

Total Engineering Solution for Heat Transfer



Aztech Heat Exchangers Pte Ltd was founded in January 1999 to provide a total Engineering Solution for our clients needs in their heat transfer equipment.

We provide customize designs & fabrications of various heat exchangers equipment to suit clients process & equipments.

With continuous improvements & developments, we are working towards **"World Class Manufacturer of Heat Exchangers"**.

Our Vision

"To be the Preferred Partner for our target markets"

Our Mission

- ◆ To provide significant competitive advantages to customers with superior qualities and distinct differences over other competitors so as to make our quality more special, more valuable, more important for their success and become their real value choice.
- ◆ Always operate with great discipline within our core values, resources, cultures and creativities to withhold the success factors of Simplicity, Speed and Self-Confidence so as to adapt to the changing of environment and marketplace.



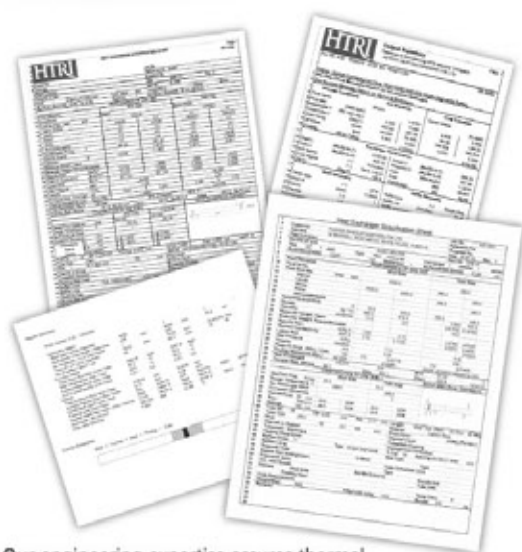
Insertion of 70 tons U-bundle into shell.



Main factory with land area 91,460Ft² and cover area 71,016Ft².



Design and Manufacturing Standard



Our engineering expertise assures thermal design optimization and performance guarantee.

Aztech has invested significantly in design softwares for design optimization and drawing generation. We have (license) for the following software:-

- Thermal design** : HTRI (Heat Transfer Research Institute, USA)
- Mechanical design** : PVElite, EJMA
- Other software** : Nozzle Pro (FEA on nozzle connection), STAAD Pro (Structure Design), RAM Connection Pro (bolt connection design), Solid Works-Simulation (FEA), Flow Induce Vibration Analysis, Fatigue Element Analysis
- Manufacturing Code** : ASME Section I, VIII. Div 1 & 2, API 660 & 661, TEMA 'C', 'B', 'R', BS5500, PED CE Marking, JIS PV 2, Standards Australia, AS/1210

Quality Assurance & Control

Our Quality Assurance System is certified by Lloyds to meet ISO9001 Edition 2008. We have also achieved several certifications such as **ASME 'U', 'U2', 'UM' stamps & National Board 'R' stamp** to meet clients requirements.

Our quality objective is:

- A** – Assurance to meet customer requirements
- Z** – Zero defect concept
- T** – Total quality services to satisfy customer
- E** – Efficient product design
- C** – Continual improvement
- H** – High productivity



Branch factory with land area 40,000Ft² and cover area 18,000Ft².

Shell & Tube Heat Exchangers



- The company has been focusing over the years on the development of Tubular Exchanger manufacturing that enabling the focus of her extensive engineering & facilities toward the production of these equipment for the various markets such as Refinery, Chemical, Petrochemical, Oil/Gas, Offshore & Pharmaceutical industries etc.
- The company has also ventured & gathered extensive fabricating and welding experience in handling special alloy material such as Hastalloy C276, Alloy 20, Alloy 200, Super Duplex, Monel, Incoloy, CrMo, Titanium & cladding material.
- Some of our supporting clients are ExxonMobil, Shell, Singapore Refining Company, Chevron, PTTEP, Lucite International, Linde Syngas, Technips & SBM Offshore, Foster Wheeler, Jacobs & Udhe.



