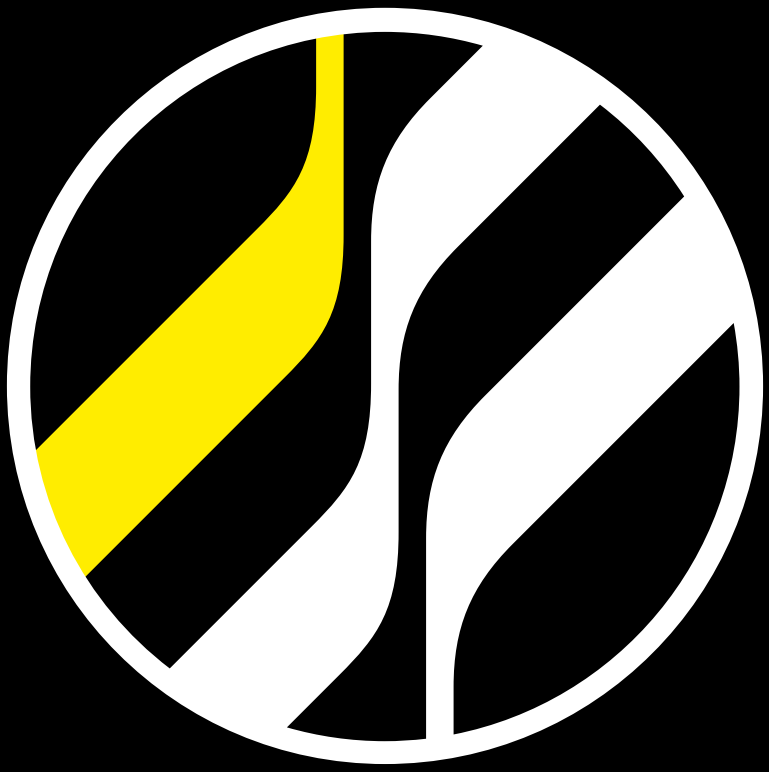
Kelvion

Product Line: Commercial & Customized Dry Coolers

RELIABLE AND SUSTAINABLE PERFORMANCE IN HEAT TRANSFER

Kelvion



EXPERTS IN HEAT EXCHANGE – SINCE 1920

Welcome to Kelvion! Where Heat Exchange is our Business. We are one of the leading global manufacturers of heat exchangers and have been providing solutions for almost every industrial application imaginable since the 1920s, specializing in customized solutions suitable for extreme environmental conditions - as of 2015 under the name of Kelvion.

With one of the most extensive selections of heat exchangers in the world, we are a well-known partner in many industries, including transportation, energy, oil and gas, chemical, marine as well as food and beverage, data center and the HVAC and refrigeration technology sector. Our products include Compact Fin Heat Exchangers, Plate Heat Exchangers, Single Tube Heat Exchangers, Transformer Cooling Systems, Cooling Towers and Shell & Tube Heat Exchangers.

Our many years of experience and in-depth expertise have made us specialists in this field. Our heat exchangers are designed specifically to meet the needs of the respective machine or equipment system, ensuring outstanding energy efficiency and reliability in any market segment. This gives our customers a cutting-edge over their competitors while also reducing operating costs over the long term.

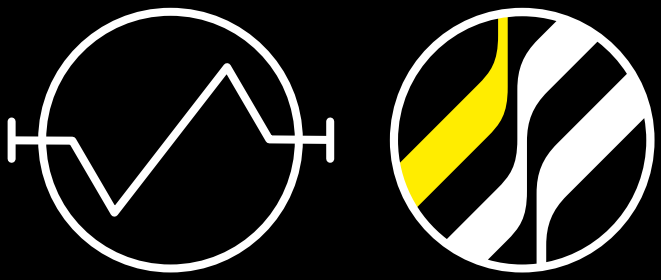
As your heat exchange partner, we understand that outstanding and reliable after-sales services are critical for you, our customer, and we work alongside with you in close partnership supporting you throughout the full life cycle of your plant and equipment to ensure lasting business success.

Kelvion – Experts in Heat Exchange.

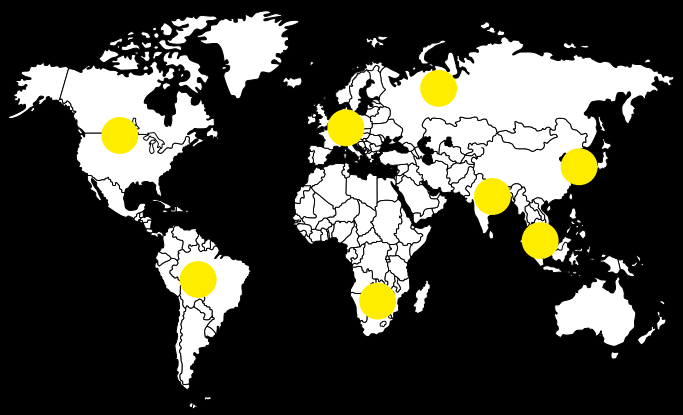
KELVION – A TRIBUTE TO LORD KELVIN (1824 - 1907)

Lord Kelvin formulated the laws of thermodynamics and absolute units of temperature are stated in kelvin, in his honor.

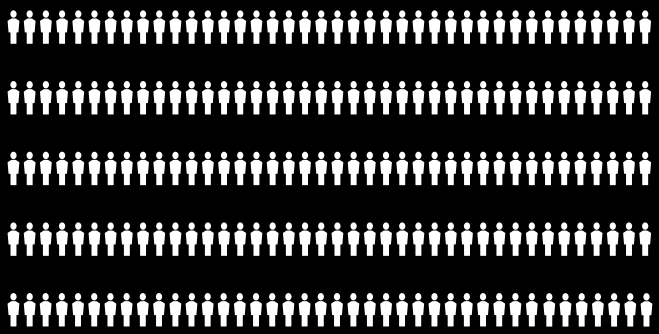
OUR LOGO – INSPIRED FROM THE SCHEMATIC FOR HEAT EXCHANGER



67 BRANCHES AND SALES PARTNERS WORLDWIDE



5,000 EMPLOYEES WORLDWIDE



YOUR MARKETS ARE OUR MARKETS

- Chemicals
- Data Center
- Food & Beverage
- HVAC
- Refrigeration
- Marine
- Oil & Gas
- Power
- Transportation
- ... and more

