

Capability Presentation

Date: 23/10/2024





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





Fluid Dynamics Heat Exchange Solutions since 1981

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:







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
- Fully refurbish and bring the unit back to sound operational condition on all parts
- Carry out final assembly; replace all seals and parts as required; carry out final pressure test and a close inspection. Document all findings and results are put into our final report.
- Finally, your unit will be dried, painted if instructed, packed and made ready for delivery.



Most Types of Heat Exchangers

including:

- Finned Tube
- Shell & Tube
- Scraped Surface
- Gasketed Plate
- Double Wall Plate & Tubes
- Semi Welded Plate
- Fully Welded Plate
- Brazed Plate

- Aluminium Radiators
- Finned Coil
- Finned Tube
- Air Cooled Condensers
- Corrugated Tube
- Diffusion Bonded
- Printed Circuit
- Custom Build



Heat Exchanger Industries Served

including:

- Power & Energy
- Coal, Oil & Gas
- Food
- Dairy
- Beverage / Brewery / Winery
- Pharmaceutical
- Refrigeration
- Marine

- Water & Wastewater
- Mineral & Mining
- Chemical
- Petrochemical
- HVAC
- Off & On Road
- General Process



Heat Exchange for following Processes

including:

- Hydrogen
- Energy
- Carbon Capture
- LNG
- Oil & Gas
- Intercooling
- After Cooling
- Flue Gas Cooling

- Waste Heat Recovery
- Desublimation
- Steam
- Lean Amine
- Biogas
- Air



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.



Gasketed Plate Heat Exchangers

OEM or our own FluidEX Range

Wide rangeModern / Efficient

IndustrialPainted frames

HygienicAll 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



GASTO LIQUID OR **GASTO GAS**



ALUMINA SLURRIES OR SIMILAR PROCESSES, **ELUATES ETC.**



FLUIDS -**PETROCHEMICAL**



HAZARDOUS CHEMICALS AND



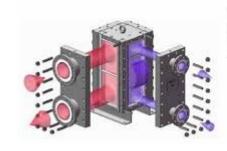




HIGH PRESSURE APPLICATIONS, **VAPOURS AND REFRIGERANTS**



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)











Pumps & Valves

Fluid Dynamics provides sales and service for a wide range of pumps and valves used in modern production facilities supported by our experts who are on hand to provide service, spares and support to ensure efficiency and performance from all your equipment.



- Service, Repairs, Overhauls, Refurbishment on site or off
- Maintenance General & Planned
- Plant Obsolescence Management
- Rotating & Spare Parts Replacement
- Plant Monitoring
- Training
- Sales







Valves

Single and Double Seat Seal • Ball • Butterfly • Check • Mixproof **Pumps**

Positive Displacement • Centrifugal • High Pressure • Lobe







Homogenisers & Buttermaker's

Fluid Dynamics now offers expert onsite servicing of Homogenisers and Buttermaker's and other similar equipment - Australia-wide.

Contact Fluid Dynamics' and have our team of expert service technicians provide annual wet-end servicing of all APV Homogenisers and Buttermaker's including drive-end inspection and oil and oil filter replacement.

Services

- Service, Repairs, Overhauls, Refurbishment on site
- Maintenance General & Planned
- Rotating & Spares Replacement
- Plant Management
- Plant Monitoring
- Training
- Sales









HRS Heat Exchangers

- Fluid Dynamics is proud to be the sole partner for HRS Heat Exchangers covering Australia and New Zealand.
- The following 8 slides, provides a window into the products and services we can deliver to our customers across all industries





HRS GLOBAL SALES LOCATIONS







APPLICATIONS













Applications / Environmental

Anaerobic Digestion (AD) & Biogas

Biodiesel

Bioethanol

Evaporation & Concentration of

environmental waste streams

Sludge Pasteurisation

Sewage Treatment

Wastewater

ZLD (Zero Liquid Discharge)

Applications / Food & Beverage

Beverages

Dairy

Fruit

Plant Based

Prepared Foods

Soups & Sauces

Vegetable

Oils

Applications / Industrial

Fine Chemicals

Palm Oil

Petrochemicals

Process Water

Solvents

Applications / Pharmaceutical

WFI

Creams

Gels

Balms

Lotions

Waxes





PRODUCTS | HEAT EXCHANGERS

Double Tube Heat Exchangers

Multi Tube Heat Exchangers

Annular Space Heat Exchangers

Scraped Surface Heat Exchangers

Plate Heat Exchangers















PRODUCTS | SYSTEMS

ENVIRONMENTAL SYSTEMS

Biogas Dehumidification Systems (BDS)

Concentration & Evaporation

Digestate Pasteurisation for Renewable Energy (DPS)

Concentration of Environmental Waste for Renewable Energy (DCS)

Zero Liquid Discharge (ZLD)















PRODUCTS | SYSTEMS

FOOD SYSTEMS

Pasteurisers/Sterilisers

Cleaning-In-Place & Sterilise-In-Place

Concentration and Evaporation Systems

DSI (Direct Steam Injection)

I Series (Ice Crusher & Re-Melter)

Process Skids















PRODUCTS | PISTON PUMPS

HRS BP Series piston pumps are hydraulically or pneumatically operated positive displacement pumps that transfers mechanical energy to pressure.







