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Kelvion

Welcome to Kelvion

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Kelvion

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Site HSE

- No planned fire alarm test
- For the Laboratory tour the following items are required
  - Safety Shoes
  - Hi-vis vest
  - Eye protection
- Ear protection may be required if the refrigeration pack is operating

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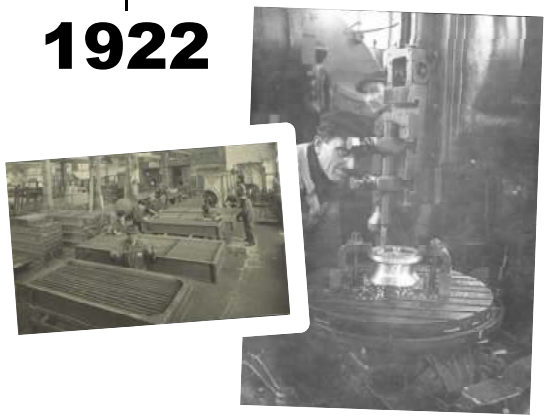
OUR HISTORY

1920

1920: Foundation of GEA in Bochum by Otto Happel sen. (Born 1882).
GEA, abbreviated from the original German name of the company “Gesellschaft für Entstaubungs-Anlagen mbH”, was the work of a man who was an entrepreneur with heart and soul, a man gifted with an exceptional technical insight and filled with the desire for pioneering technical innovations.

1922

1922: Happel’s closed-circuit cooling system with elliptical finned tubes
Just two years after setting up his small business he had achieved that objective, and Happel’s closed-circuit cooling system differed from those of his European and overseas competitors in only one – but one very important – aspect.



1925

1925: Renaming to GEA Luftkühler-gesellschaft mbH.
On 15 February 1925, Happel renamed his company “GEA Luftkühlergesell-schaft mbH”.

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OUR HISTORY

1935

1935: The Air Cooled Condenser – a Technical Milestone.
In co-operation with the engineer Dr. Kurt Lang, Otto Happel began developing air-cooled condensers for stationary steam turbines.

1948

1948: Otto Happel sen. passed away.
His death left a great gap, for he had not only shaped his company as a far-sighted engineer with pioneering ideas but also guided it through good times and bad as a wise businessman and dynamic organizer. Against the advice of friends and close associates, his widow, Elisabeth Happel, resolved to continue her husband's life's work for her son Otto who had been born in February 1948.

1960–1970

1960s: Establishment of numerous companies abroad. .
The increased demand for GEA plant and equipment plus the growing demand for local production led to the establishment in the 1960s of numerous companies abroad.

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OUR HISTORY

1975

1975: Dr. Otto Happel jun. takes over the management.
After more than 25 years at the helm, Elisabeth Happel handed over the management of the company for health reasons to her son.

1980 – 1989

1980s: Reorganization and further acquisitions.
Reorganization by departments, divisions and regions with a central management company, “GEA GmbH”, at the top.

1989

1989: Going public.
GEA presented itself to the public as a “global and broadly diversified supplier of machines, systems and components in the field of energy, environmental and process engineering”.

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OUR HISTORY

1990

1990s: Further acquisitions in Europe.

1999

1999: MG / GEA - the takeover.
In April 1999, GEA was acquired by mg technologies AG (the successor of Metallgesellschaft).

2005

2005: Renaming and further acquisitions

2010

2010: Reorganization of the group.
Reorganization of GEA's 9 Divisions into technologically distinct Segments. The largest segment is the Heat Exchangers Segment (HX).

GEA Heat Exchangers

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OUR HISTORY

06/2013

June 2013:
GEA announced to sell the HX Segment.
The board of GEA Group announced their decision to sell the Heat Exchangers Segment (HX).

10/2014

October 2014:
In October, GEA Group concludes the agreement on the sale of the Heat Exchangers Segment to Triton.

2015 With the new name, the former GEA Heat Exchangers has been formally split from the GEA Group and is writing its own history as Kelvion.

The name Kelvion pays homage to Lord Kelvin (1824 - 1907). Lord Kelvin formulated the laws of thermodynamics and absolute units of temperature are stated in kelvin, in his honour.