KELVION HAS A LONG HISTORY

2015 With the new name, the former GEA Heat Exchangers is writing its own history as Kelvion.

2014 GEA sells the Heat Exchangers Segment to Triton.

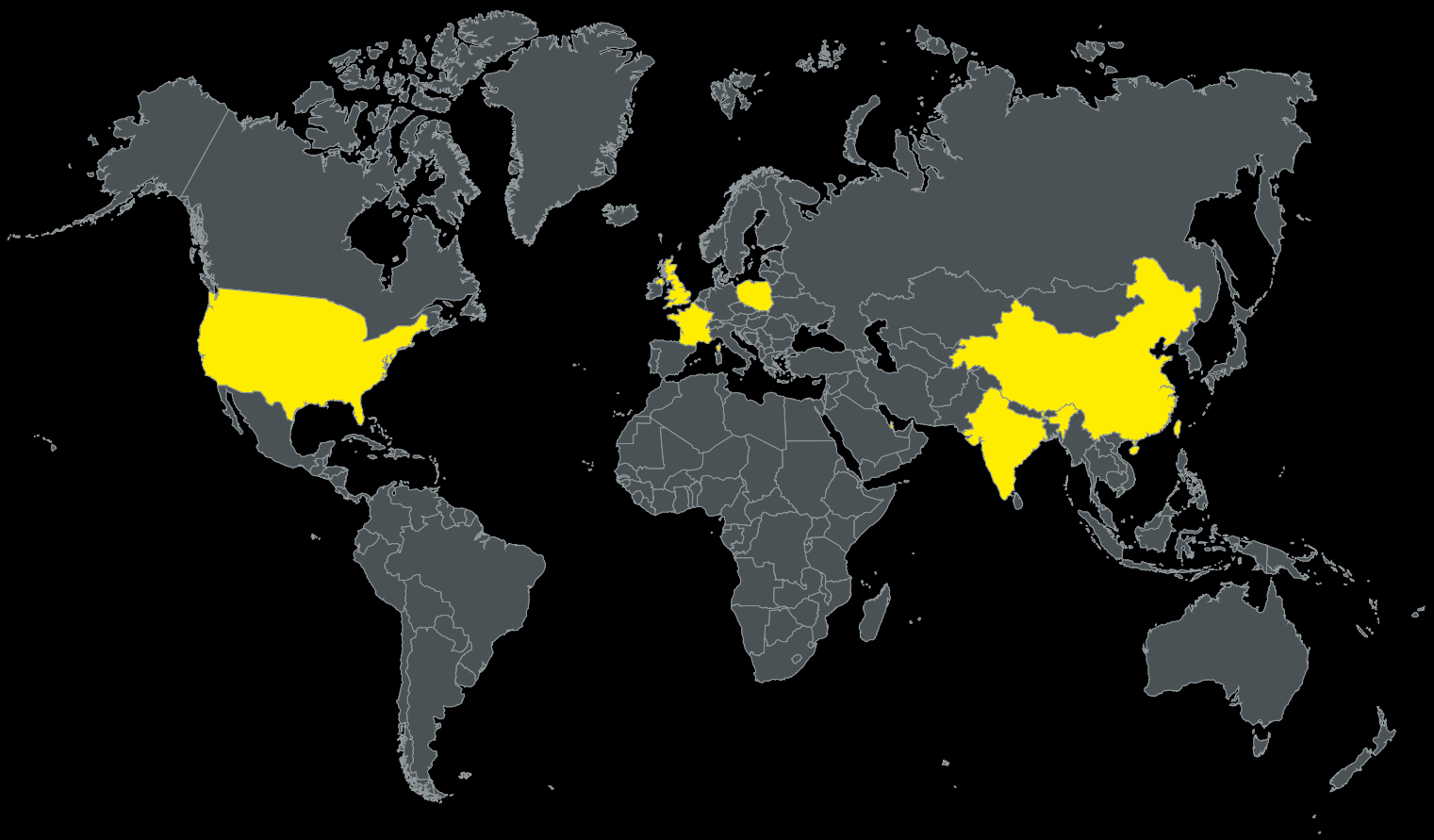
2010 Reorganization of GEA's 9 Divisions into technologically distinct Segments. The largest segment is the Heat Exchangers Segment.

1999 In April 1999, GEA was acquired by mg technologies AG

1920 Foundation of GEA in Bochum by Otto Happel sen. (Born 1882)

GLOBALLY ACTIVE AND STILL CLOSE BY

No matter where your market is, regardless of country, we are never far away.
We are always happy to answer any questions you may have and meet your requirements.
Even the largest, most successful project begins with an initial, profitable conversation.
We look forward to hearing from you.



CHINA

Wuhu
- ▶ Commercial Dry Coolers
- ▶ Customized Dry Coolers

FRANCE

Wingles
- ▶ Commercial Dry Coolers
- ▶ Customized Dry Coolers

INDIA

Pune
- ▶ Customized Dry Coolers

POLAND

Świebodzice
- ▶ Commercial Dry Coolers
- ▶ Customized Dry Coolers

UNITED KINGDOM

Fareham
- ▶ Commercial Dry Coolers
- ▶ Customized Dry Coolers

UNITED STATES

Knoxville
- ▶ Commercial Dry Coolers

This map only shows production locations of dry coolers.
For our complete global footprint, please note our “Product Line Overview” Brochure.

KEEPING INNOVATION AT THE FOREFRONT

35 R&D Experts

6 Locations

2,000m² Lab area

Kelvion's comprehensive research and development facilities enable us not only to validate the performance of our products, but also to optimize customized solutions directly for your application.

Our extensive, decades-long, experience of working as a nominated technical partner with end users, technology start-ups, universities and established engineering organizations has given us a diverse knowledge base. This enables us to find a solution to meet the most challenging cooling and heat transfer requirements. Continuously researching heat exchanger optimization is critical to achieving our innovation goals and understanding our application is pivotal to this success. Our laboratory facilities across Europe can test air coolers with a thermal balance up to a nominal maximum capacity of 600kW (from 100W), and dry air coolers/ ambient rejecters up to a 1.4MW.

A calibrated calorimeter chamber capable of holding units with dimensions of up to 12 m long, 4 m high and 3 m wide, allows for the largest of heat exchangers to be tested.

The in-house wind tunnels can test air volumes up to 50,000 m^3/hour and higher air volumes can be calculated from lower fan speed testing. Synthetic refrigerants can be tested up to a nominal capacity of 600kW and CO_2 systems can be tested up to 150 kW; a range of other working fluid (synthetic and natural) can also be tested at various conditions and capacities. With a range of facilities available, we will try and find rapid testing solutions to meet requirements.

Unit under test in large calorimeter room

Wind Tunnel – Discharge Chamber 3m²

Component analysis using the x-ray micro-tomography ensures the quality of fin press and joint integrity, and is also available to validate contractor joints or other component analysis on request.

Resident CFD and FEA can be used for a range of investigations, which can also be validated against physical simulations of most scenarios in the laboratory.

We take great pride in offering a high quality, robust, efficient and reliable solution specific to application environments and the laboratory is there to help facilitate innovation and remove the risk from application critical environments.

EUROVENT CERTIFIED PERFORMANCE

ECC is globally known for its quality mark ‘Eurovent Certified Performance’. For the HVACR industry in Europe, the Middle East, and Northern Africa, ECC plays an important role in establishing a level playing field for manufacturers by certifying performances while guaranteeing the fundamental integrity of their product lines.

The ‘Eurovent Certified Performance’ mark indicates that this quality requirement has been fulfilled and should not require the need to be proven after the customer’s decision and after the manufacturer’s production process.

Detailed information can be found at www.eurovent-certification.com

CERTIFIED CHARACTERISTICS

AIR COOLERS
The following performances of Air Coolers are certified:

- Standard capacity
- Fan power
- Air flow rate
- Energy class

AIR COOLED CONDENSERS AND CO_2 GAS COOLERS
The following performances of Forced Convection Air Cooled Refrigerant Condenser are certified:

- Standard capacity
- Fan power
- Air flow rate
- Energy class
- A-weighted sound power level

DRY COOLERS
The following performances of Forced Convection Liquid Coolers are certified:

- Standard capacity
- Fan power
- Air flow rate
- Energy class
- Liquid side pressure drop
- A-weighted sound power level

CUSTOMER BENEFITS

The purpose of all Eurovent Certified Performance (ECP) Programmes is to encourage honest competition and to assure customers that equipment is correctly rated on the market. The purpose is achieved by verifying the accuracy of ratings claimed by manufacturers by continuing testing production models, randomly selected, in independent laboratories.

SECURITY
Certified realistic conditions ensure performance and energy efficiency

TRANSPARENCY
Easy comparison of different units

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

RELIABILITY
For your planning an operation

CERTIFY ALL
Be sure that the entire series is according the certification program and not only a single product

APPLICATIONS

- Data Centers
- Fossil Power Plants
- Renewable Energies
- Diesel & Gas Engines
- HVAC
- Process Cooling

Pushing forward with innovative Ideas

COMMERCIAL DRY COOLERS

Kelvion's extensive portfolio of dry coolers is the result of decades of research and expertise. Whatever the requirement, we can supply the right solutions to meet the most demanding operating conditions.

