



Fluid Dynamics

Heat Exchange Solutions since 1981

Capability Presentation

Presented by: Mike Surridge - General Manager



Capability



Fluid Dynamics Pty Ltd, an Australian owned and operated company specialising in heat exchangers since 1981, is certified ISO 9001:2015 and can design and verify to most compliance standards including:

API 661 norms; AS1210; ASME 'U' Stamp; PED etc..

In over 40 years of operation Fluid Dynamics has built an enviable reputation for being able to design, manufacture, supply, re-engineer, refurbish, clean and test a huge range of heat exchangers at its fully equipped facility.

We carry a large range of stock and equipment for even the most complicated of projects with our product range being constantly extended and updated to include the latest designs.

As we are not tied to any single brand we are completely unrestrained in what solutions we can offer – the best solution that suits our customers, not the 'solution' that suits the supplier

Our unique business model allows us to supply both OEM and aftermarket heat exchangers with custom designs, modifications, refurbishment, parts and service for almost any type of heat exchanger to suit our customers needs. Fluid Dynamics will always offer the best solution and the best quality at very competitive pricing - all backed up by a proud Australian company specialising in heat exchangers



Heat Transfer



Fluid Dynamics has remained at the forefront of heat exchanger technologies since 1981. From our base in Melbourne we offer the following services to our very broad customer base:



Fabrication & Service Facility



Ultrasonic Cleaning System



In House Inspection and Testing



Design, Sales and Service for new, replacement & rebuild of all heat exchangers



Accreditation to ISO 9001 SAI Global



Site Installation Capability



Site Inspection



Strategic supply partners to enhance our own manufactured heat exchanger technologies



Waste Heat Recovery Heat Recovery Consultancy

Factory & Facilities

We have a dedicated team of fitters, welders and in house service technicians who know what is needed when it comes to your heat exchangers.

With Fluid Dynamics your heat exchangers are in good hands.

When we receive your unit our team will : -

- Carry out initial inspection and detail findings
- Pre-clean the heat exchanger if required
- Carry out a preliminary pressure test and further assess the unit
- If instructed, contact you to discuss all findings in detail and advise our recommendations and what corrective actions should be taken.
- If instructed, clean the heat exchanger using our advanced ultrasonic cleaning system
- Carry out final assembly; replace all seals as required; carry out final pressure test and a close inspection. All findings and results are noted.
- Finally your unit will be dried, painted if instructed, packed and made ready for delivery.



Our Current Product Range

- Bar & Plate
- Shell & Tube
- Scrape Surface (SSHE)
- Plate & Frame / Semi Welded
- Fully Welded
- Brazed Plate
- Fin Tube Coil
- Dry Coolers
- Air Cooled Condensers
- Shell & Tube
- Corrugated Shell & Tube
- WHRU
- Custom build



Gasketed Plate Heat Exchangers

OEM or our own FluidEX[®] Range

Wide range
Modern / Efficient

Industrial
Painted frames

Hygienic
All stainless-steel frames

Plate Materials
316, 304, Titanium,
Hastelloy, Inconel, etc.

Gasket Materials
HT NBR, HT EDPM, HNBR,
Viton

Capacity
1m³/h to 4,500m³/h

25bar
Max working pressure

Operating Temps
-20°C to +190°C

Standard Connections
DN25 to DN500

Hygienic Dairy Fittings
Connections
1" to 6"



Plate Heat Exchangers Spares & Service

- Fluid Dynamics supplies high quality Plates & Gaskets for most models including: -
APV, Alfa Laval, FluidEX[®], GEA, Vicarb, Mueller, Sondex, Tranter, Hisaka, Reheat, HRS, Sepak, AHTT, API Schmidt Bretton, Arsopi, Barriquand, Fischer, Funke, SWEP...
- On-site service, gas testing and maintenance of your PHE units
- In-house cleaning and crack detection of plate packs
- Ultrasonic cleaning system for plates and associated components
- In-house refurbishment and rebuilding of plate heat exchangers
- Redesign and design changes for most ranges possible
- Swap out frames for many sizes with minimal modifications required
- Flexibility to offer tailored service and spares solutions to meet specific requirements and needs



Fully Welded Heat Exchangers



SUITABLE FOR A
WIDE RANGE OF
APPLICATIONS



GAS TO LIQUID
OR
GAS TO GAS



ALUMINA
SLURRIES OR
SIMILAR
PROCESSES,
ELUATES ETC.