High pressure stacked type heat exchangers.



Tubeside hydrotest 471 barg for DFU type.



This 55 tons stainless steel heat exchangers with 7775 tubes, shell dia 2200mm complete shell side hydrotest.



Tubeside pressure of 221 barg for NFU type.



Special U-Tube bundles with spiral finned design for air heater.



This 23 tonnes CCR Reduction Zone Exchangers is constructed with combination of CrMo P5, P22 and SS321 material.



Vertical MEG Recycle Column Reboiler - NEN type.



Hydro-test of floating head bundle with special test ring.



Hydrotest of stacked type heat exchangers as per API 660.



Steam superheater equipped with expansion bellow.



A sample of the AKU, Kettle type Shell & Tube heat exchanger.

Our in-house facilities & machineries enable us to construct new tube bundles or retubing of existing tube bundles at the most competitive cost & fastest delivery.

'U' bundle is constructed in accordance to ASME VIII DIV I & API 660 requirement.

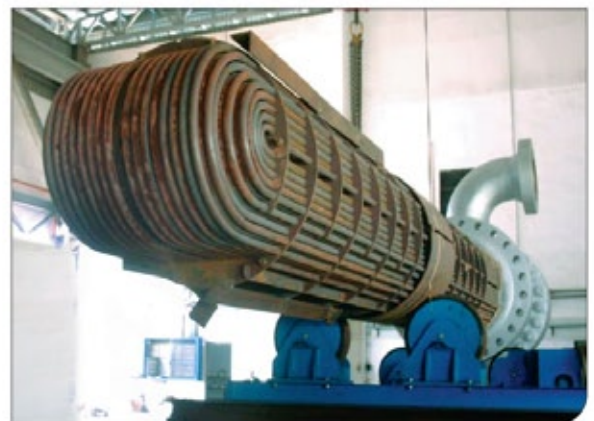
'U' tube bending specified in accordance with TEMA 'R'.

For bends radius greater than $1.5 \times$ tube outside diameter, the following applies

- Flattening of the 'U' bend portion should not exceed 10% of tube diameter.
- Tube wall thinning should not be less than minus 17% of the tube wall thickness.
- Leg length (total overall length) $-0 + 5\text{mm}$.
- Bend diameter tolerance 1.5mm.
- Stress relieve can be arranged with reputable heat treatment company.



A Completed titanium U-bundle with tube to tubesheet welding.



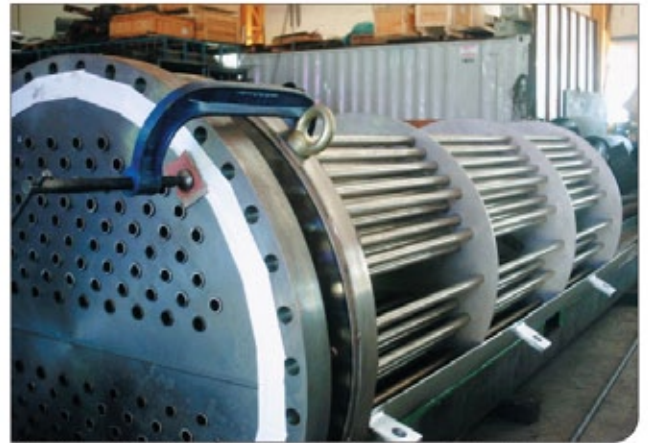
A special design Flanged-only Tubesheet U-bundle sits on a rotator for final dimension inspection. Tube side hydrostatic test pressure up to 167 barg.

Tube end welding for Feedwater High Pressure heater for power plant.