Based on modular designs, our commercial dry coolers are available in a variety of fan sizes, multiple speeds and suppliers, coupled with a wide range of tube and fin profiles. This enables us to tailor our products to accurately suit the needs of our customers.

From standard commercial stock products to customized, made to order units, our products can be deployed in multiple applications.

WHY CHOOSE KELVION

- Your global solution provider
- Extensive research
- Continous development
- Delivering certainty since 1920

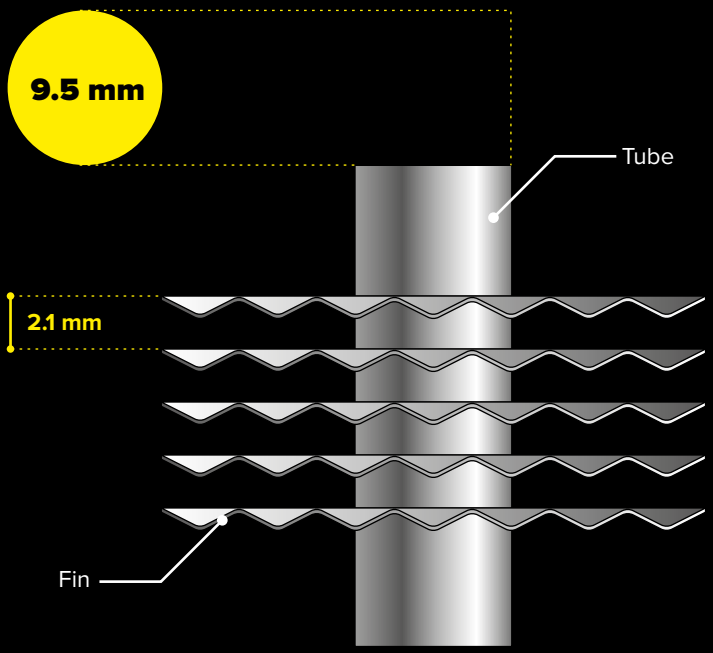
EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

FIN OPTIONS

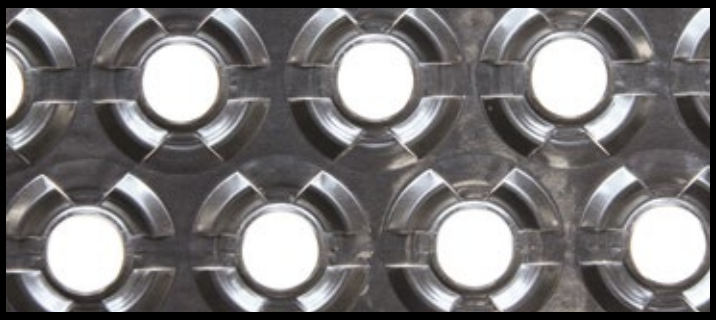
Coils can be configured in 9.5, 12 and 15.9 mm in a variety of length, width and height variants.
The many combinations make it possible to perfectly balance capacity, fluid pressure loss, internal volume and fluid charge.

L FIN

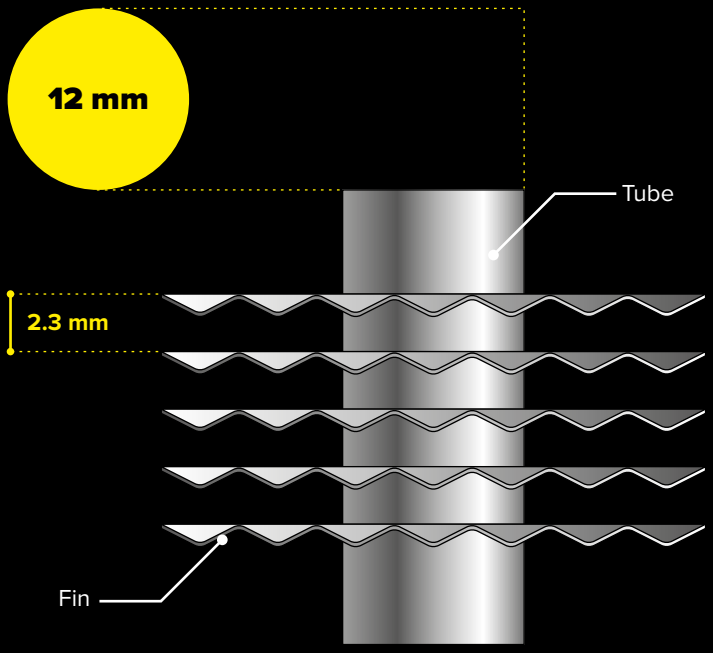
- Tubes with 9.5 mm diameter
- Designed to be used in condensers & dry coolers
- Various fin enhancements available to optimise performance
- Fin shown is our high efficiency Louvre, optimized for the highest capacity and best cost competitiveness



T FIN

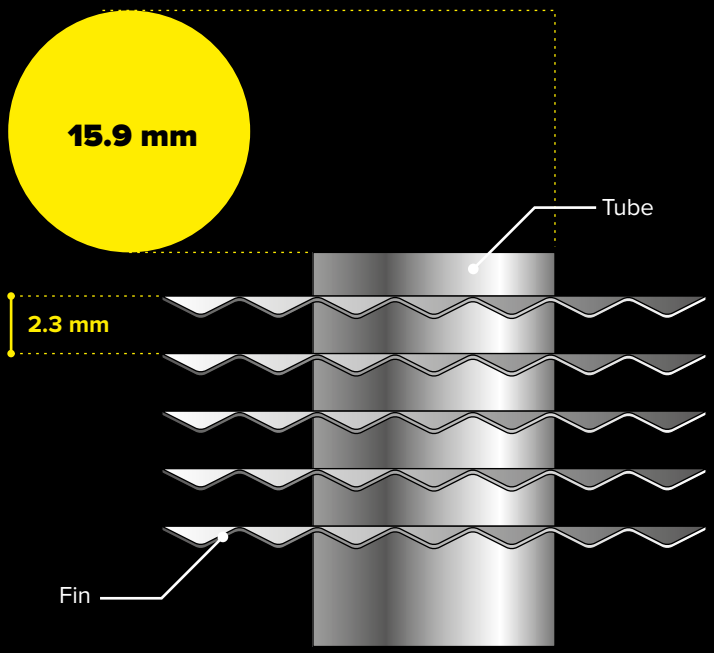


- Tubes with 12 mm diameter
- Designed to be used in condensers and dry coolers
- Various fin enhancements available to optimise performance
- Fin shown is our Turbulator, with cut window to increase heat transfer coefficients without significantly increasing airside pressure loss



K FIN

- Tubes with 15.9 mm diameter
- Specially designed to be used in Dry coolers
- Performance of the fin shown is increased with a ripple profile; flat option is available for special applications



MATERIAL OPTIONS

Dry Coolers can be selected in different material configurations. The many combinations of fin types and materials suit many applications and in the most challenging environments.

MATERIALS			
NAME	**TUBE MATERIAL**	**FIN MATERIAL**	**INSTALLATION AREA**
Cu/Al	Copper	Aluminium	
Cu/AlMg	Copper	Aluminium magnesium	
Cu/AV	Copper	Aluminium with two pack epoxy coating	
Cu/Cu	Copper	Copper	
Cu/AlBg	Copper	Aluminium with Blygold coating	
Cu/AMBg	Copper	Aluminium magnesium with Blygold coating	
St/Al	Stainless steel	Aluminium	
St/AlMg	Stainless steel	Aluminium magnesium	
St/AV	Stainless steel	Aluminium with two pack epoxy coating	
St/AlBg	Stainless steel	Aluminium with Blygold coating	
St/AMBg	Stainless steel	Aluminium magnesium with Blygold coating	
St/St	Stainless steel	Stainless steel	

ALUMINIUM

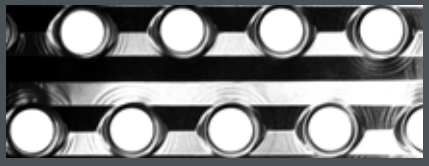
ALUMINIUM MAGNESIUM

ALUMINIUM EPOXY COATED

ALUMINIUM BLYGOLD

COPPER

STAINLESS STEEL



FLATBED & V-BANK

By offering a broad range of flatbed and V-bank dry coolers, Kelvion is able to tailor products accurately to meet application demands.
Whether you're looking for a lower carbon footprint, quieter operation, improved capacity density or have restricted space, you will find the perfect fit.