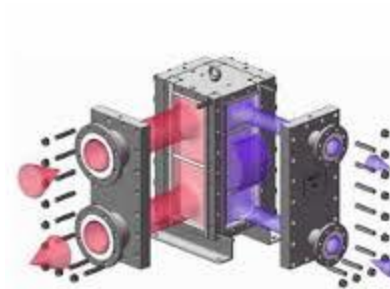
HAZARDOUS
FLUIDS –
CHEMICALS AND
PETROCHEMICAL



HIGH PRESSURE
APPLICATIONS,
VAPOURS AND
REFRIGERANTS



REFRIGERATION
AND CO₂



FluidEX[®] Brazed Plate Heat Exchangers

Very large range

Suit almost any application.

Brazing

Copper or Nickel

Very compact

High Thermal Efficiency.

Easy Installation

Long life

Proven
Durability & Reliability

Corrosion Resistant

available

Materials

316L, SMO254 plates, Cu
& Ni Brazing

Twin Wall

Safety Plates

available

Dedicated Oil Coolers

(DOC)





Kelvion K^oBond

COMPACTNESS & PERFORMANCE BONDED TOGETHER



DESIGN & FUNCTION

For decades, we have been supplying the oil & gas industry with reliable and efficient heat exchange technology for a wide range of applications. Our broad experience and knowledge of the market has enabled us to develop and enhance our product portfolio with innovations.

K^oBond, Kelvion's diffusion bonded heat exchanger, is ideal for applications involving extreme process temperatures and pressures. Combining design with welding expertise, K^oBond withstands pressures up to 1,000 bar and temperatures from cryogenic -200 to 600 °C, while providing significant savings in weight and footprint compared to common heat exchanger solutions.

K^oBond with its diffusion bonding technology is perhaps one of the most significant and game-changing solutions for projects with restricted space – May it be for offshore plants (e. g. as high pressure vaporizer) and reliquefaction on floating units.

ADVANTAGES

- ▶ PRESSURE RESISTANCE UP TO 1000 BAR
- ▶ WORKING TEMPERATURE RANGE FROM -200°C TO 600°C
- ▶ HIGH HEAT TRANSFER RATE THANKS TO FLUIDS PROXIMITY ALLOWING TEMPERATURE APPROACH UP TO 2°C
- ▶ LEAKAGE FREE AND SAFE
- ▶ HIGH RESISTANCE TO CYCLIC SERVICES
- ▶ UP TO 6 TIMES SMALLER THAN CONVENTIONAL S&T HEAT EXCHANGER

K^oBOND APPLICATIONS



LNG



GAS COMPRESSION
OFFSHORE



FSRU



RENEWABLES



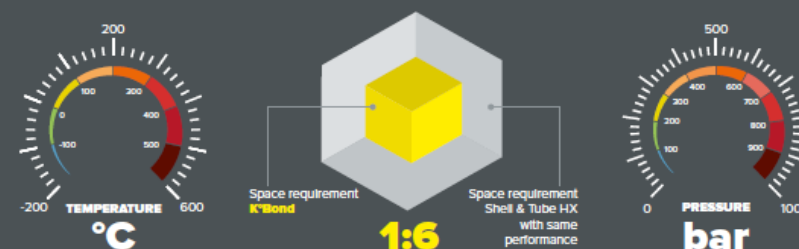
HYDROGEN



SUPERCritical
CO₂



K^oBOND PERFORMANCE



DIFFUSION BONDING

1. Patterns are designed for each service and chemically etched on stainless steel plates.
2. Etched plates are stacked and welded through diffusion bonding process, converting them into one solid block of metal (core).
3. When required, multiple cores are welded together. Nozzles and headers are welded on cores to form final K^oBond.



Plate



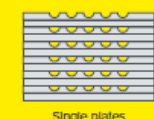
Single plates



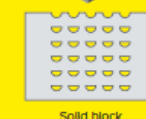
Solid block



Plate with etched channels



Single plates



Solid block

Diffusion bonding



Optimized
in-house design software



Available in stainless steel
304L & 316L



Designed as per ASME rules,
CE-marked and / or U-stamped



Fluid Dynamics

Heat Exchange Solutions since 1981

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Kelvion Thermal Solutions for

CARBON CAPTURE & STORAGE

FLUE GAS COOLING



Rekuluvo/Rekugavo
Flue Gas Cooling

AMINE CO₂ REMOVAL SYSTEMS



Air Fin Cooler
Lean amine cooler



K°Flex
Thermosyphon Reboiler

CCS BY DESUBLIMATION



Desublimators
Direct exhaust gas capture

CCS ABSORBER



Cooling Tower
Direct air capture

Kelvion



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Cooling solutions for the entire value chain of
HYDROGEN