PRODUCTS | ASEPTIC FILLERS

Aseptic filling ensures products remain safe, fresh and retain quality for up to twelve months, thus maintaining their taste, colour, texture and the essential nutritional values.

The HRS AF Series is a range of single and dual head aseptic fillers for use with 'bag-in-box' and 'bag-in-drum' type sterile packaging solutions.















Kelvion Heat Exchangers

- Fluid Dynamics is proud to have been chosen as the partner to Kelvion for their complete range
 of heat transfer technologies across all industries covering Australia and New Zealand
- The following slides provides a window into the products and services we can deliver to our customers





KELVION PORTFOLIO

Widest Thermal Solutions Portfolio in the Industry











HEAT REJECTION & HEAT RECOVERY SOLUTIONS





PLATE HEAT EXCHANGERS





ENGINE & GENERATOR COOLERS





COILS





HEATING SOLUTIONS





PROCESS HEAT TRANSFER SOLUTIONS





TRANSFORMER COOLING SYSTEMS







Kelvion K°Bond

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'Bond, Kelvion's diffusion bonded heat exchanger, is ideal for applications involving extreme process temperatures and pressures. Combining design with welding expertise, K°Bond 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*Bond 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°BOND APPLICATIONS







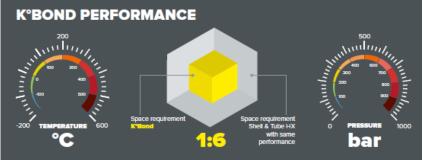






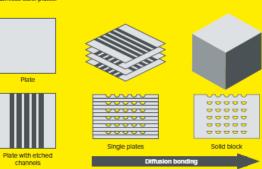
Fluid Dynamics

SUPERCRITICAL CO2



DIFFUSION BONDING

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







In-house design software





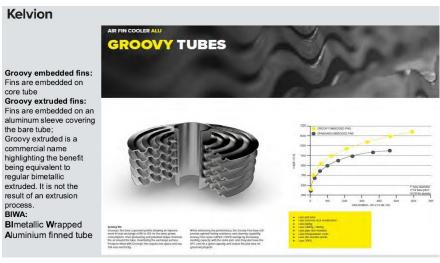


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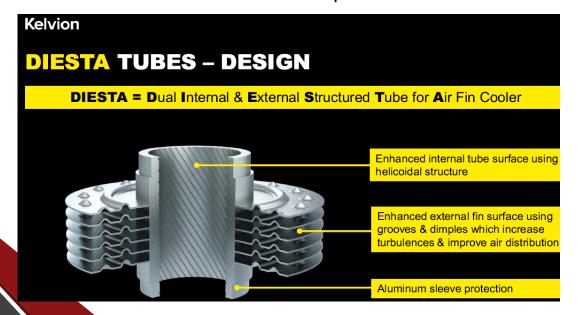








A more detailed presentation on the Groovy and Diesta is available on request









Kelvion

KEY FACTORS OF AIR FIN COOLER PERFORMANCE







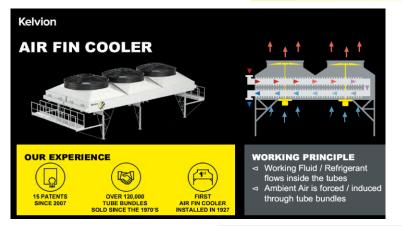


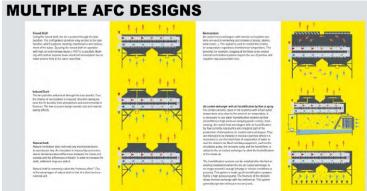
















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Cooling solutions for the entire value chain of

HYDROGEN



PRODUCTION & PRODUCTION UPSCALING



Air Fin Coolers High performance tube technology



Desublimators Unique technology for carbon capture Wide range & experience



Cooling Towers Smallest footprint



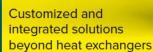
Heat recovery

DISTRIBUTION



K°Bond Diffusion bonded heat exchanger with highest pressure resistance

INTEGRATED **SOLUTIONS &** UTILIZATION (FUEL CELLS)