	FLATBED	V-BANK
AVAILABLE AS	Condenser Gas Cooler Dry Cooler	Condenser Gas Cooler Dry Cooler
FAN TECHNOLOGY	AC Fan Technology EC Fan Technology	AC Fan Technology EC Fan Technology
MAX N° OF FANS	20	22
DRY COOLER FIN TYPES	L = 9.5 mm Tube T = 12 mm Tube K = 15.9 mm Tube	L = 9.5 mm Tube T = 12 mm Tube K = 15.9 mm Tube
ADIABATIC OPTION	●○○	●●●
	▶ Good price-performance ratio ▶ Multiple configuration possibilities ▶ Vertically or horizontally installation ▶ 2 circuits design (HT/LT) ▶ Blow through & Draw through available	▶ When space is restricted ▶ Higher capacity density ▶ Better fit for adiabatic systems ▶ 2 circuits design (HT/LT)
CAPACITY IN RELATION TO FOOTRPINT (EXAMPLE)	**Capacity** 300 kW **Footprint** 7.5 m^2 Footprint V-Bank Footprint Flatbed **Conditions** 55 db(A) Δt 15K	**Capacity** 300 kW **Footprint** 4.7 m^2 Footprint V-Bank **Conditions** 55 db(A) Δt 15K

FLATBED PORTFOLIO

DESIGN CODE

1	2		3	4	5	6	7	8	9		10	11	12	13
L	F	-	P	A	2	04	T	2	H	-	080	N	06	D

1 PRODUCT SERIES

L	Liquid	Dry Cooler
I	Industrial	Dry Cooler

2 UNIT FORM

F	Flatbed	**V**	V-Bank

3 MODULE WIDTH

S	Small
M	Narrow
N	Medium
P	Wide

4 MODULE LENGTH

J	1000 mm
A	1200 mm
F	1300 mm
B	1500 mm
C	1800 mm
D	2100 mm

5 FAN ROWS

1 

2 

6 FANS PER ROW

1 - 10 

7 FIN TYPE

L, T, K

8 COIL ROWS

2, 3, 4, 5, 6

9 ORIENTATION

H	Horizontal Draw through	**V**	Vertical Draw through
U	Horizontal Blow through	**W**	Vertical Blow through

10 FAN DIAMETER

035	350 mm	**090**	900 mm
050	500 mm	**091**	910 mm
080	800 mm		

11 FAN TYPE

N	AC Normal	**B**	EC Axiblade
E/M	EBM EC	**A/C**	EBM Axitop
H	High power	**S**	EC Single Phase
L	Low power	**P**	Ziehl EC
		Z	ZA plus

12 SPEED OPTIONS

04, 06, 08, 12, EC

13 MOTOR WIRING

D	Delta	**S**	Star

Flatbed Portfolio

LF S

Kelvion has re-engineered the popular LF-SJ.
We have optimised the coil sizing for new generation fans
to get additional benefits of an even higher efficiency coil.

S

NUMBER OF FANS:

1 - 4

FAN DIAMETERS*:

500 630

FIN GEOMETRIES:

L

* Customized fan solutions on request

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

LF-S DRY COOLER

FLUID: **WATER/GLYCOL/OIL**

CAPACITY: **8 kW - 125 kW**

Flatbed Portfolio

LF

The Flatbed range has been developed specifically to reflect the latest market requirements. Reduced footprint, lower noise level, improved capacity density and the greatest flexibility through configurable options to suit all requirements.

S

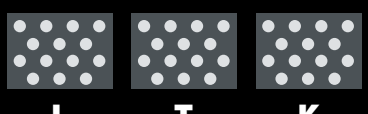
NUMBER OF FANS:

1 - 20

FAN DIAMETERS*:

800 900 910

FIN GEOMETRIES:



L T K

* Customized fan solutions on request

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LF DRY COOLER

FLUID: **WATER/GLYCOL/OIL**

CAPACITY: **21 kW - 1290 kW**

V-BANK PORTFOLIO

DESIGN CODE

1	2		3	4	5	6	7	8	9		10	11	12
L	V	-	T	B	2	06	L	2	091	-	N	06	D

1 PRODUCT SERIES

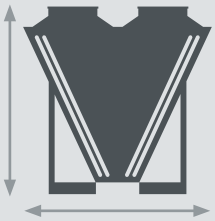
L	Liquid	Dry Cooler
I	Industrial	Dry Cooler

2 UNIT FORM

F	Flatbed	**V**	V-Bank

3 MODULE HEIGHT

M	Small	1669 mm
T	Medium	2521 mm
L	Large	2929 mm



4 MODULE LENGTH

A	1200 mm	only available with M module height
F	1300 mm	
B	1500 mm	only available with M module height
C	1800 mm	
F	1300 mm	only available with M module height
K	1600 mm	only available with M module height

5 FAN ROWS

1  **2** 

6 FANS PER ROW

 **1 - 4**   **2 - 22** 

7 FIN TYPE

L, T, K

8 COIL ROWS

1, 2, 3, 4, 5, 6

9 FAN DIAMETER

080	800 mm
090	900 mm
091	910 mm

10 FAN TYPE

N	AC Normal	**B**	EC Axiblade
E/M	EBM EC	**A/C**	EBM Axitop
H	High power	**S**	EC Single Phase
L	Low power	**P**	Ziehl EC
		Z	ZA plus

11 SPEED OPTIONS

06, 08, 12, EC

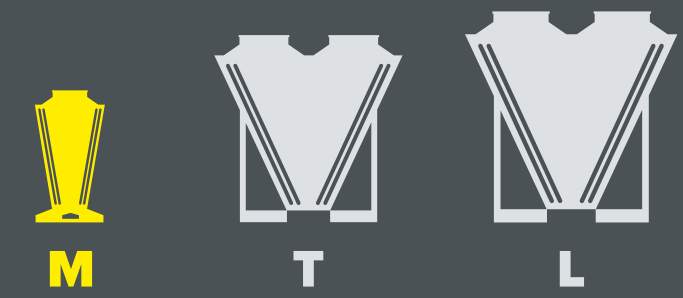
12 MOTOR WIRING

D	Delta	**S**	Star

V-Bank Portfolio

LV M

M-height configuration is suitable for many applications: The single row of fans and narrow V angle make it ideal for installation requiring a high capacity density – small footprint.



NUMBER OF FANS:

FAN DIAMETERS*:

FIN GEOMETRIES:

* Customized fan solutions on request

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LV-M DRY COOLER

FLUID: **WATER/GLYCOL**

CAPACITY: **6 kW - 395 kW**

V-Bank Portfolio

LV T

T and L-profile extends the versatility of the V Profile range: With its high thermal capacity, robust framework and low noise levels, plus innovative energy-efficient fan sets, the V-Profile is suited to applications ranging from HVAC, data centers, centralized cryptocurrencies, to power applications (like diesel and gas genset cooling) and industrial cooling.