PRODUCTION & PRODUCTION UPSCALING



Air Fin Coolers
High performance tube technology



Cooling Towers
Smallest footprint



Desublimators
Unique technology for carbon capture



Heat recovery
Wide range & experience

DISTRIBUTION



K°Bond
Diffusion bonded heat exchanger
with highest pressure resistance

INTEGRATED SOLUTIONS & UTILIZATION (FUEL CELLS)



Customized and
integrated solutions
beyond heat exchangers

Bar and Plate (Aluminium & Copper)

- Large stock of components carried at all times
- Ability to custom build to just about any size
- Aftermarket units are a specialty – quicker, cheaper and stronger than OEM
- Replacement / Renewal of existing core
- Cooling systems can be fitted with 12v/24v DC, 3 phase hydraulic and Pneumatic motors,
- Shrouds, mounting base, stone guards can also be supplied
- BSP port sizes and locations are fitted to individual requirements
- High performance for heavy duty hydraulic and lubricating applications
- Maximum working pressure 26bar
- Service, Testing, Repair and Ultrasonic Cleaning
- Serving all industry sectors



Oil Cooler solutions



Fluid Dynamics is your one stop solution for automotive and industrial oil coolers

Fluid Dynamics is an Australian owned and operated company specialising in a wide range of heat exchangers.

- Full service for oil coolers including ultrasonic cleaning, testing, repair re-engineer and replacement.
- Large range of stock and equipment for even the most complicated projects.
- Supply of OEM and aftermarket oil coolers ensuring the best solution, the best quality, and very competitive pricing.



Fluid Dynamics - for all your oil cooler needs

Coil & Finned Tube Heat Exchangers

All industries served
to the highest
standards

All types of Coils &
Finned Tube units
designed &
manufactured to all
major industrial
standards.

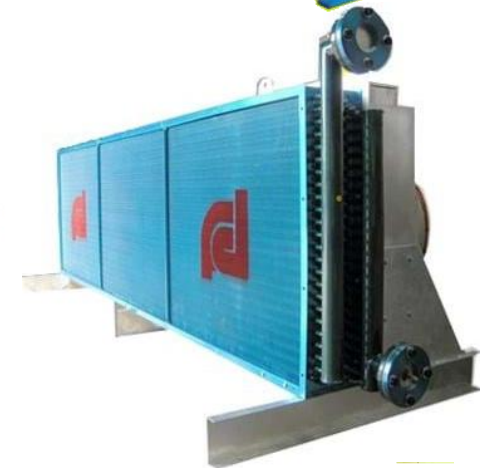
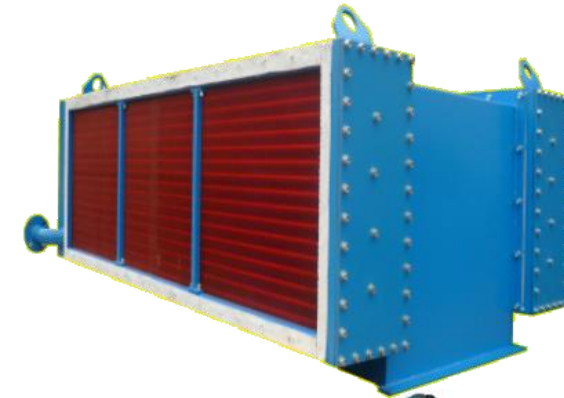
Special coatings
applied to all coil
units where required



Dry coolers – single
through to multi core,
multi fan, condensers
and adiabatic coolers

