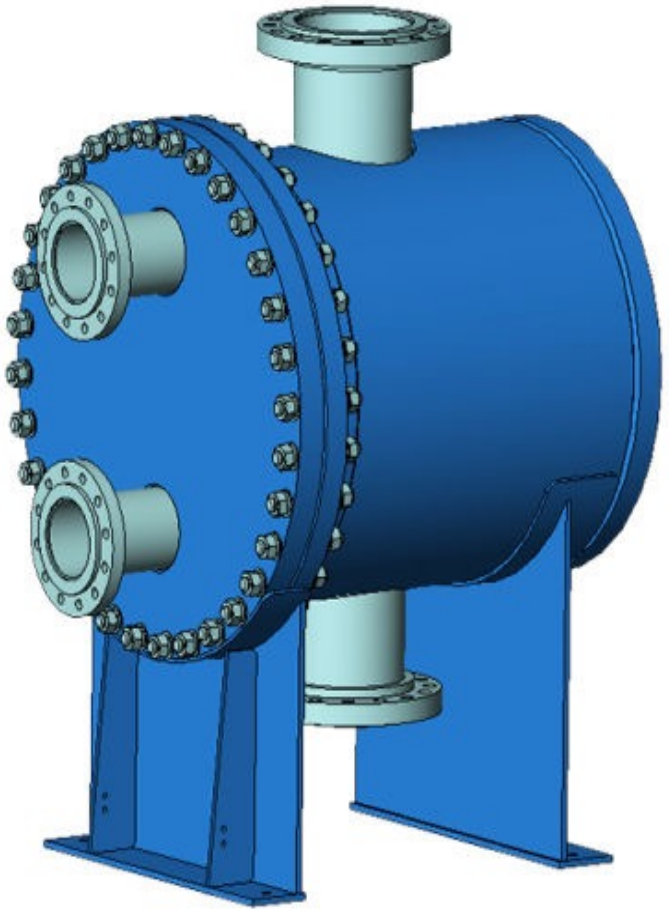
Shell and Tube Heat Exchangers

Shell and Tube Heat Exchangers

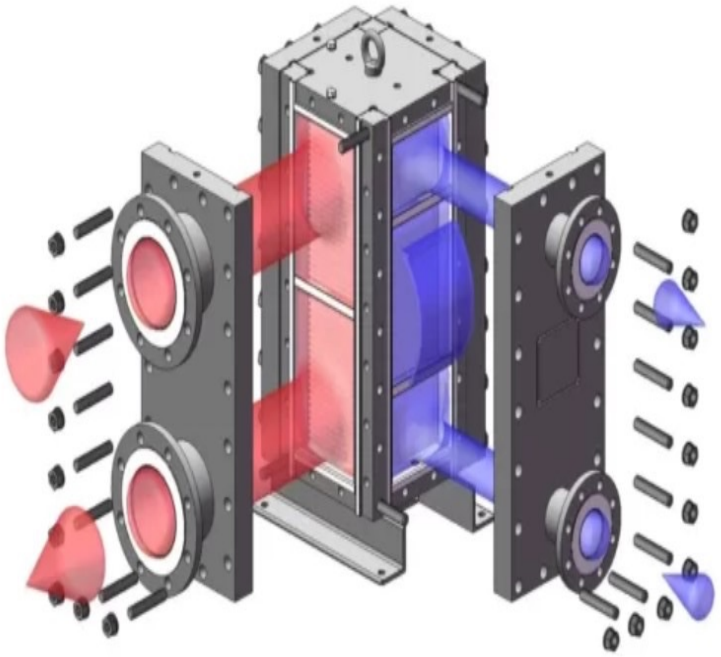
Corrugated Shell and Tube Heat Exchangers