M T L

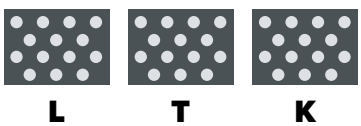
NUMBER OF FANS:

2 - 22

FAN DIAMETERS*:

800 900 910

FIN GEOMETRIES:



L T K

* Customized fan solutions on request

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

LV-T DRY COOLER

FLUID: **WATER/GLYCOL/OIL**

CAPACITY: **10 kW - 1640 kW**

V-Bank Portfolio

LV L

M T L

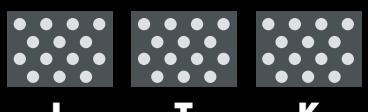
NUMBER OF FANS:

2 - 22

FAN DIAMETERS*:

800 900 910

FIN GEOMETRIES:



L T K

* Customized fan solutions on request

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

LV-L DRY COOLER

FLUID: **WATER/GLYCOL/OIL**

CAPACITY: **13 kW - 2140 kW**

Kelvion Select RT

SELECTION SOFTWARE

- Kelvion's latest user-friendly, web-based and mobile RT application
- Select the right components from our extensive product range
- Receive all information, technical specifications and calculation results
- Technical data available as pdf-file or as shared Kelvion code
- Available in several languages and suitable for all operating conditions

www.kelvion.com

OPTIONS, ACCESSORIES & CUSTOMIZATION

- Alternative fin material, fin spacing and thickness
- Multi sections (HT/LT)
- Safety switches
- Electrical panels for motor protection and speed control
- Expansion tanks with level alarms
- Explosion proof motor-fans
- Special coating (C4, C5) an special colors
- Customized housing
- Customized piping and flanges arrangement
- Customized fan solutions
- Hinged fans
- Anti vibration mounts
- Supporting steel strucure with platform, access ladders & handrails
- Adiabatic system
- Pump skids
- Please contact us for other bespoke solutions

Options & Accessories

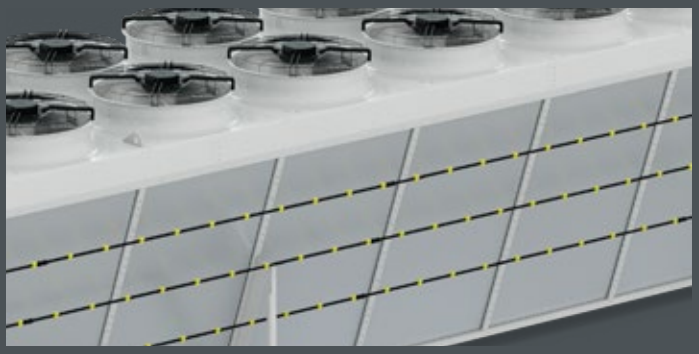
ADIABATIC SYSTEM

Kelvion can look back to a 30-year experience with adiabatic systems. This technology can offer major benefits to your system and is perfectly adapted to our versatile V-Bank range.

During extensive testing in our own R&D facilities, we verified several spray systems to get the best possible results with regard to water distribution, water mass flow and droplet formation.
We also tested different pad systems from numerous suppliers in our labs to judge independently the claims made when used with our design.
The result is a tailored adiabatic pad system with a new water distribution system for outstanding performance, as well as an update to our existing spray system to offer improved performance and water efficiency. Both options will offer you a uniform, reliable cooling effect with a tested, verified air pressure drop.

Learn more about adiabatic systems in our „Adiabatic Systems brochure“ or contact our sales staff.

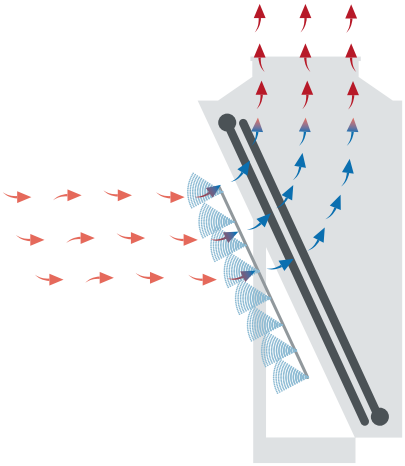
ADIABATIC SPRAY SYSTEM



- The new spray nozzles use less water and produce smaller droplets. The result is 39% less water consumption with the same temperature cooling effect.
- The System is designed to evaporate 95% of the water in the air and not on the coil. This reduces coil fouling and potential corrosion.
- New pump box design improves maintenance
- With options for booster pumps and actuated flow valves, the system minimizes water consumption, varying with your needs.

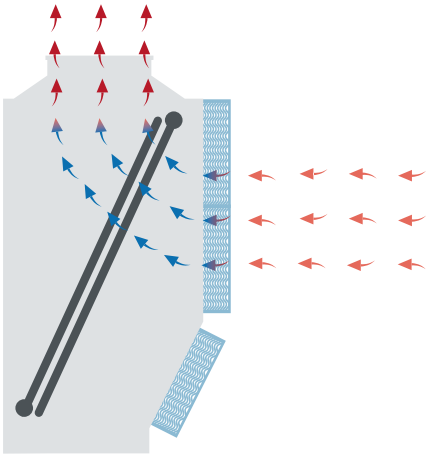
ADIABATIC PAD SYSTEM

- Our newly-developed water distribution system on top of the pad combines standard systems, to make better use of the respective advantages.
- The system facilitates even air cooling with reduced water loss.
- Easy removal and installation of pads for periodic inspection and cleaning when required
- Optional meshes in front of the pad protect against dirt and debris depending on need. Easy to clean and extends the pad’s service life.
- Bespoke solutions for every need: pre-mounted or mounted on site.



The evaporating energy of water is used to cool the incoming air.

This cooling effect can be used individually for your system.



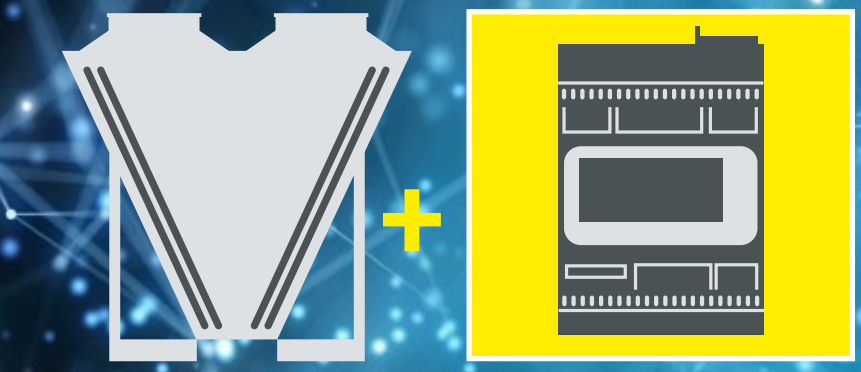
CONTROL OPTIONS

OPTION	DESCRIPTION
Full Modbus and BACnet capability	Building management system (BMS) integration
Speed Control (AC and EC)	Modbus, analog, inverter or triac
Staged Control (AC fan sets)	Motor switchgear with or without controller.
Junction Box	Single or twin according to unit model
Unwired	Installer wires directly to fan terminal boxes

Control Options

KELVION CONTROLS

Kelvion Controls offers the possibility of increasing the service life of the product by ensuring it is suitably maintained before irreparable damage may occur. Scheduled maintenance is not always sufficient for the heat exchanger. Some locations require more visits than others, often governed by seasonal changes. Kelvion Controls with its full BACnet and Modbus building management system integration ensures continuous full visibility of cooler status. Advanced control and monitoring solutions enable on demand maintenance by optimizing not only heat exchanger performance but also service budgets.



- ACTIVE Maintenance
- Live fan data
- Remote interrogation
- Self-Service Management
- System Alarm out features
- Live Monitoring
- Improved Adiabatic System

APPLICATIONS

Diesel Rail

Electric Rail

Fossil Power Plants

Heavy Duty Vehicles

Renewable Energies

Steam & Gas Turbines

Diesel & Gas Engines

Solutions for smooth continous Operation

CUSTOMIZED DRY COOLERS

CUSTOMIZED DRY COOLERS offer a rugged and reliable design. They have been in use with us for more than 40 years in all types of industrial applications.
They are suitable for diesel applications in which particular specifications are applied.