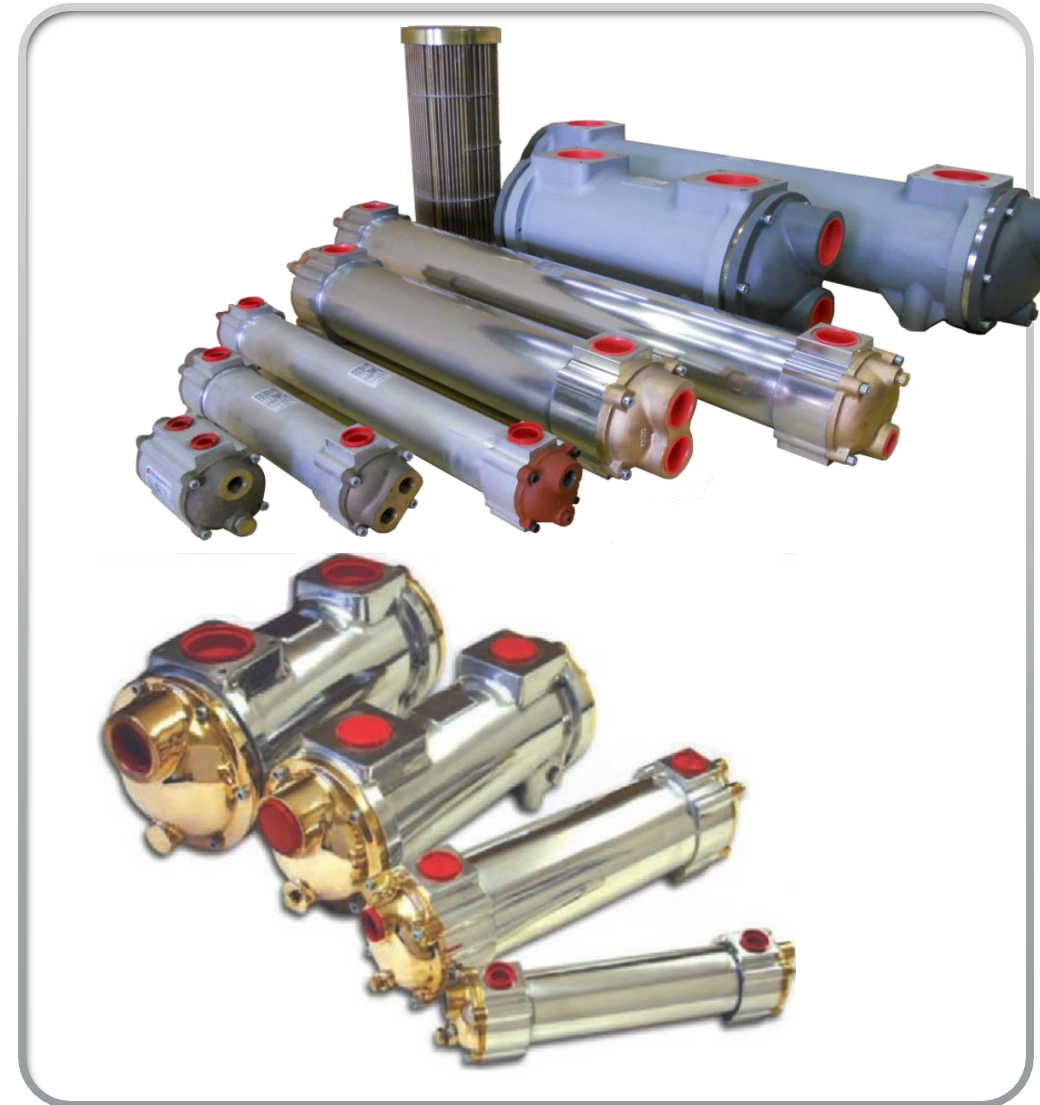
Round tubes,
elliptical tubes,
compact fin, single
fin, spiral fin,
rectangular fin

All materials available
including carbon steel
tubes and fins, Cu
tube and fin or Ali fin,
CuNi tubes and
stainless or Ali fin,
stainless tube and fin