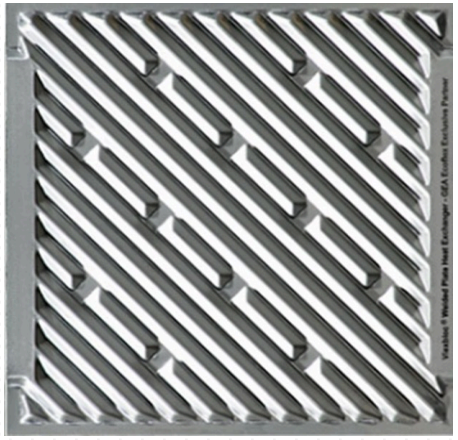


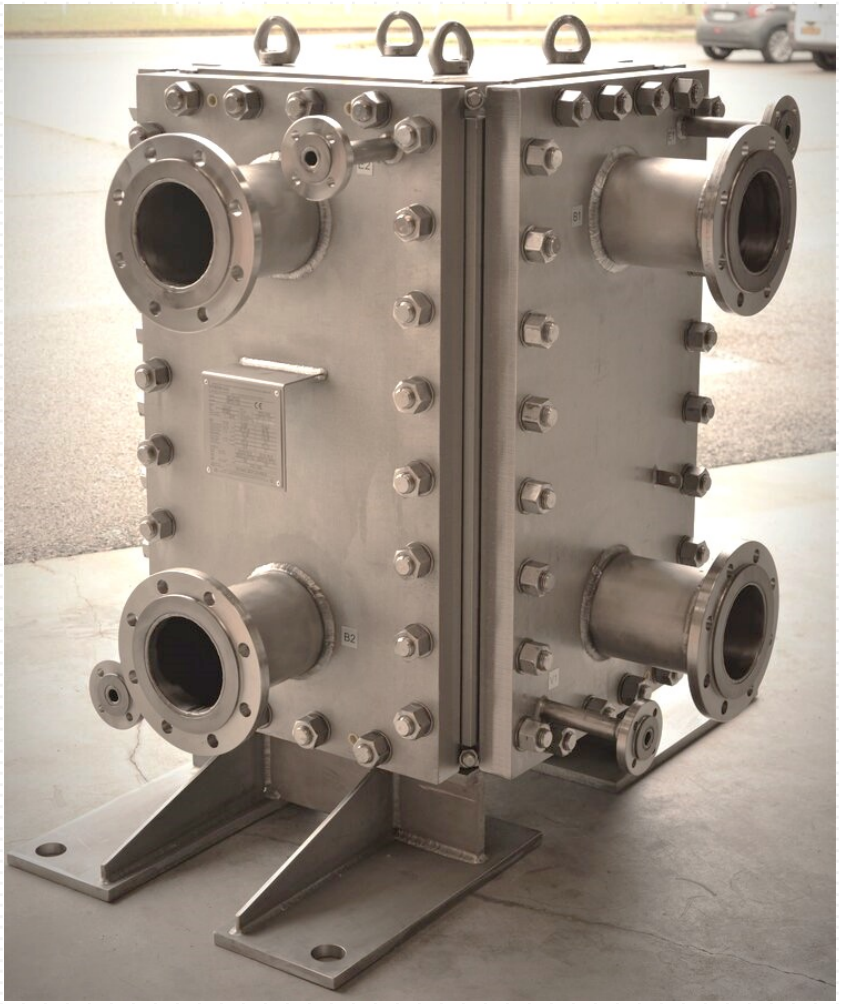
Shell and Plate Heat Exchangers



Block Heat Exchangers





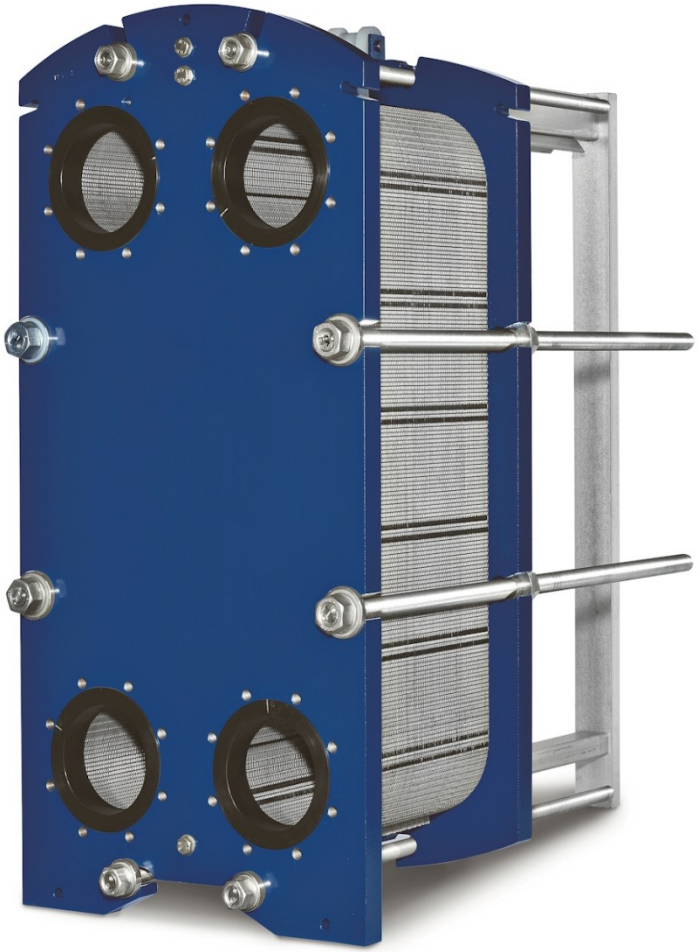


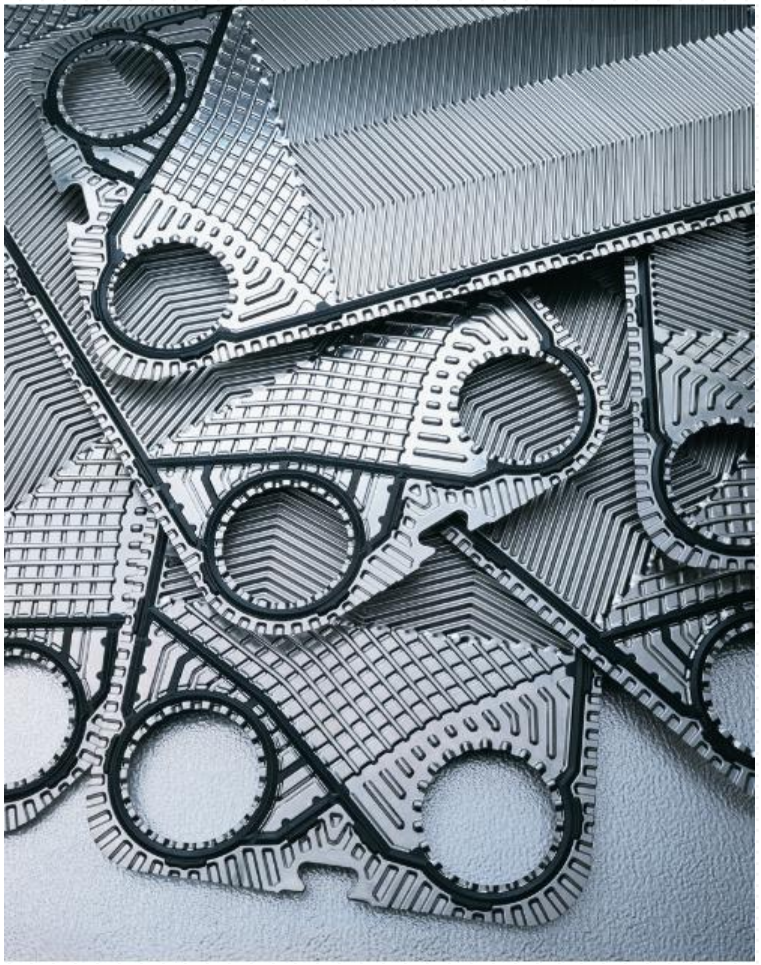
Spiral Heat Exchangers

Spiral Heat Exchangers

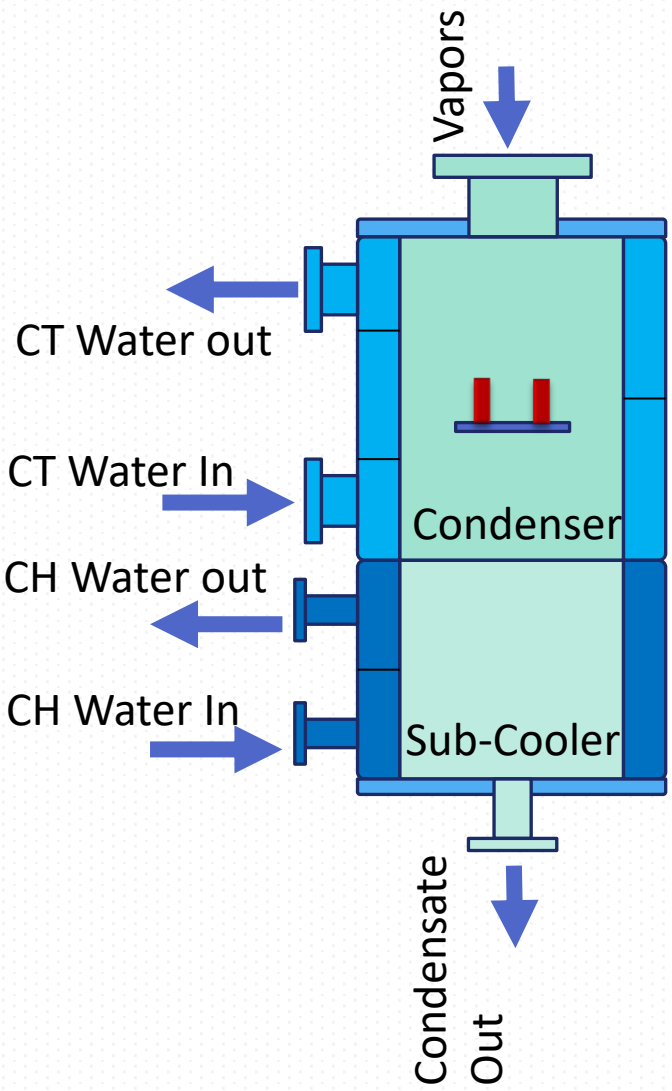
Spiral – For Steel Industries (HT Area – 115m2)
MOC- SS 304