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

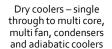


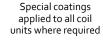
Coil & Finned Tube Heat Exchangers



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











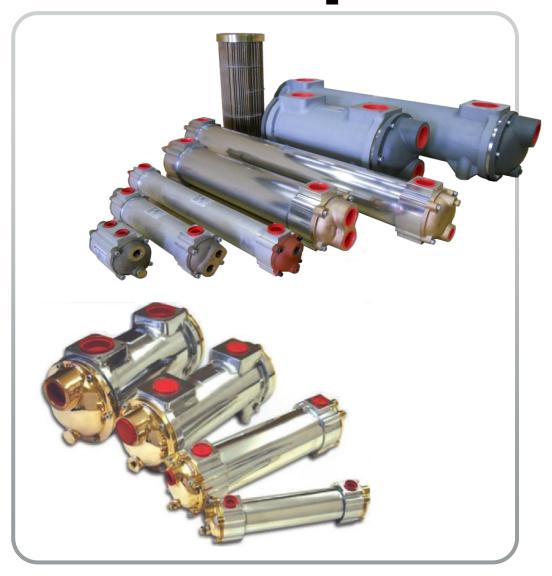






Shell & Tube (off the shelf)

- 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 retubing. 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 our key strengths is our ability to design, reengineer, 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 into 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





FluidEX[®] 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 shearsensitive, viscous or highly viscous products











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 Brazed 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.



x robe, r iinica robe, r iinica con, r iirost bearing, r iate (dasketea, welaca ana seriir welaca), riioniinioni kaalatois ete





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.



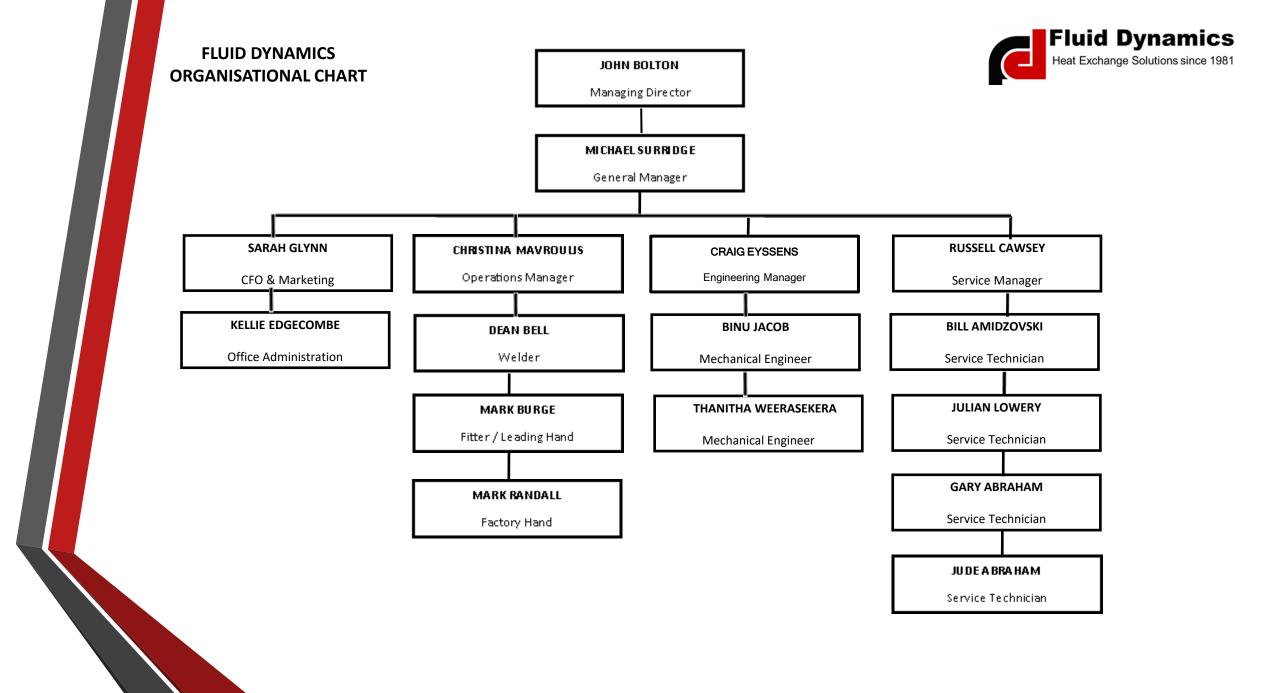












Some of our Valued Customers:









































































































































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The Heat Exchanger Specialists for all your Heat Exchanger Needs