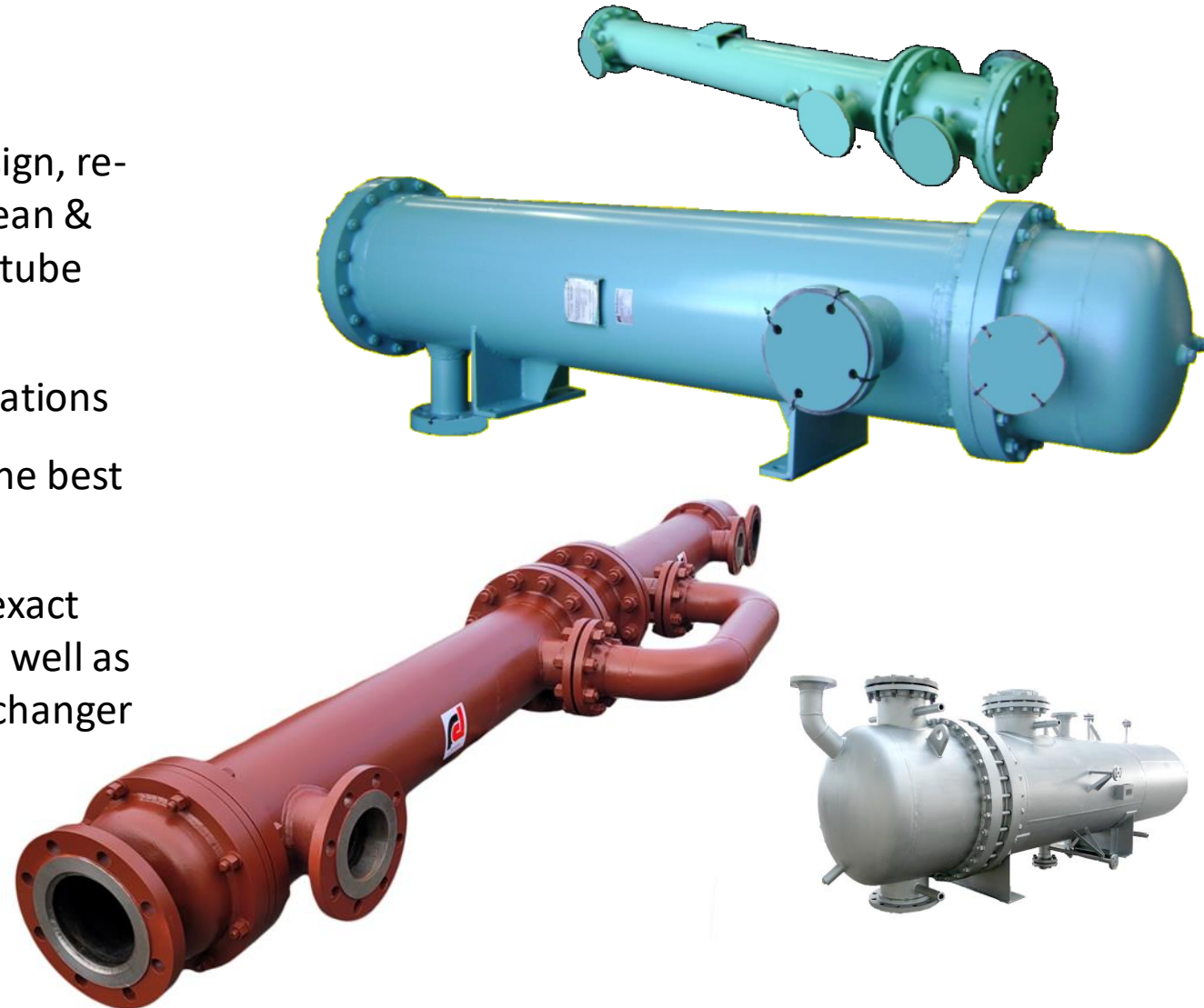
Shell & Tube (off the shelf)

- Fluid Dynamics has been synonymous with shell and tube heat exchangers for over 40 years
- One of Australia's largest Stockists of shell & tube oil coolers, Custom Build, transmission oil coolers & water to water coolers. Most standard ranges are available ex stock
- We offer a full range of services including like for like replacements, new units, repairs, testing, service and ultrasonic cleaning, new tube bundles, repairs to existing tube bundles and re-tubing. All carried out in our well-equipped Hallam factory
- Ideal for many applications – marine, industrial, on-road & off-road etc.



Shell & Tube-Custom Build

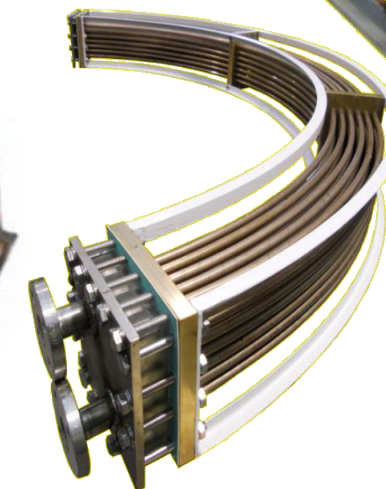
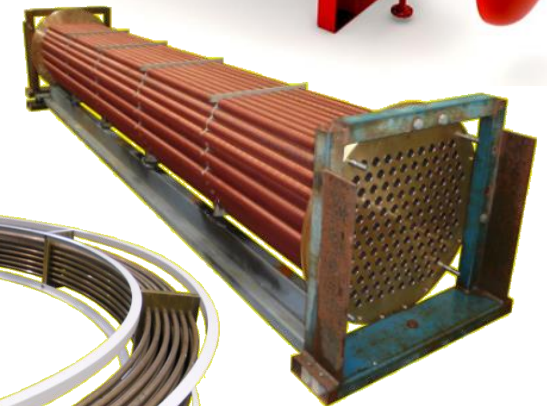
- One of our key strengths is our ability to design, re-engineer, manufacture, refurbish, test, clean & and repair all types and sizes of shell and tube heat exchangers
- We provide heat exchangers for all applications
- Built to the highest standards and using the best quality materials
- We can provide new tube stacks built to exact standards to fit in to your existing shell as well as manufacture the entire shell and tube exchanger



Special Project Heat Exchangers

At Fluid Dynamics we pride ourselves in our skills and ability to provide solutions for almost every project.