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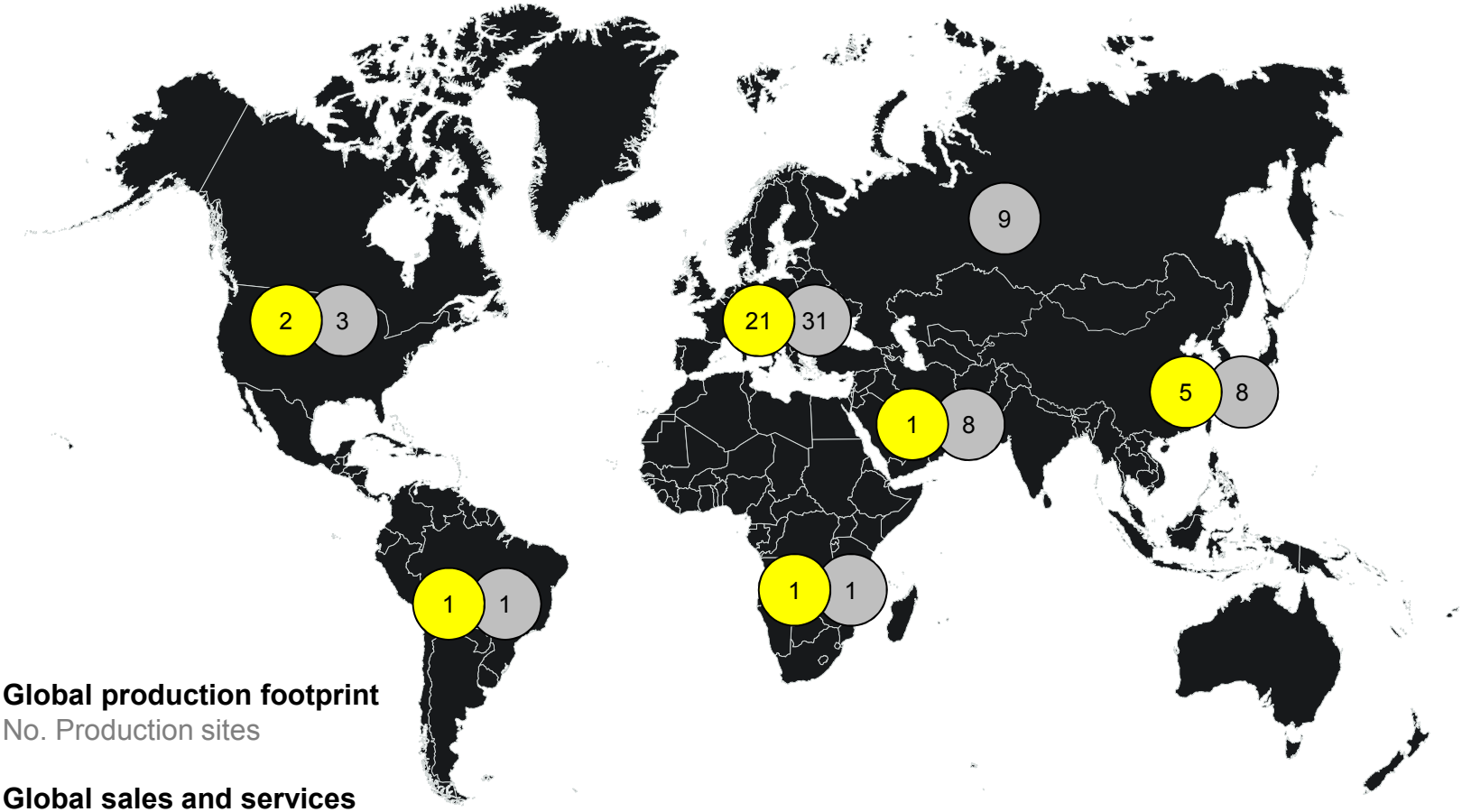
Kelvion Global Footprint



Global production footprint
No. Production sites

Global sales and services
No. Sales and Services entities and partners

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COMPACT FIN HEAT EXCHANGERS

COMMERCIAL AIR COOLERS

Cubic and ceiling mounted air coolers for basic refrigeration applications. You receive a high-quality solution and can profit from the absolute reliability and safety of our proven quality.

CUSTOMIZED AIR COOLERS

With a very high degree of customization those air coolers can be flexibly and effectively designed for individual refrigeration requirements.

CONDENSERS

Our condensers are suitable for all refrigeration and air conditioning applications. There are models that can be installed either vertically or horizontally, floor or wall mounted.

ALUMINIUM BLOCS

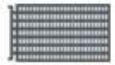
Stringent demands placed on cooler designs, e.g. high power density coupled with low weight, made the use of aluminium indispensable for heat exchangers. In the face of these demands, Kelvion introduced vacuum brazing technologies.

RADIATORS & DRY COOLERS

More than 40 years of experience in manufacturing all types of radiators and dry coolers guarantee a high performance solution in various applications.