Plate Heat Exchangers and Spares

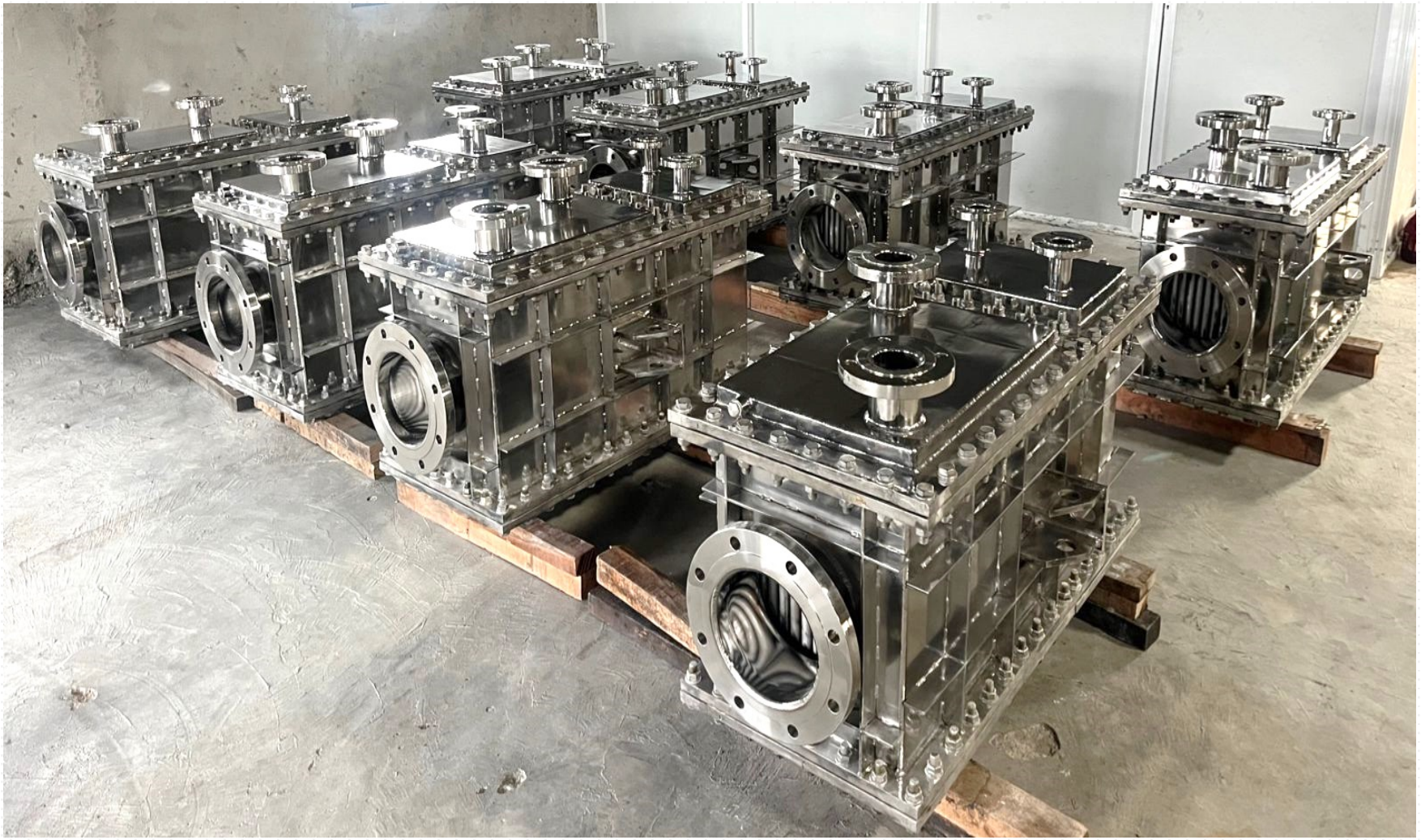




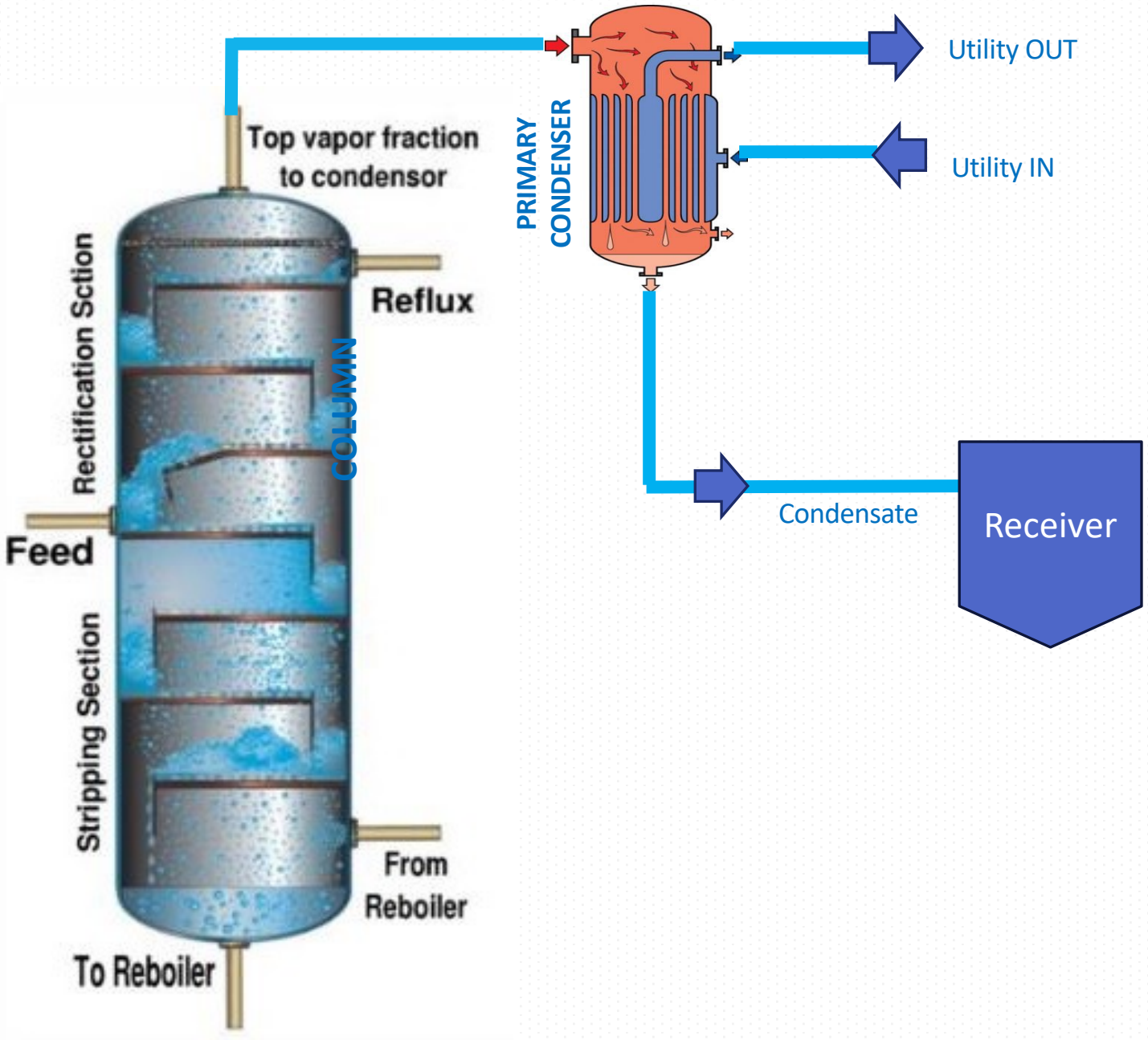
Box Type Heat Exchangers



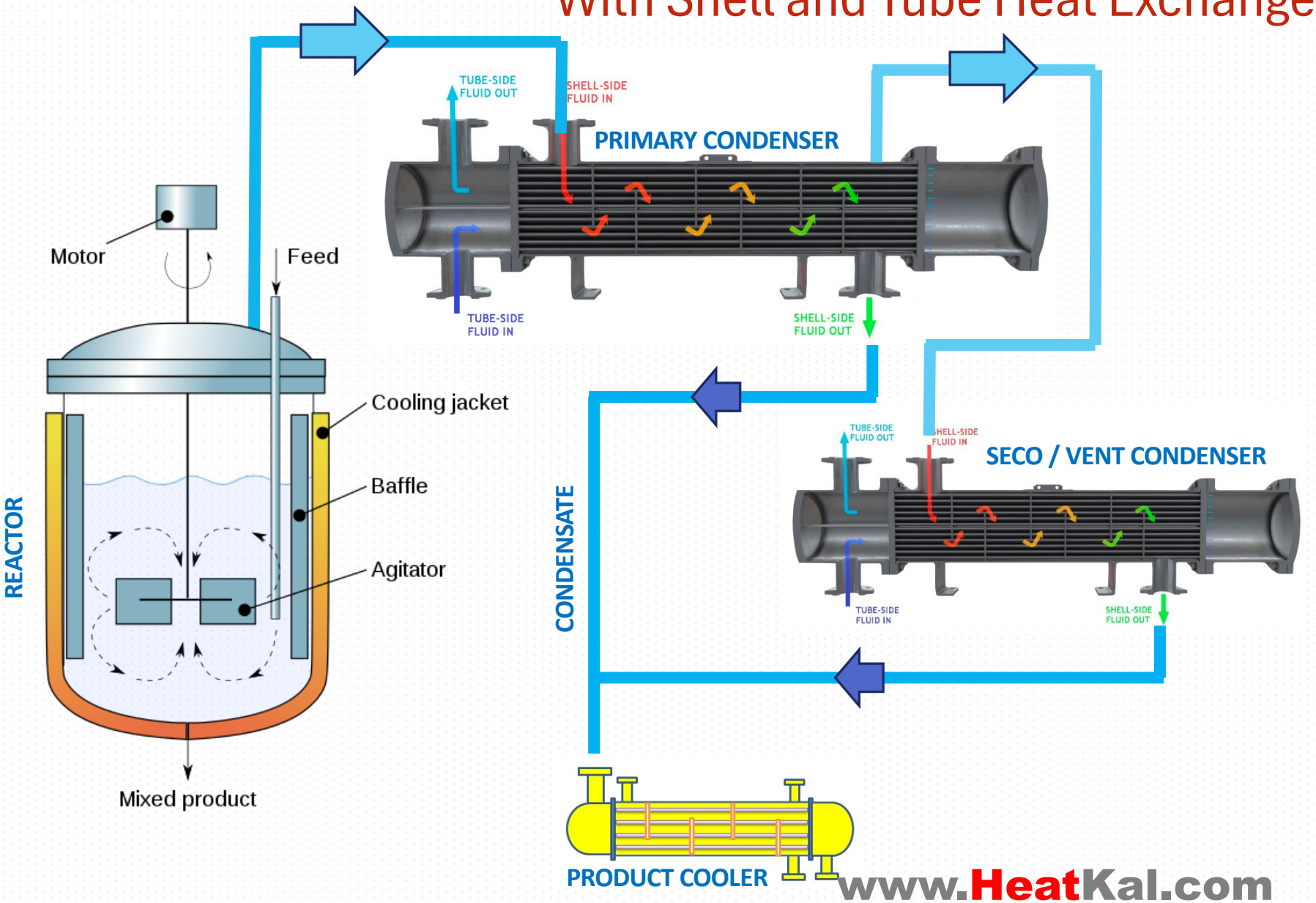
Box Type Heat Exchangers



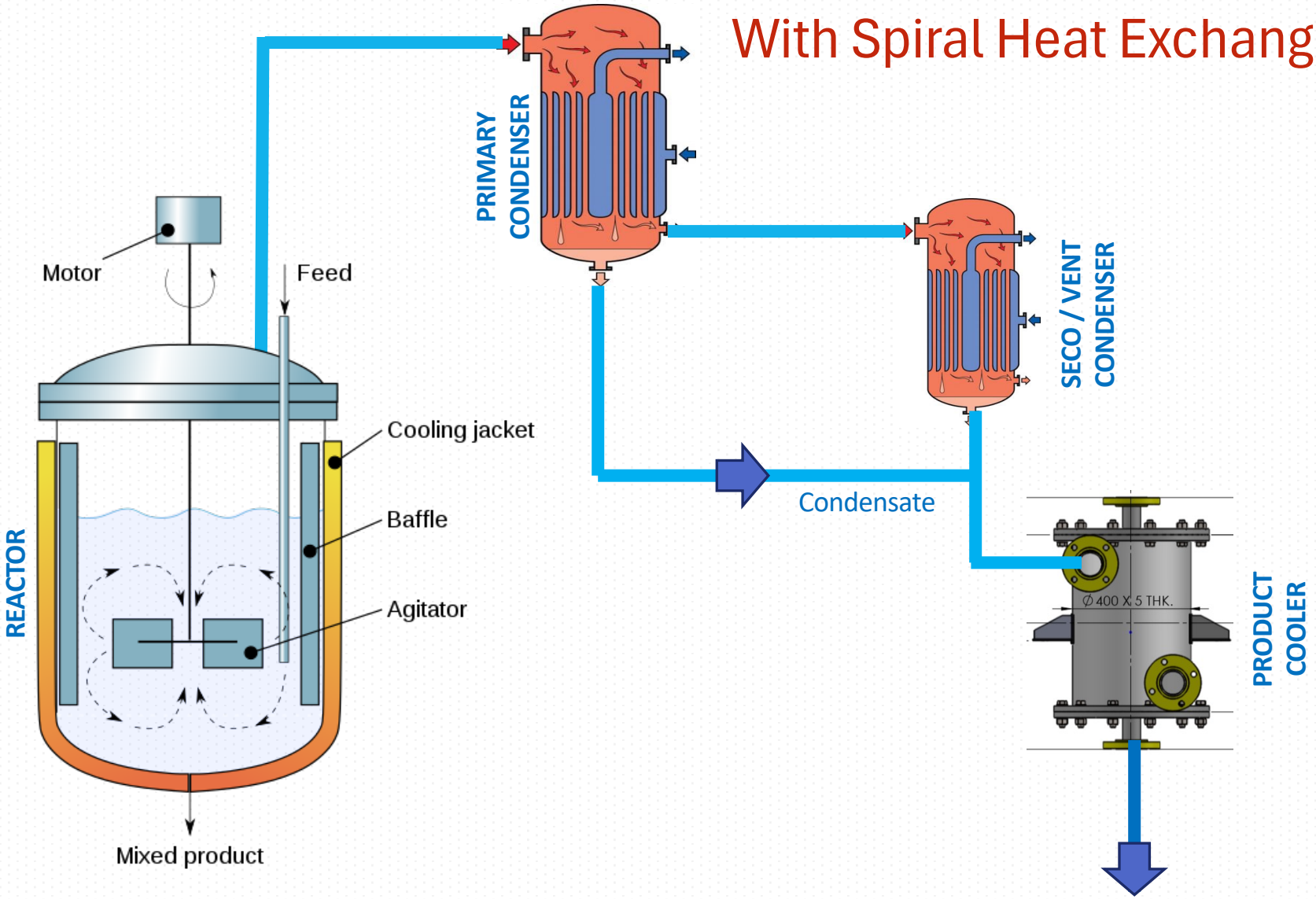
Indicative Sketch