- Hydrogen Coolers
- Thrust Bearing Coolers
- Large Transformer oil Coolers
- Generator Coolers
- Large Cooling Coil Systems
- No matter what the requirement Fluid Dynamics can provide the correct technology and solution to match it



Corrugated Tube Heat Exchangers



Highly efficient all stainless-steel shell and tubes with other materials available



Hard start through to multi-start corrugation designs for different fluids



Twice the heat transfer coefficient of smooth tube heat exchangers



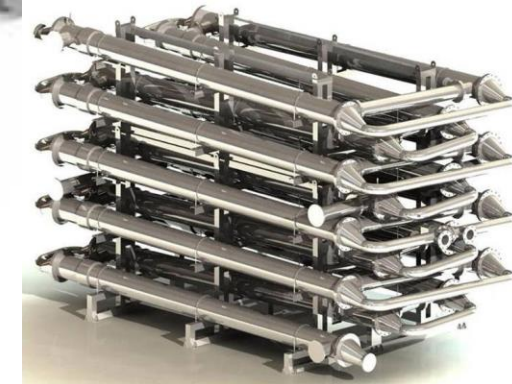
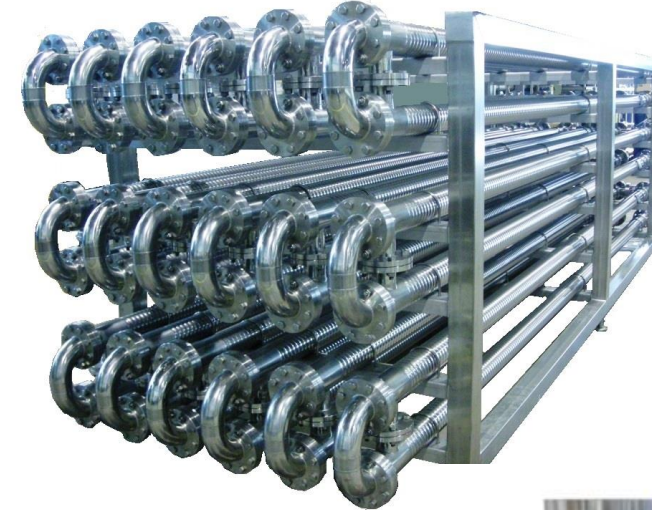
Suitable for almost every feasible hygienic or industrial application



Working temperatures up to 550°C



Ideal for shear-sensitive, viscous or highly viscous products



What Heat Transfer Application are you looking for?

- Heating
- Cooling
- Regeneration
- Pastuerisation
- Desuperheating
- 2 Stage Heating / Cooling
- Waste Heat / Energy Recovery
- Condensate Recovery
- Exhaust Gas Heat Recovery
- Evaporation
- Condensing



- Fluid Dynamics

If your application is not listed then please ask.

Ultrasonic Cleaning

- Our Ultrasonic Cleaning System uses special fluids (not harsh acids).
- Huge industrial sized tank
- Although it operates normally at 50°C to 60°C our system can heat to 90°C if required.
- When combined with the power of ultrasonics the system effectively removes carbon, rust, oil, epoxies, scale etc..

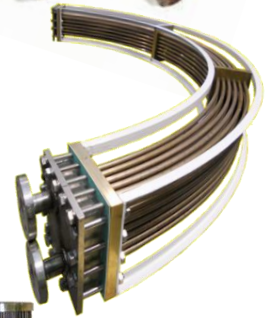
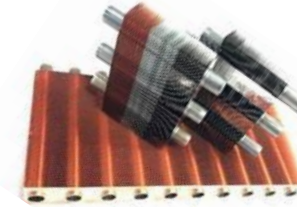
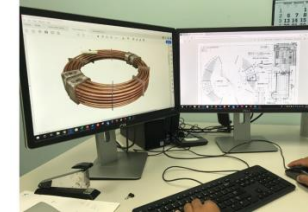


Heat Exchanger Spares

OEM & FluidEX[®]



- Spare or Replacement Custom Heat Exchanger Re-Builds
- Spare or Replacement Tube Bundles & Tube Nests
- Spare or Replacement Tube Plates (blanked or pre drilled)
- Spare or Replacement Aluminium Cores
- Spare or Replacement Finned Tubes – (most types)
- Replacement Spare Parts for all plate heat exchanger makes including complete plate packs
- Replacement Braze Plates, SWEP, SONDEX, APV, WTT, FUNKE etc.