COILS

The wide range of product portfolio with different tube diameters, tube patterns, fin profiles, materials and options allows us to customize our coils for any specific application and fluid.

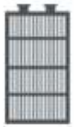


CLOSED CIRCUIT COOLERS

Closed circuit coolers are designed according to customers' requirements and assure exact compliance with their performance specifications.

COMPRESSOR COOLERS

Compressed gas cooling technology is a key component in our portfolio: one which has grown in importance over several decades of continuous development, design, and operating experience.



RECIRCULATION COOLERS

To protect mechanical system from pollutants in ambient air – and to prevent complicated and cost-intensive cleaning operations – recirculation coolers move air and exchange heat in a circuit inside an airtight system.

EXHAUST GAS RECIRCULATION COOLERS

Developed in close collaboration with our customers, ensures that the recirculation exhaust-gas is mixed at the lowest possible temperature with the air for the combustion process.

CHARGE AIR COOLERS

Installed on thousands of diesel and gas engines these coolers are well known throughout the world for their excellent performance and reliability.

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PLATE HEAT EXCHANGERS

BRAZED PLATE HEAT EXCHANGERS

Thanks to the automated manufacture and compact design of our highly efficient BrazedPHE, we can assemble a customised heat exchanger in the shortest time possible at an unbeatable price.

WELDED PLATE HEAT EXCHANGERS

They make a convincing case combining high heat transfer coefficients of a PHE with the advantages of rugged welded design for demanding applications with medium to large volume flows.

GASKETED PLATE HEAT EXCHANGERS

They are designed for highest thermal efficiencies with ease of maintenance in mind, can be adjusted if requirements change and opened for cleaning – suitable for a wide range of application with medium to large volume flows.

COOLING TOWERS

COOLING TOWERS

Around 80 % are available as standard solutions, with the remaining 20 % implemented as customized engineering.

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SINGLE TUBE HEAT EXCHANGERS

AIR COOLED CONDENSERS

Air cooled condensers are engineered to project products with several architecture and customized design. The air cooled condenser belongs to the dry cooling systems.

AIR FIN COOLERS

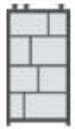
Special high-performance finned tubes with optimized material and design, enabling clearly more efficient heat exchange.

AIR DRYERS

Tubes generating low pressure drop, or multistage systems decreasing your process steam consumption are just few of Kelvion Air Dryers USP's. Materials and design flexibility combined with Kelvion experience result with equipment that will perfectly fit into your applications.

AIR PREHEATERS

Many decades of experience in designing and manufacturing have made us a leading supplier of heat exchangers for cooling and heating of gaseous and liquid media.



ECONOMIZERS

Heat recovery implementation in your process will increase its efficiency, decrease energy consumption and save your money. Our economizers are available with different materials to fit your application.

AIRTOAIR

Realizing an internal waste heat recovery system – in this case meaning preheating fresh air by the exhaust air – our AirToAir heat exchangers are the first choice for this purpose.

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SHELL & TUBE HEAT EXCHANGERS

BOX COOLERS

Box Coolers are designed for effective and reliable marine cooling systems – forcing cooling water through a U-tube bundle and using natural convection with seawater for a zero energy, low maintenance cooling.

SHELL & TUBE DOUBLE SAFETY

Double Tube Safety Heat Exchangers, developed for safety critical applications to prevent a damage or a product mixture in case of a leak, help to avoid cost intensive intermediate circuits and higher energy consumption.

SHELL & TUBE SINGLE

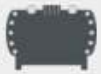
Shell & Tube Heat Exchangers in single tube design are provided as plain, fin tube and compact fin tube solutions in standardized or customized types to achieve an optimal fit to your application.

SHELL & TUBE PROCESS

Most of the industrial processes require heat exchanger equipment and miscellaneous pressure vessels. These processes require a wide capability of performing complex thermal and mechanical design.

SHELL & TUBE STEAM

Optimization of the global efficiency of a power plant requires the use of highly specialized equipment: Vacuum Surface Condensers, Heat Recovery Steam Generators and Feed Water Heaters.



DESUBLIMATORS

We adapted the special designed fin tube system composed of rectangular fins to the newest requirement of the PA process, mainly to the increasing feedstock loading of the air.

TRANSFORMER COOLING SYSTEMS

TRANSFORMER OIL PUMPS

We offer a large range of transformer oil pumps, from which customers can choose a type that suits their specific requirements and ensures optimum operating conditions.

TRANSFORMER OIL AIR COOLERS

Our range of transformer oil air coolers can be supplied in a standard air cooler version designed for direct mounting at the transformer tank. In addition, our range of products comprises free-standing transformer oil coolers designed to customer specifications.