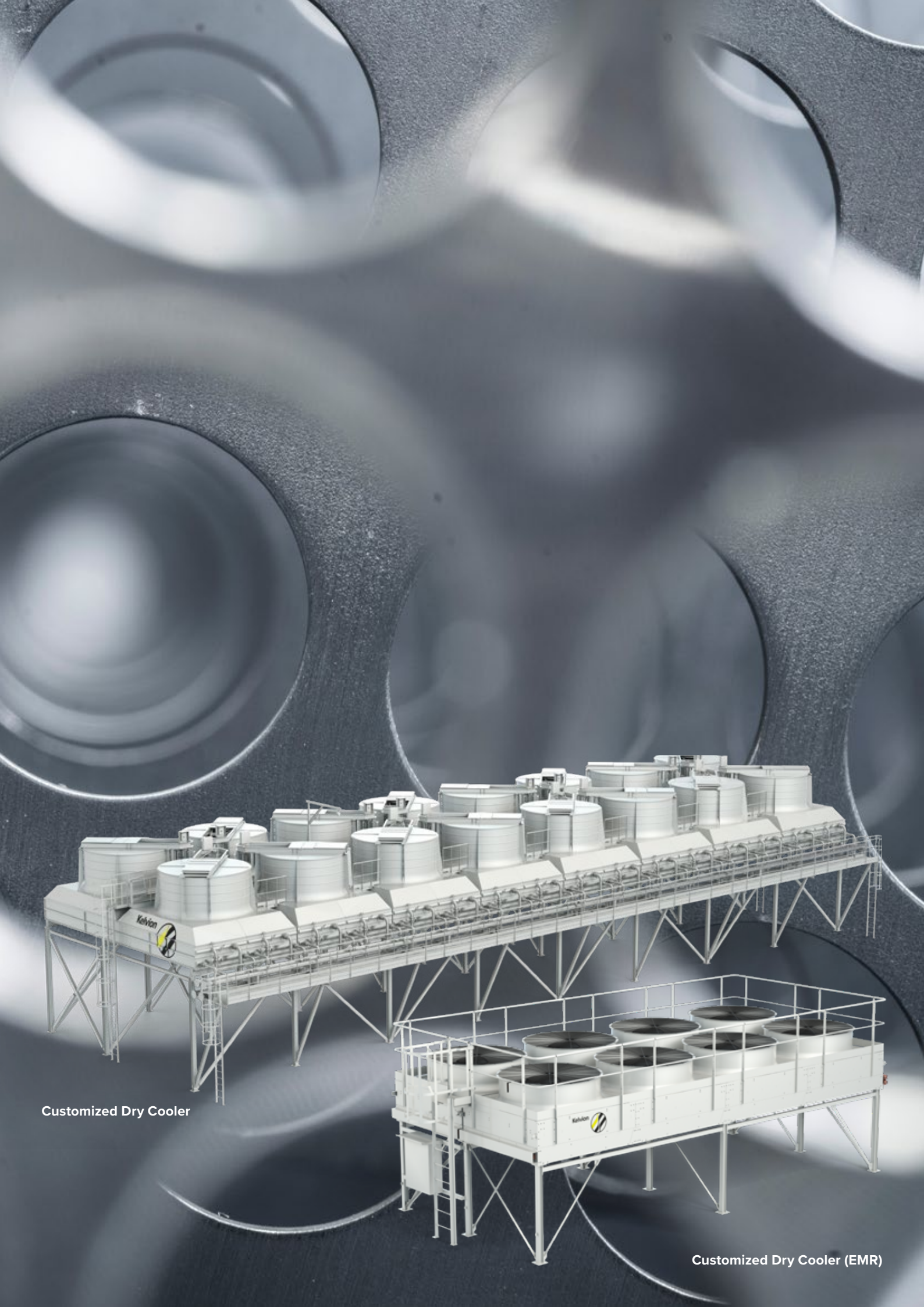
Price and lead time are based on design specifications. An infinite variety of subcontracted items can be ordered specifically for each contact. Very large fans driven by gear transmission or V-belts and pulleys, with possibility of installation in forced-draft configuration, are available to meet very quiet noise requirements and to enable very low power consumption.

Bay configurations are available; they consist of two large bundles installed side by side, overlapped by two or three large fans. Such configurations are regularly used in diesel engine power plants. Any components available from us or from external suppliers can be installed. We offer compact fin technology, with tube diameters of 12 or 16 mm and with the materials copper, steel or stainless steel. Any design and manufacturing codes can be applied - such as ASME, Codap, AD, etc.

CUSTOMIZED DRY COOLERS (EMR), top quality products with competitive price and short delivery times, offer an improved product range developed to match the technical requirements of the main players in the large diesel-engine market.

The product range uses horizontal induced-draft design, with single- or double-bank configuration (HT/LT).
EMR are modular compact products made of pre-specified components that are assembled according to analysis by design software. They are completely assembled and tested in the factory before delivery. All components are standard items, and outsourced repetition with a long delivery time are put on stock to ensure ad-hoc availability. Only a limited range of outsourced components (fans, motors, etc.) have been selected; they ensure, however, price worthiness based on ordering large quantities of similar components.

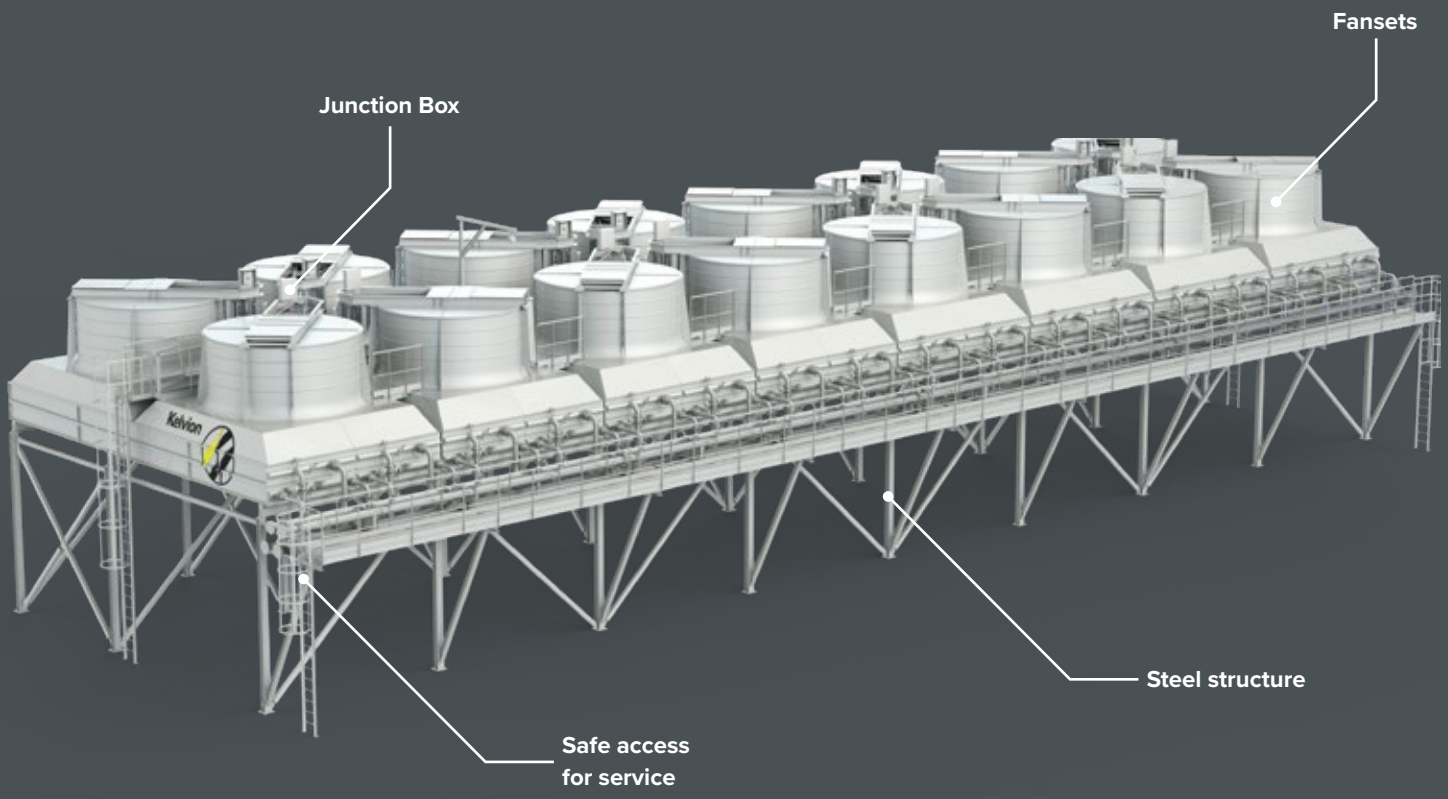
The high modularity of the product ensures sizing as close as possible to the customer's needs. Internal manufacturing allows a maximum of flexibility. a wide veriety of dimensions is available, with two widths and over 60 different lengths.