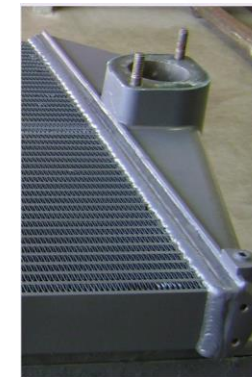
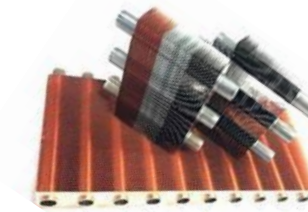
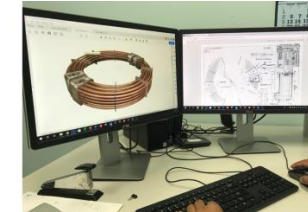


Heat Exchangers - In House Servicing

- In house Cleaning, Testing, Inspection & Repair of almost any type of Heat Exchanger:

Shell & Tube; Steel, Copper & Aluminium Radiators & Oil Coolers; Finned Coil; Finned Tube; Aluminium Bar & Plate; Thrust Bearing Coolers; Hydrogen Coolers; Condensers; Evaporators; Fin Pack Units, Fin Coil Units, Charge Air Coolers, Generator Coolers, etc.

- Custom Heat Exchanger Builds and Re-Builds
- Replacement Tube Bundles and Cores
- NDT - Eddy Current; Ultrasonic and Borescope
- Camera inspections of tubes and internal surfaces
- Material analysis
- Replacement Spare Parts
- Redesign and Design Engineering Services including site laser scanning and 3d modelling



Servicing & Maintenance on Your Site

Fluid Dynamics has an experienced and well-equipped team of professional heat exchanger service technicians covering all States in Australia and at your call.

Cleaning, Testing, Inspection & Repair

The list of what we can do on your site is extensive and includes:

- Gas Integrity Testing
- Inspection and Evaluation
- Inline Chemical Cleaning
- Installation and Removal
- Re-gasketing
- Replacement of Spare Parts
- Replacement of Plates and Plate Packs
- Complete Heat Exchanger Builds and Re-Builds
- Repair and Re-builds of Tube Bundles
- Finned tube removal and replacement
- Leak Detection
- Borescope Inspections
- Material & Failure analysis
- Non Destructive Testing - Eddy Current, Ultrasonic etc.
- Waste disposal etc.



All Heat Exchangers

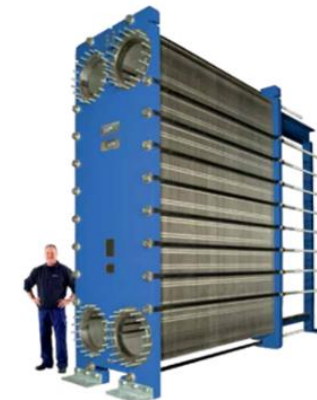
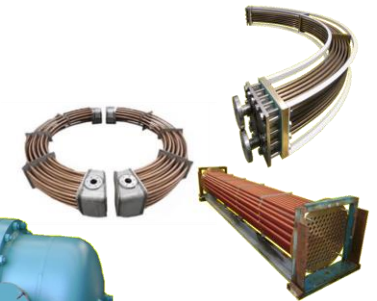
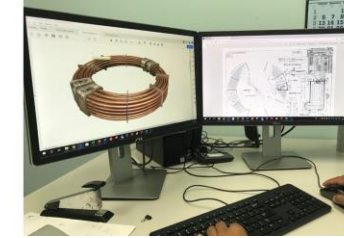
Shell & Tube; Finned Tube; Finned Coil; Thrust Bearing; Plate (Gasketed, Welded and Semi-Welded); Aluminium Radiators etc.