TRANSFORMER OIL WATER COOLERS

These coolers in general are used for specific types of transformers, such as furnace transformers or rectifier transformers. A further application is generator transformer cooling at power plants.

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Kelvion Fareham History

1921
The Searle Radiator Company

1940
Searle Radiator & Refrigeration Ltd

1953
Bush Refrigeration

1959
Searle Manufacturing Company Ltd

1979
Prestcold Ltd

1981
Suter Environmental Group

1996
Ascot Holdings Plc

2001
Dow Chemicals

2002
International Cooling Group Ltd

2008
GEA Group

2014
Triton

2015
Kelvion

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Kelvion Fareham

- One of the most diverse manufacturing sites within Kelvion
  - Commercial air coolers (evaporators)
  - Customised air coolers (evaporators)
  - Dry air coolers / Radiators
  - Air cooled condensers
  - Transcritical gas coolers
  - Condensing units & systems

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Air coolers

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Condenser/dry cooler/gas cooler






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Market demands

- Certainty in operation
- Clear CAPEX, OPEX & TCO
- Reliability and longevity

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Testing – in house

- Reduced product failures
- Known operational limits
- Optimised material usage

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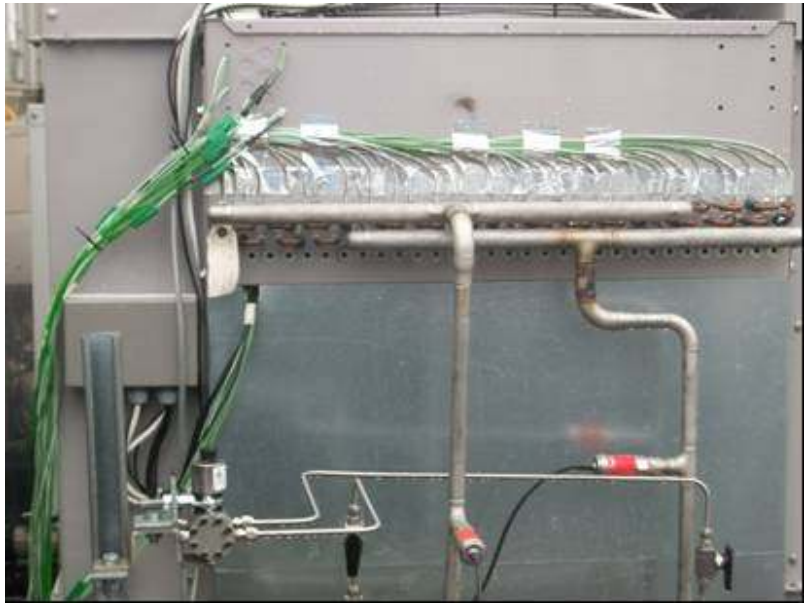
Testing – In partnership with Academia



- Fundamental research
- External validation
- New and emerging technologies

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Testing – on site

- On site / in application testing

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Industry engagement

EXPERIMENTAL INVESTIGATION OF THE PERFORMANCE OF FINNED TUBE CO_2 REFRIGERATION GAS COOLERS

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ABSTR

This paper presents experimental investigations into g
tested in a specially designed test facility that allows t
the air and refrigerant flow rates to be varied. The coi
row of tubes to reduce heat transfer between the 1st a
have been used to investigate the influence of operati
condenser and gas cooler modes of operation and valida

Keywords: CO2 refrigeration system, gas cooler perfor

MODELLING AND ANALYSIS OF CO_2 GAS COOLERS FOR COMMERCIAL REFRIGERATION APPLICATIONS

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ABSTRACT

CO_2 is an environmentally benign refrigerant which is increasingly b
applications. CO_2 refrigeration systems can operate subcritically durin
or transcritically when the ambient temperature is above 25 °C or so
rejection heat exchanger. Optimisation of the heat transfer performan
can extent the temperature range in which the CO2 refrigeration syste
and this will improve the seasonal efficiency of the system. This pa
developed to simulate the performance of CO_2 heat rejection heat exc
against both sub-critical and transcritical data with the view to establi
and selection tool for CO2 heat rejection heat exchangers over a wide

Keywords: gas cooler, commercial refrigeration, optimisation of gas co

IOR ior.org.uk The knowledge hub for refrigeration, air conditioning and heat pumps

Nick Atkins MInstR
Simon Jones MInstR
Gary Bell

Comparative Performance of HFO Blends in a Condenser

Paper 2 – research laboratory tests