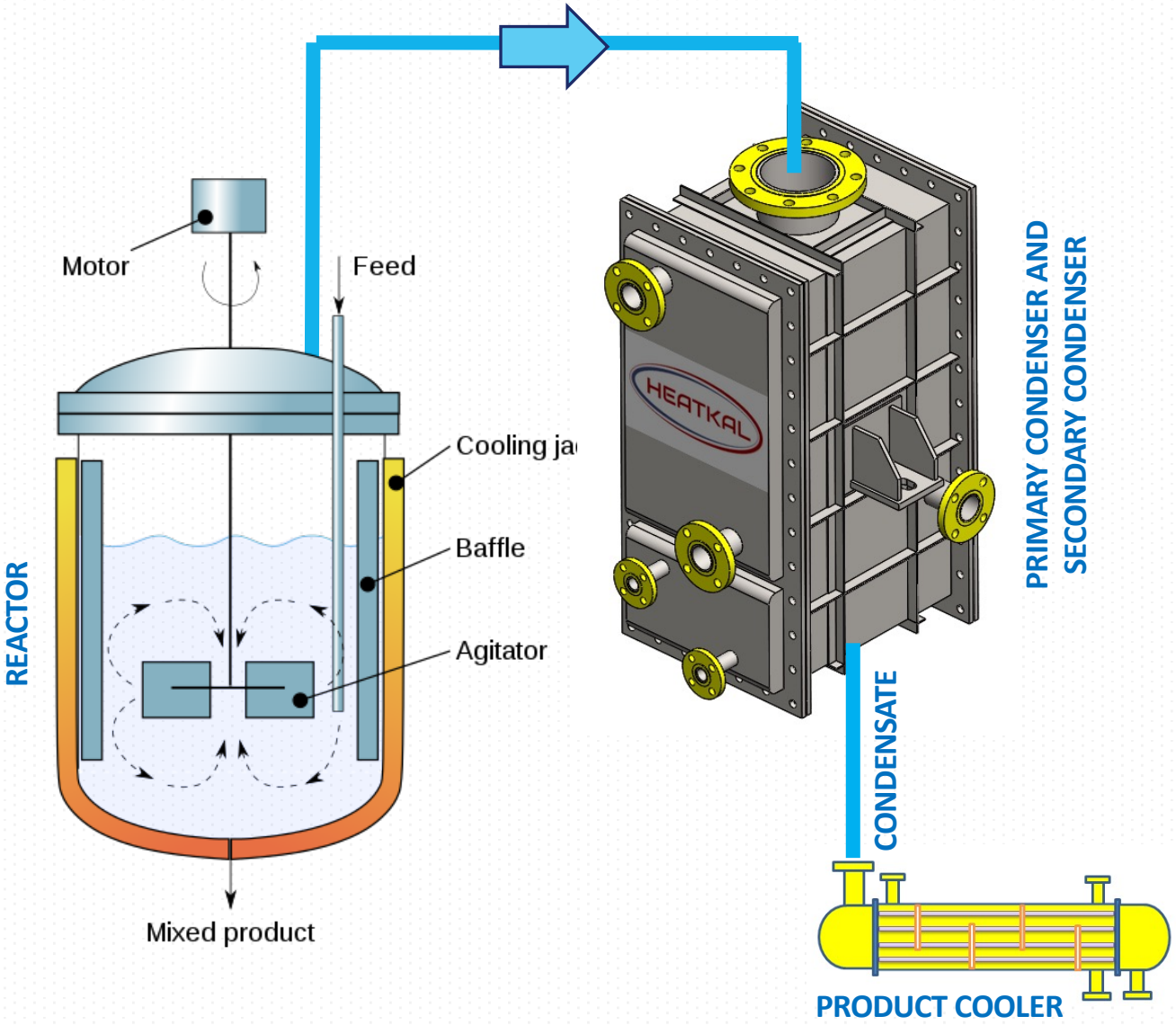
Solvent Recovery
With Shell and Tube Heat Exchanger



Solvent Recovery
With Spiral Heat Exchanger



Solvent Recovery
With BOX Type Heat Exchanger

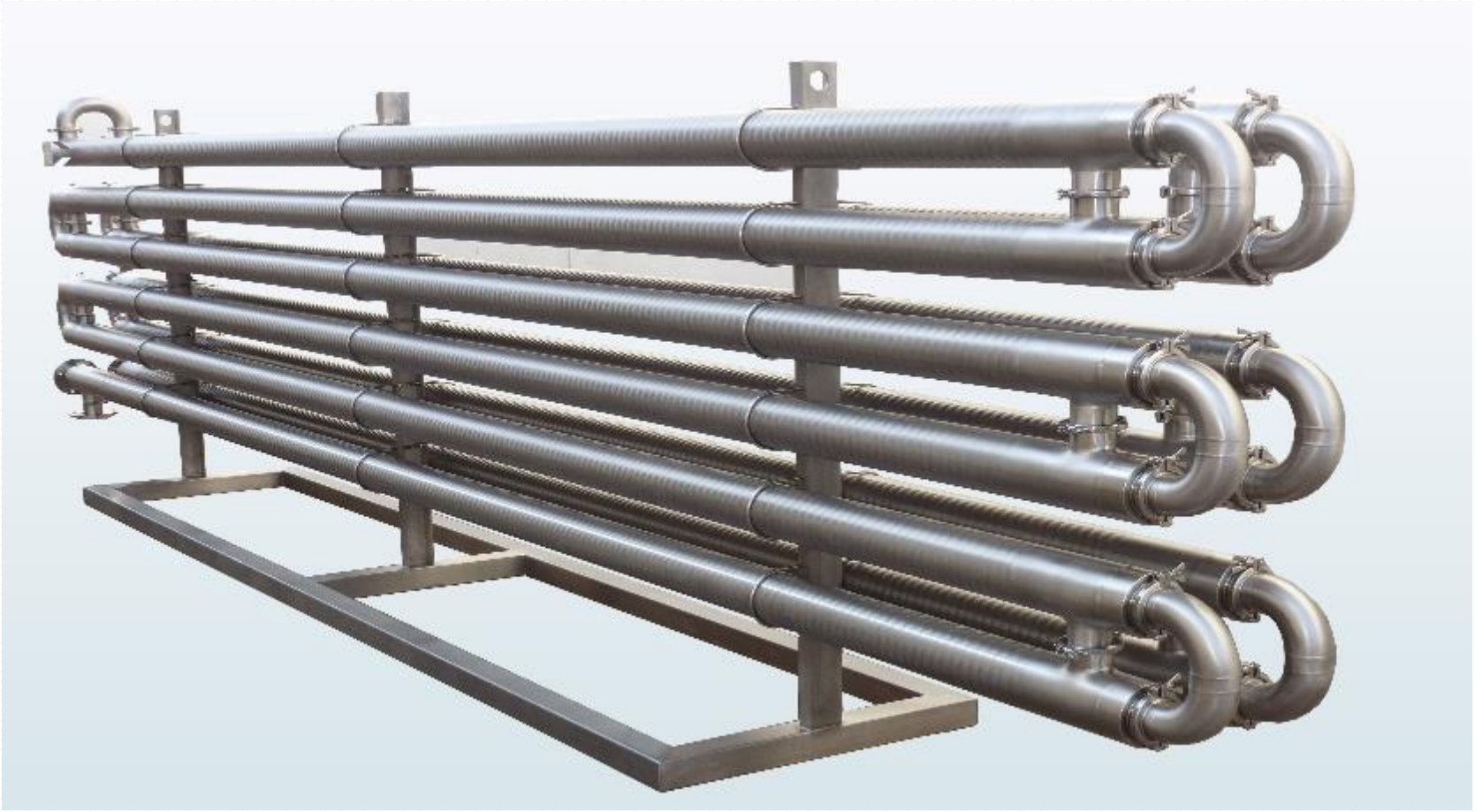


Comparison with Different Heat Exchangers

Design Case – 600 Kg/h Methanol at ATM Pressure

Items	Shell and Tube Corrugated	Spiral HE	BOX Type with Corrugated Tubes
HTA (m2)	Primary – 8.5 m2 Secondary – 2 m2	Primary – 4.5 m2 Secondary – 2 m2	Primary – 6 m2 Secondary – 2 m2
Space	100%	60%	20%
Pressure Rating	High	Moderate	Low
Maintenance	Critical	Critical	Easy
Draining	90%	90%	100%