Customized Dry Cooler

Customized Dry Cooler (EMR)

CUSTOMIZED DRY COOLERS



Standard configuration
- ▶ Induced and forced draft, V-bank, vertical
- ▶ Improved sidewall design:
  - Several units installed side by side on a steel structure.
  - Suitable for the adaptation of hand rails.
- ▶ The side wall height is suitable for fitting the fans and for appropriate air distance between fans and bundle in case of forced draft coolers.

Optional equipment
- ▶ Steel structure
- ▶ Handrails and ladders
- ▶ Piping and accessories
- ▶ Water spraying system (HP with patent or LP)
- ▶ External VFD control
- ▶ PTC probes on motors
- ▶ Junction boxes, cables and MCC
- ▶ Safety switches on fans
- ▶ Expansion tank with level detector

Seaworthy packing
- ▶ SEI3B and SEI4B
- ▶ Standard containers (dry and OT types)

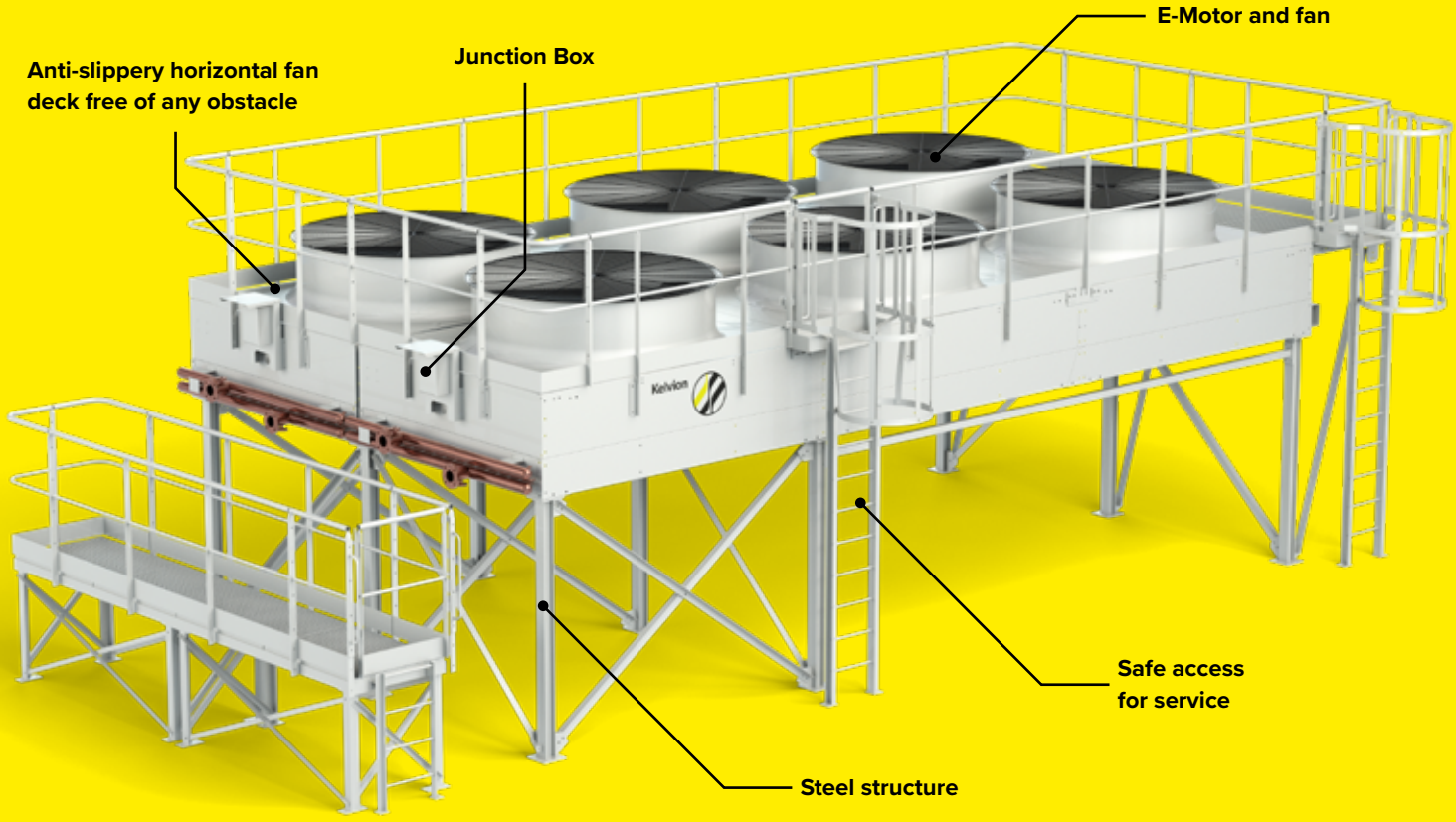
Steel structures
- ▶ Made of HDG angle beams
- ▶ Mechanical calculation report available on request

Fans access and repair
- ▶ Ladders and peripheral handrail
  - Modular systems (HDG)
  - Assembled by bolting only

Fansets – technical characteristics
- ▶ Normal / Quiet / High temp. AC fanset
- ▶ Atex fansets
- ▶ Cables H07RNF – UV resistant

Heat exchanger – based oncompact fin technologies from Kelvion with:
- ▶ Fins: Alu, AlMg or Copper – flat, rippled or turbulated
- ▶ Fins thickness from 0.135 to 0.20 mm
- ▶ Fins pitch from 1.8 mm to 4.0 mm – tubes to fins bonding made by mechanical expansion
- ▶ Copper headers brazed to the tubes
- ▶ S32: Triangular tube pattern – staggered layout
  - Copper tubes – Ø12 mm thickness from 0.35 to 1.0 mm
- ▶ S40: Triangular tube pattern – staggered layout
  - Copper, steel and stainless steel tubes Ø16.0 mm thickness 0.40 mm, flat and turbulated fins

CUSTOMIZED DRY COOLERS (EMR RANGE)



Width	Fan diameter	Module length	Dry Cooler length
220 cm Container Size	1250 mm / 4‘ 1829 mm / 6‘	170 - 300 cm	max 1,350 cm
270 cm Large Duties	1829 mm / 6‘	170 - 300 cm	max 1,350 cm