All Applications

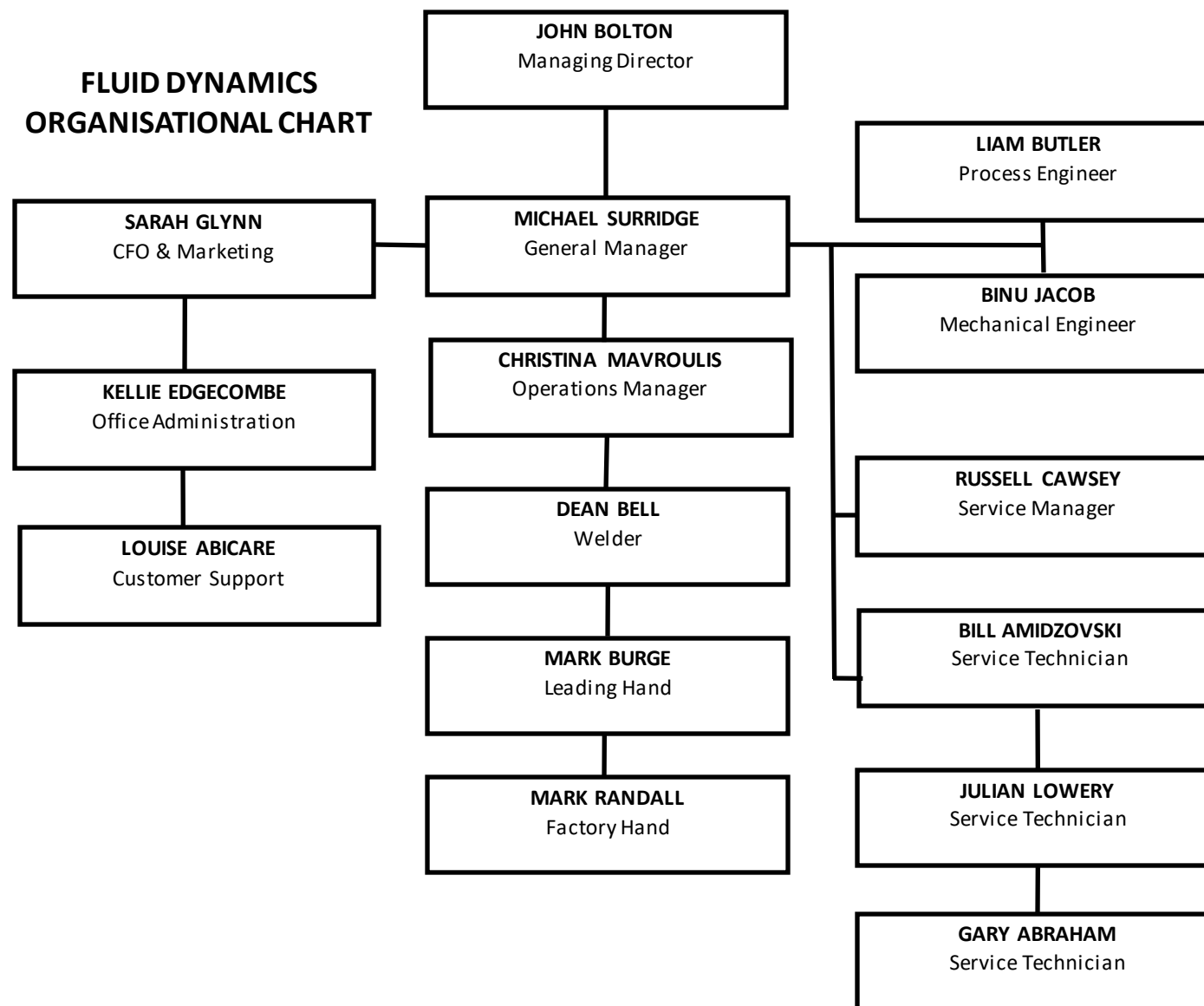
Oil, Air and Water Cooling & Heating; Condensers & Evaporators; Generator Air Coolers; Refrigeration; Steam

On Site Service

- Cleaning, Testing, Inspection & Repair of almost any type of Heat Exchanger:
Shell & Tube; Oil Coolers; Finned Coil; Finned Tube; Thrust Bearing Coolers; Plate and Shell & Tube Condensers & Evaporators; Coolers, Generator Coolers, etc.
- Plate Heat Exchanger Builds and Re-Builds
- Replacement Tube Bundles and Re-builds
- Inline chemical cleaning, waste disposal
- Camera inspections of Shell & Tube internal tube nests and internal surfaces
- Offsite Material and Failure analysis
- Replacement Spare Parts, Replacement Plate Heat Exchanger Plate Packs
- Offsite cleaning and testing of Plate Heat Exchanger plate packs,
- Redesign and Design Engineering Services including site laser scanning and 3d modelling
- Onsite Inspection and Evaluation of your heat exchanger including but not limited to : Finned Tube Air Coolers, shell & Tube, Plate Heat Exchanger (Gasketed, Welded or Semi Welded), Custom Coolers such as Bearing Coolers etc.



FLUID DYNAMICS ORGANISATIONAL CHART



Some of our Valued Customers:



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Fluid Dynamics

Heat Exchange Solutions since 1981



The Heat Exchanger Specialists for all your Heat Exchanger Needs