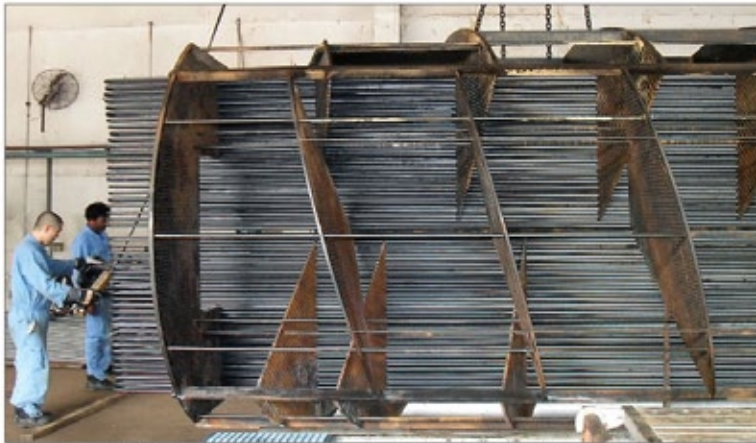




A removable duplex stainless steel tube bundle with floating head (AES Type).



This Alloy 200 (99% nickel) U-bundle is constructed with double tube sheet.



Retubing of SA179 Helical U-tube bundle (2553 pcs) within 2 weeks with tube end strength welding.



SA179 U-tube bundle with Special Internal & External tube finings (3044 pcs) to be inserted into Shell using bundle puller.



Hairpin Heat Exchangers



Our in-house modular design package for Hairpin heat exchangers in either Double pipe or Multi-tube configuration. We are able to arrange these individual hairpin section in proper series, parallel, series – parallel combination in order to achieve the ultimate duty.

We are able to perform thermal design rating for both new or replacement exchangers. Our design constructions are able to meet the various code requirements and any special customers specifications.



Complete Hastalloy C276 Multi-tube Hairpin economizer for CO₂ to CO₂ application (U stamp).



These double pipe hairpin exchangers are constructed with fin material welded on longitudinal axis by High Frequency Welding.



Hastalloy C276 multi-tube hairpin exchangers with straight tube length 7,160mm is designed for a hydrostatic test pressure up to 571 barg.

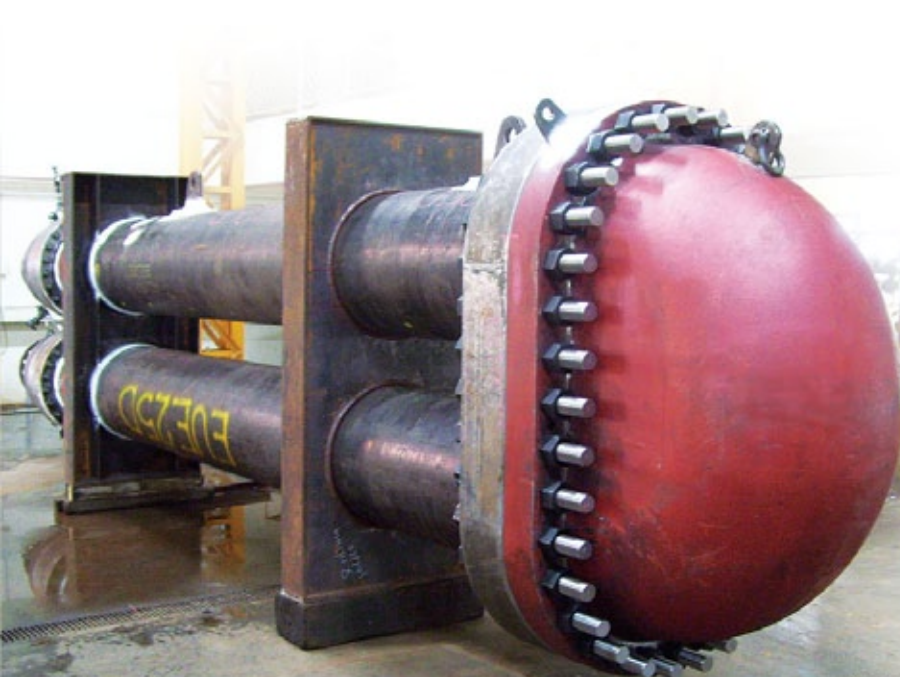




Different types of multi-tube hairpin exchangers design.