Double Pipe Heat Exchanger



Falling / Rising Film Evaporator

SCAPHE (Steam Coil Air Pre-Heater)

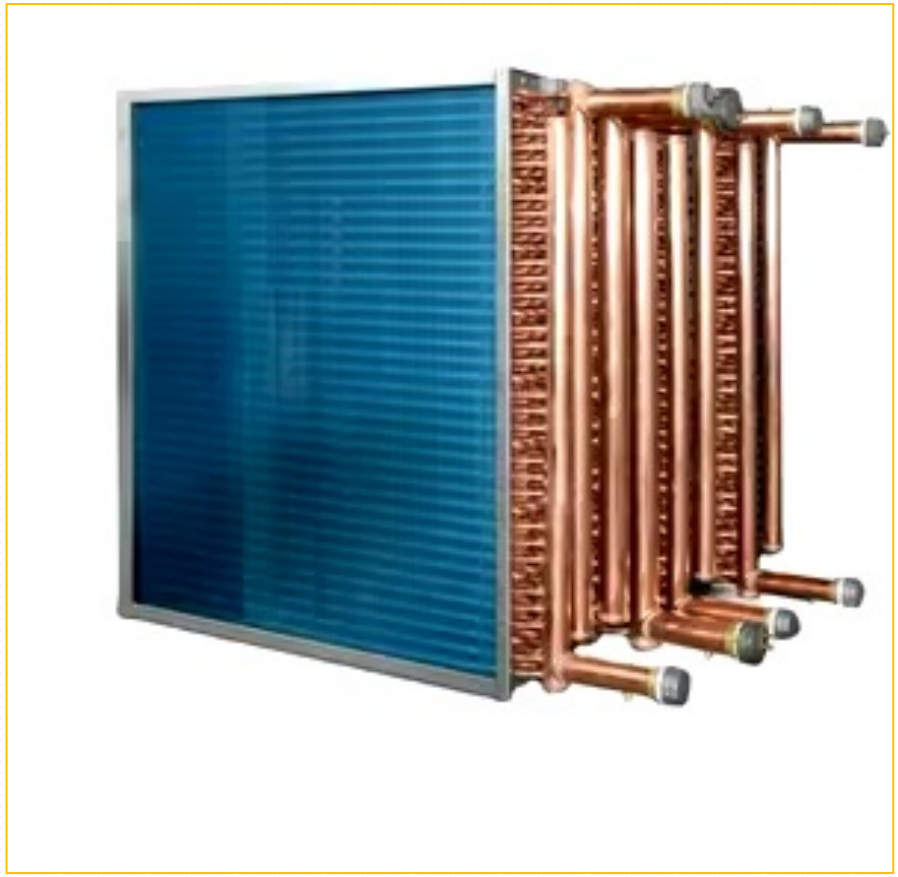
Fin-Fan Coolers

Air Cooled Condensers

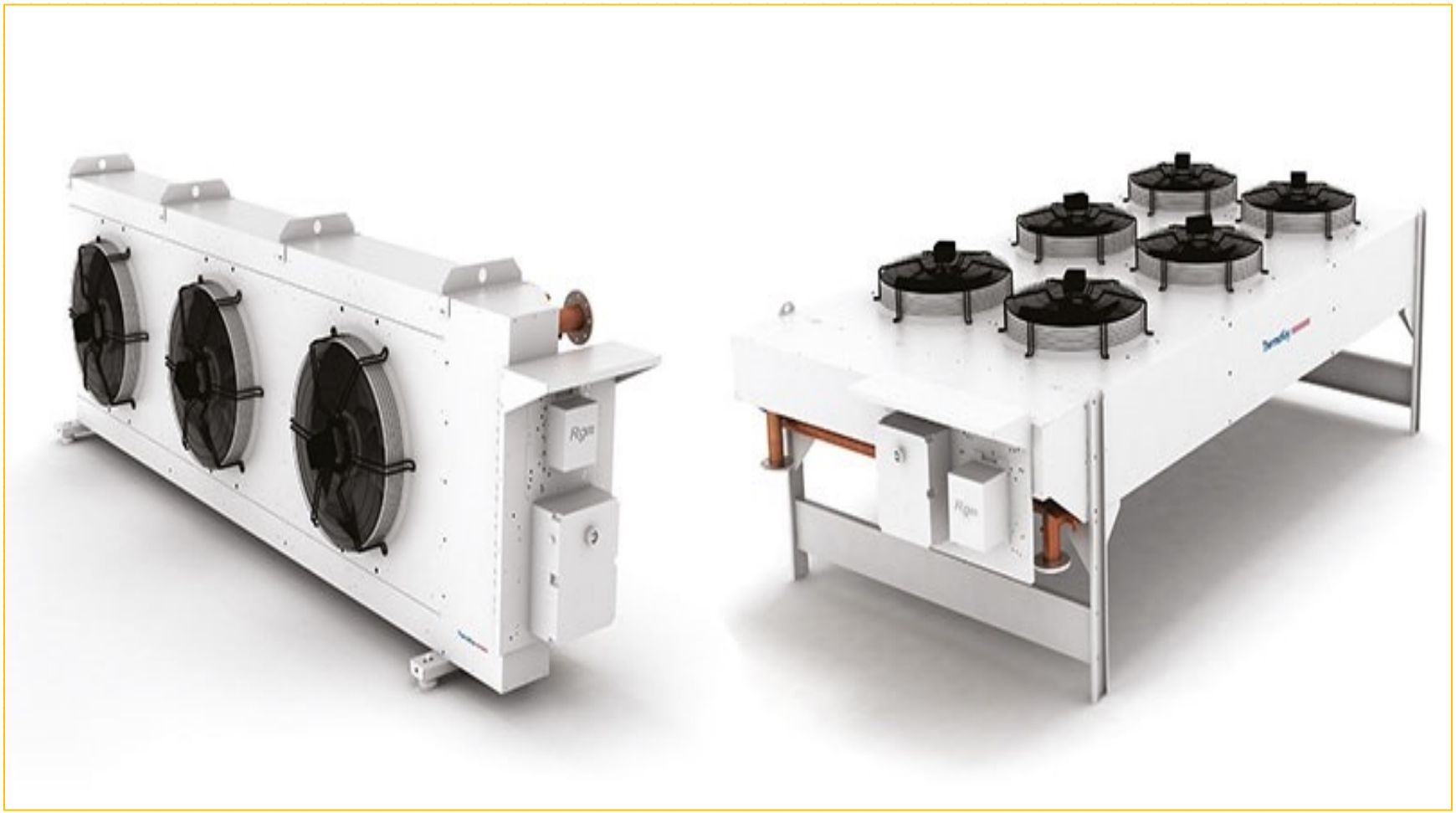
Fin Tube Heat Exchangers

Fin Tube Heat Exchangers

Radiators



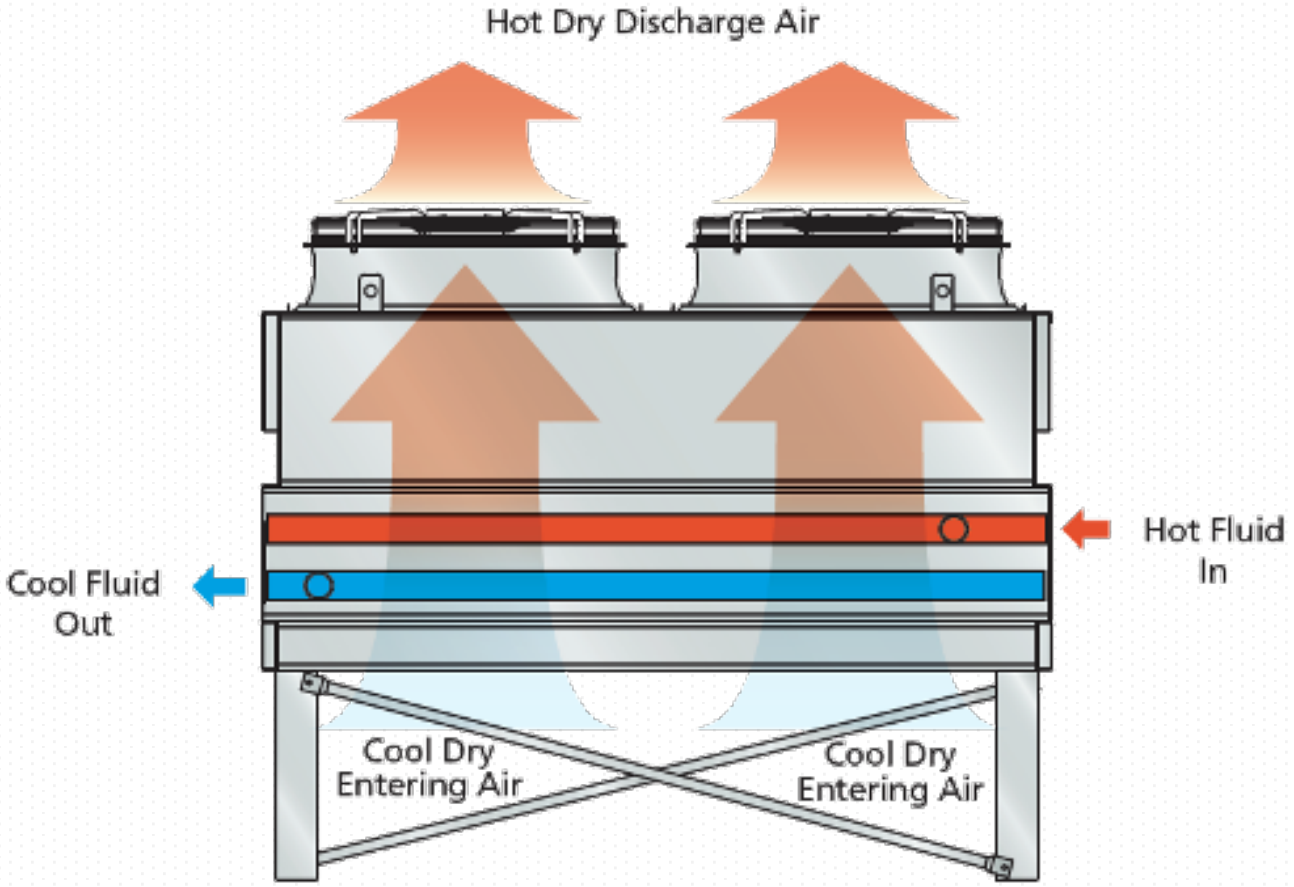
Dry Coolers



Air Cooled Condensers

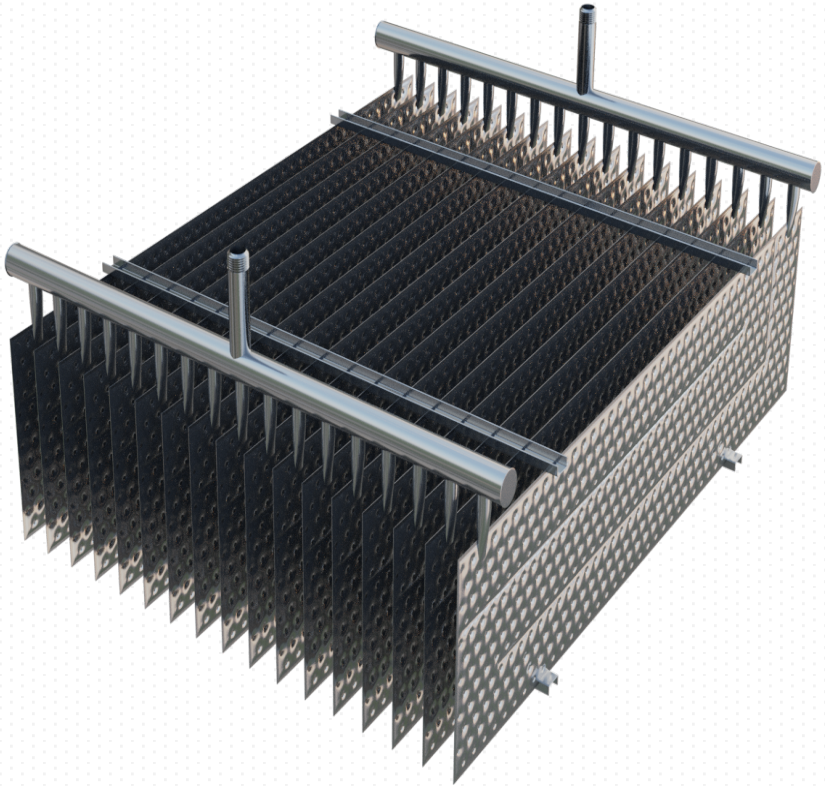
Air-Cooled Condensing Units

Adiabatic Cooling Tower