A multi-tube high pressure return cover by plate forming & welding.



A multi-tube high pressure return cover by casting.

Waste Heat Boilers and PIG Launchers & Receivers



Our manufacturing standard for Unfired Waste Heat Boiler fulfilled ASME Section I and Ministry of Manpower Occupational Safety & Health requirement.



Insitu furnace for PWHT of Waste Heat Boiler.



Packing of waste heat boiler for delivery.



PIG Launchers & Receivers with Quick Opening Closures (QOC) are fabricated for the cleaning of pipelines internal wall surfaces.



Another 50 tonnes Waste Heat Reboiler with shell thickness 76mm.

To fabricate various types of pressure vessels according to customer requirements and specifications. Pressure vessels are fabricated under API 650 code requirements.



Various Carbon Steel & Stainless Steel vessels fabricated.



Pressure vessel with special GRP lining for the internal coating.



Stainless steel column with carbon steel skirt.



Tray installation inside the column.



Clad 316L column with diameter 2m x length 22m x weight 60 tons.

Air Cooled Heat Exchangers (Fin Fan Coolers)



Apart from traditional Tubular heat exchangers manufacturing, Aztech Heat Exchangers also has good experiences in designing and manufacturing Fin Fan Coolers for various industries.

Top hopper for the natural draft air cooler.



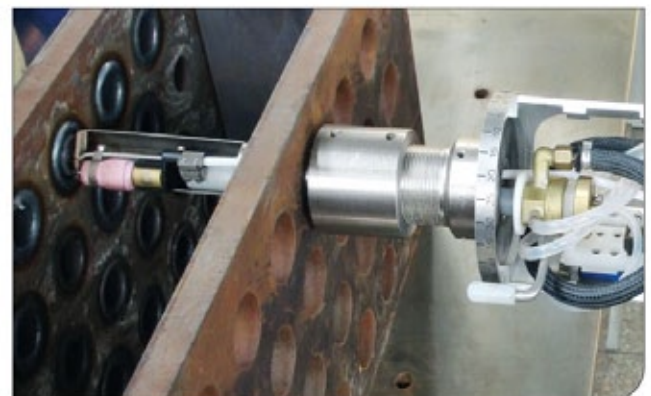
Plugged header type fin fan cooler bundles.



Air cooled tube bundle for natural draft design.



4 units of Channel header tube bundle ready to be delivered.

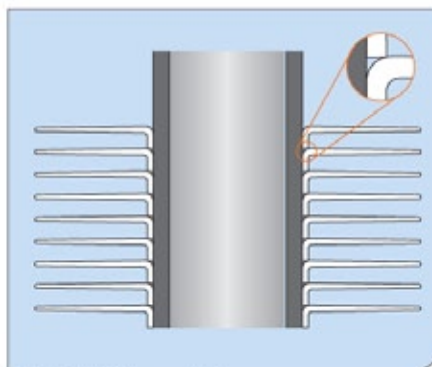


Automatic tube end welding in a plugged header to ensure reliable & quality weld finish.

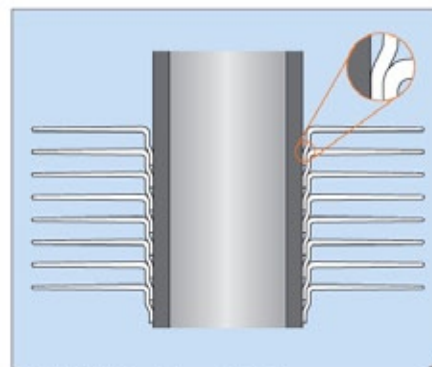


Assembly of complete fin fan cooler with walkway & ladders.

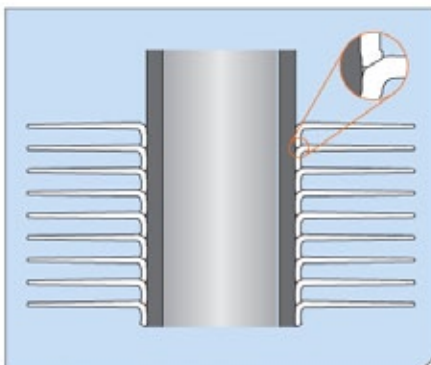
We are able to provide various type of Finned Tubes for the different design application. The most common type of Finned Tubes used are 'L', 'LL', 'KL', 'G' and Extrusion.



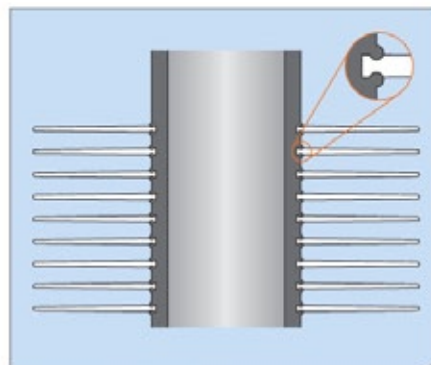
SG-L Fin (Wrapped Fin)
Maximum working temperature: 120°C



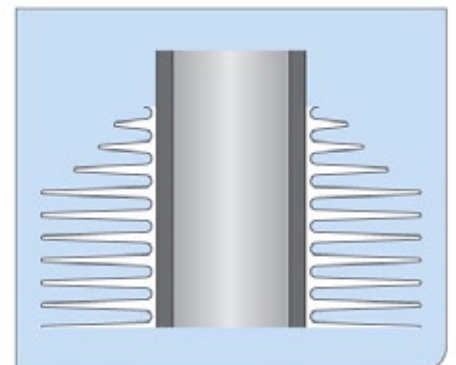
SG-LL Fin (Overlapped L Fin)
Maximum working temperature: 180°C



SG-KL Fin (Knurled L Fin)
Maximum working temperature: 250°C



SG-G Fin (Embedded Fin)
Maximum working temperature: 400°C



SG-Extruded Fin (Bi-metallic Fin)
Maximum working temperature: 300°C

Block Finned Heat Exchangers



Block Fin designs are generated from great vast of experiences and careful study of flow geometric pattern. The special louver openings create excellence turbulence and eliminate laminar flow. This high quality fin block has advantages for higher heat transfer efficiency, lower pressure drop, increase airflow rate, stronger fin to tube bonding and lesser induce vibration.

Block Fin can also use together with wireloop tube insert to further improve heat transfer performance for application in air-air, air-oil and air-high viscous fluid.

Manufacturing Specification:

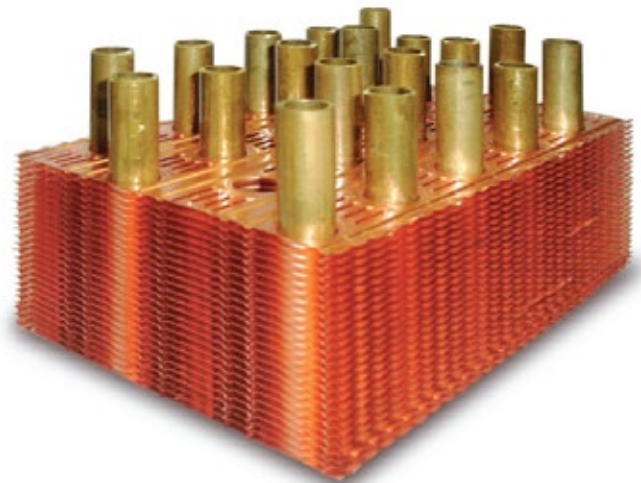
Tube Material : Copper Nickel 90/10, Aluminium Brass and Copper