Pillow Plate Chiller / Evaporator

Pillow Plate Heat Exchangers



Heat Exchangers Servicing

Other Products

Pressure Vessels

Agitated Reactors

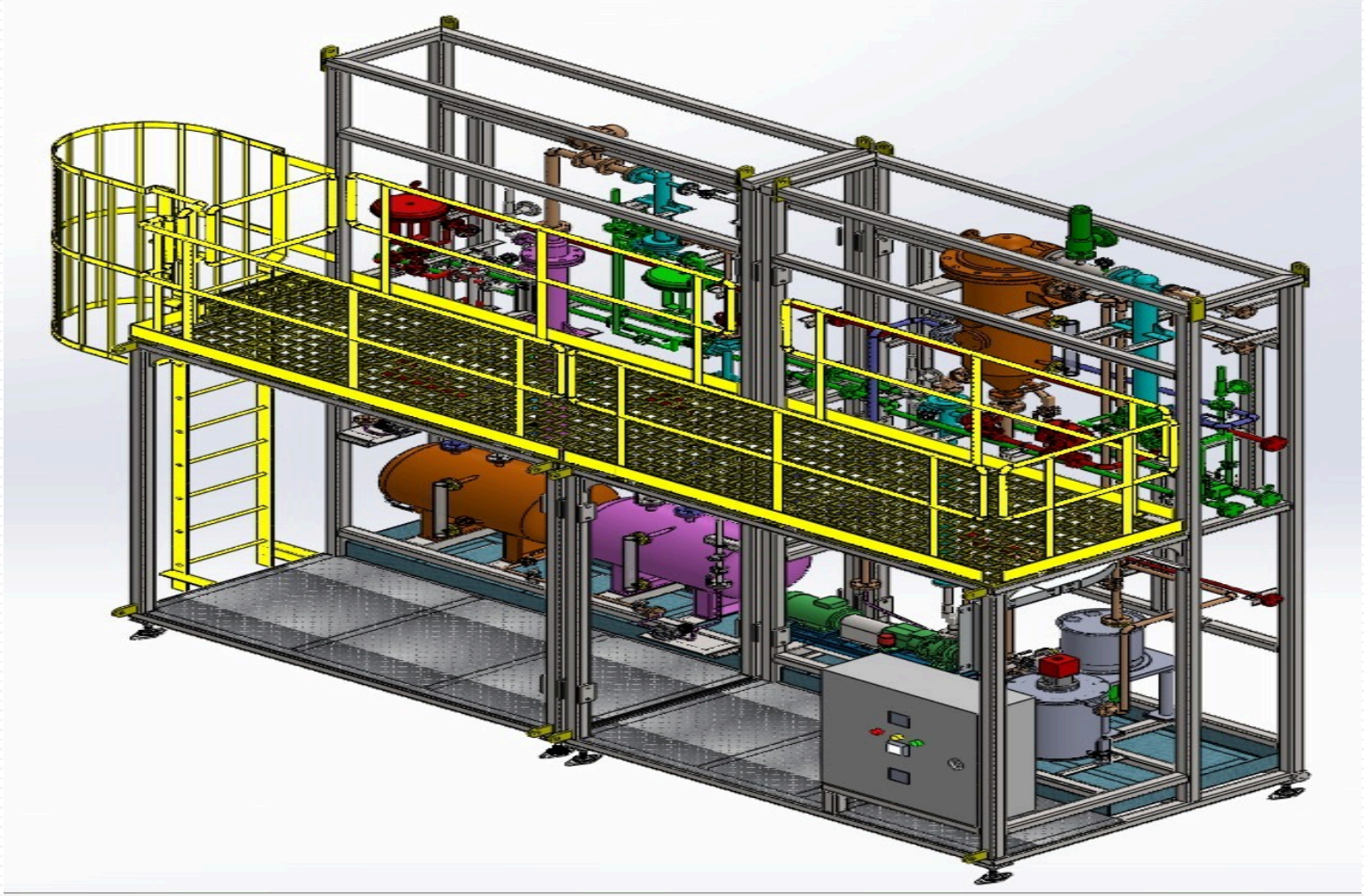
Other Products

Storage Tanks

Filter Vessels

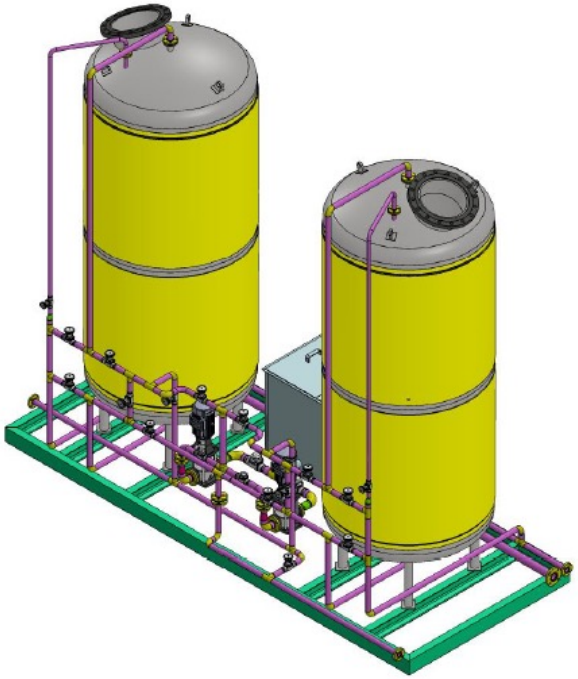
Skids with Process Automation

Pilot Plants



Pilot Plants

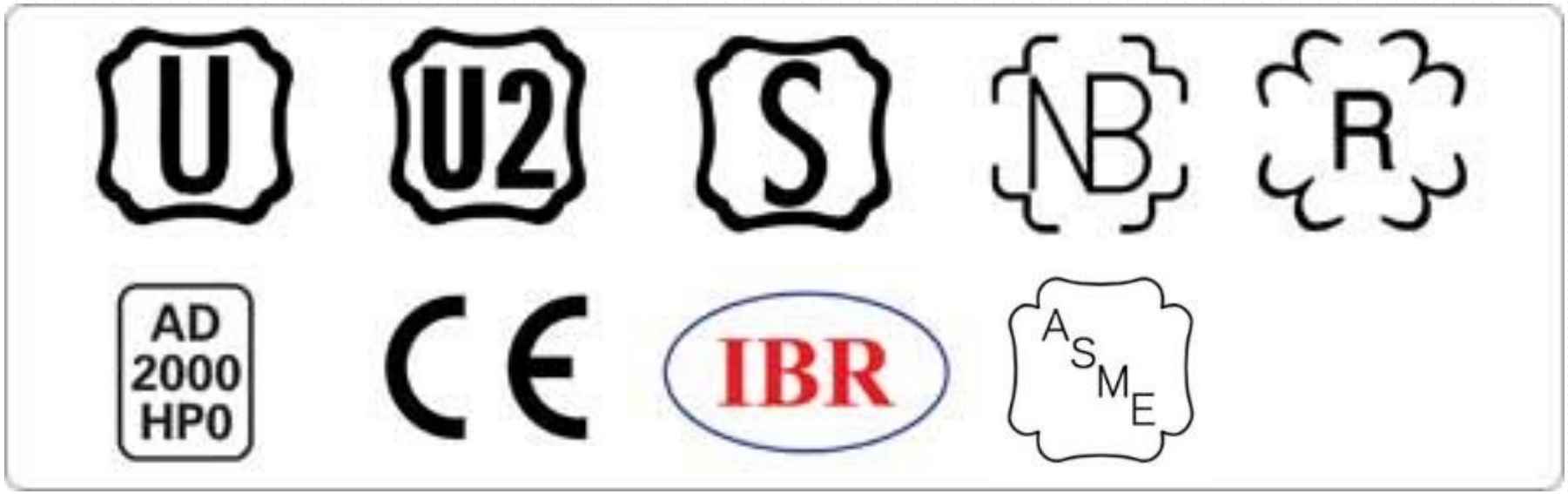
Water Skid



Refrigeration Skids

Pharma Skids

Manufacturing Practices



ASME Section VIII Div 1 | TEMA | IBR-1950 | IS-2825

DOSH | GHOST | AD-MERKBLATT | AS-1210 | CRN

ASME Section 1 | API-650 | PED-2014/68/EU

Special Certifications / Designs

- **CE marking : - PED 2014/68/EC (for European)**
- **GHOST /TRCU Certification (for Russia)**
- **KGS Certification (for Korea)**
- **Australian Design Code AS-1210**
- **Canadian Registration Number (CRN for Canada)**
- **Boiler Design Calculation as IBR-1950**

Team

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