Fin Material : Copper and Aluminium

Fin Pitch : 7– 20 FPI

Fin Bonding : Bullet expanding

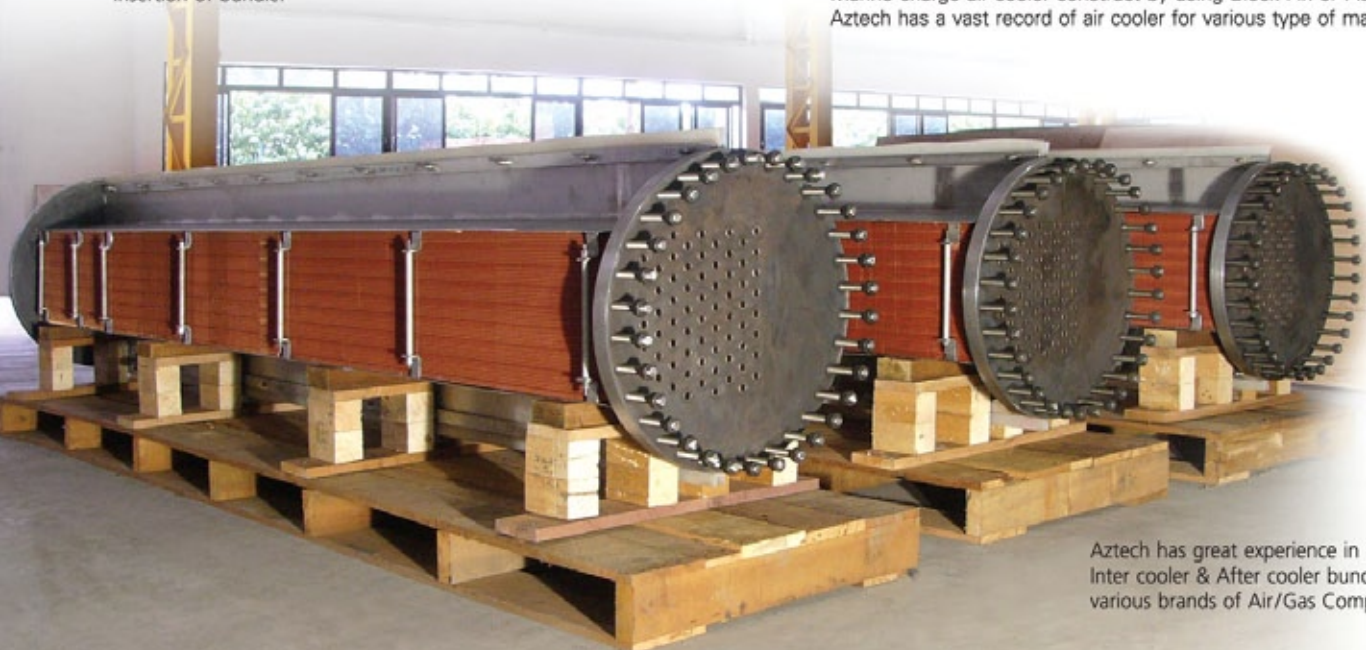
Tube Size : 1/2", 5/8" & 3/4"



Insertion of bundle.



Marine charge air cooler construct by using Block Fin or Plate Fin tube. Aztech has a vast record of air cooler for various type of marine engine.



Aztech has great experience in replacing Inter cooler & After cooler bundles of various brands of Air/Gas Compressor.

Weld deposit on dish head.



The new overlay welding machine able to deposit alloy over carbon steel tubesheet & pipe.

New U bending machine able to bend tube radius 1.5 x tube outside diameter



Digital Torque control expansion assure equal torque being apply to each tube, thus prevent over or under expansion & improve productivity.



Profile cutting machine for thick wall shell nozzle opening.

Our CNC Double Column machine is able to take maximum load size of 3m x 4.5m x 15,000kg.





Titanium welding chamber.



FCAW, DSS filler for inside pipe weld overlay.



Submerge Arc Welding for heavy wall vessel.



New auto welding machine able to weld Titanium tube.



Orbital tube end weld & cross section.



CNC profile cutting machine for plate cutting.



Bandsaw machine for quick & clean cut up to maximum OD 2,500mm.



Our in-house Level III QA is performing UT test on a shell body.



Magnetic Particle Test is able to pick up hair line cracking.



PMI testing ensure right composition of base material & welding consumable being use.



PMI-Master Pro (Able to detect carbon content)



Digital mobile hardness tester.



Digital coating thickness gauge.



Vedioscope to check tube internal to enhance product quality.



Digital thickness gauge.



Optimised tube-side heat transfer enhancement



Reduces size, number of bundles, weight, cost and maintenance



hiTRAN Matrix Elements are installed on the tube-side of exchangers and reactors to substantially increase the rate of heat transfer. Changing fluid dynamics from the highest velocity at the centre of the tube to being highest velocity at the wall (annular type flow), increases shear and mixing, essentially removing the thermally limiting boundary layer. Fouling is also reduced as a result of lowering the wall temperature when heating and increasing wall temperature when cooling, particularly important when processing hydrocarbons.

Used in both single and 2-phase flow regimes, for new and retro-fit applications, these highly engineered systems are purpose-designed to meet specified thermal and hydraulic duties.

- CRUDE OIL
- RESIDUES
- POLYMERS
- RESINS
- CHEMICALS
- SLURRIES
- GASES
- TARS
- EMULSIONS
- ACIDS
- REFRIGERANTS
- LUBE OILS

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OVER 30 YEARS EXPERIENCE, MORE THAN 16,000 BUNDLES INSTALLED WORLDWIDE



Enhancing performance of tubular heat exchangers and delivering extensive technical and economic benefits



Lukoil, Russia



Sinopec, China

- Increased production and longer run-times
- Lower cost of new plant
- Reduced energy costs
- Lighter, more compact designs
- Reduced processing and maintenance costs
- Increased plant operability
- Improved product quality

HEATERS • COOLERS • CONDENSERS • VAPOURISERS • BOILERS
REBOILERS • THERMO-SYPHON REBOILERS • REACTORS • ECONOMISERS
FALLING FILM EVAPORATORS • CLIMBING FILM EVAPORATORS • CHILLERS
DE-VOLATILISERS • INTERCOOLERS • AFTERCOOLERS • OXIDISERS...

Benefits – New exchangers:

- Reduced number of shells/bundles
- Reduced exchanger size
- Performance maintained even under turn-down conditions
- Lower maintenance – lower operating cost
- Lower capital cost

Benefits – Retro-fit:

- Increased throughput at same terminal temperatures
- Variable/selectable performance to meet process need
- Re-use of existing equipment – low capital expenditure
- Easily and quickly installed
- Short pay-back time

Our major customers:

ExxonMobil



sembcorp



Thaioil Group



جاسكو
GASCO
شركة أبوظبي لاستثمارات الغاز المحدودة
Abu Dhabi Gas Industries Ltd.

ادجاس
ADGAS

PTTEP



قطر للبترول
Qatar Petroleum



Human Energy™

JE JACOBS

M+W GROUP

Technip

SBM OFFSHORE

BR PETROBRAS

FOSTER WHEELER

And more.....

Public Awards

Aztech has participated for 3 Entrepreneur Competitions and received following awards:-



2002 Sept – Shell Live Wire Young Business Start-up Award: Top 5 merit winner



2002 Dec – Yazhou Zhoukan (亚洲周刊) Young Chinese Entrepreneur Award: Top 5 merit winner



2003 Sept – A Rotary - ASME Award The Entrepreneur for the year: Top 10 winner



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