Standard configuration
- Induced draft only
- Directly driven fans suitable for VFD control
- Fans, motor types and dimensions limited to the range
- Max. 8 tube rows for single circuit cooler
- Max. 6 tube rows per circuit for double circuit cooler

Optional equipment
- Steel structure
- Handrails and ladders
- Piping and accessories
- Water spraying system
- PTC probes on motors
- Junction boxes, cables and MCC
- Safety switches on fans

Seaworthy packing
- SEI3B and SEI4B
- Standard containers (dry and OT types)

Steel structures
- Made of Hot Dip Galvanized angle beams
- Up to 2 modules between 2 legs
- Mechanical calculation report available on request

Fans access and repair
- Anti-slippery horizontal fan decks free of any obstacles
- Ladders and peripheral handrails
- Assembled by bolting only
- Crane to lift and replace fans and motors

E-motors – technical characteristics
- Height: 160 or 180 mm
- Rotation speed: 8, 10 and 12 poles
- Insulation class: H/F
- Epoxy painted, tropicalized
- Anti-condensation heaters
- Suitable for VFD control (indicated on nameplate)

Heat exchanger – based on compact fin technologies from Kelvion with:
- Fins: Alu, AlMg or Copper – flat, rippled or turbulated
- Fins thickness from 0.135 to 0.20 mm
- Fins pitch from 1.8 mm to 4.0 mm – tubes to fins bonding made by mechanical expansion
- Copper headers brazed to the tubes
- S32: Triangular tube pattern – staggered layout
- Copper tubes – Ø12 mm thickness 0.35 mm

Customized Dry Coolers

CERTIFICATIONS AND STANDARDS

PRESSURE VESSEL
- PED 2014/68/EU

CUSTOMIZED DRY COOLERS
Requirements of the machine directive, including
- Grid type and position of fans, equipped with safety screws
- Safety switches on fan rings
- Machines
  European directive 2006/42/CE

E-MOTORS
- Low voltage
  European directive 2006/95/CE
- Electromagnetic compatibility
  European directive 2014/3O/UE

FANS
- ERP 2015 regulation compliant

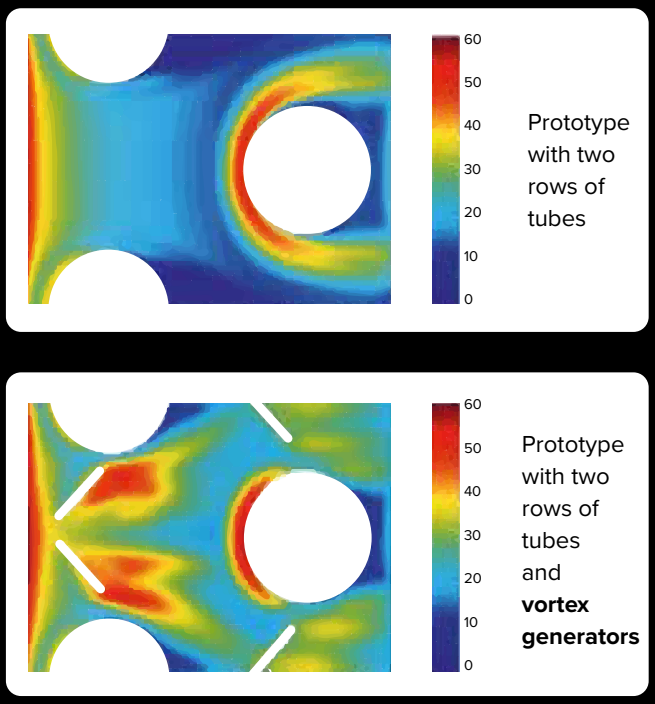
PATENTED RING FIN

Kelvion advanced ring fin features

- ▶ Market's best ratio efficiency / pressure drop
- ▶ Very low sensitivity to clogging risks
- ▶ High-tech ring guides the cold air behind the tube
- ▶ No obstacle to generate turbulences (louvered fins)
- ▶ Technology fully suitable for all industrial environments
- ▶ Extensively and successfully used for more than 30 years in power generation all over the world

Experimental investigation using infrared thermography

Heat transfer coefficient on heat exchanger fins

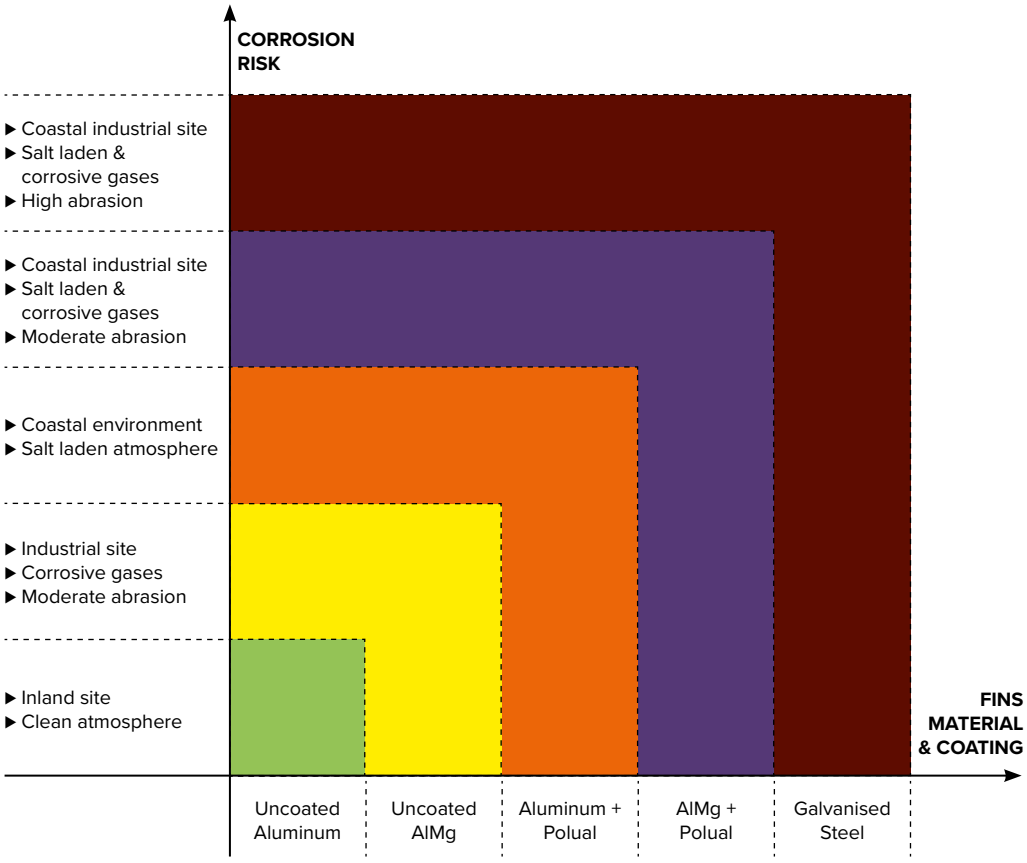


SURFACE TREATMENT

With more than 80 years of experience in the design and construction of heat exchangers, Kelvion has developed countless types of compact fin tube systems to meet all specific requirements involving media temperature, pressure, noise levels, reduced footprint, vibration, and protective coatings.

In partnership with Blygold, Kelvion has developed a uniqueautomated process to apply a perfectly graduated coating. It protects the compact finned coils against harsh environmental conditions such as erosion by sand or salt.

In the event of any incident or shock to the exchange surface, the fins and the film can be repaired on site without changing or even moving the dry cooler.




OUR SERVICE
IN THREE
WORDS:
PEACE
OF MIND

START-UP SERVICES & ONSITE SERVICES

REPAIRS, OVERHAULS & MAINTENANCE

SPARE PARTS & SPARE PARTS SOLUTIONS

MONITORING, CONSULTING & TRAINING

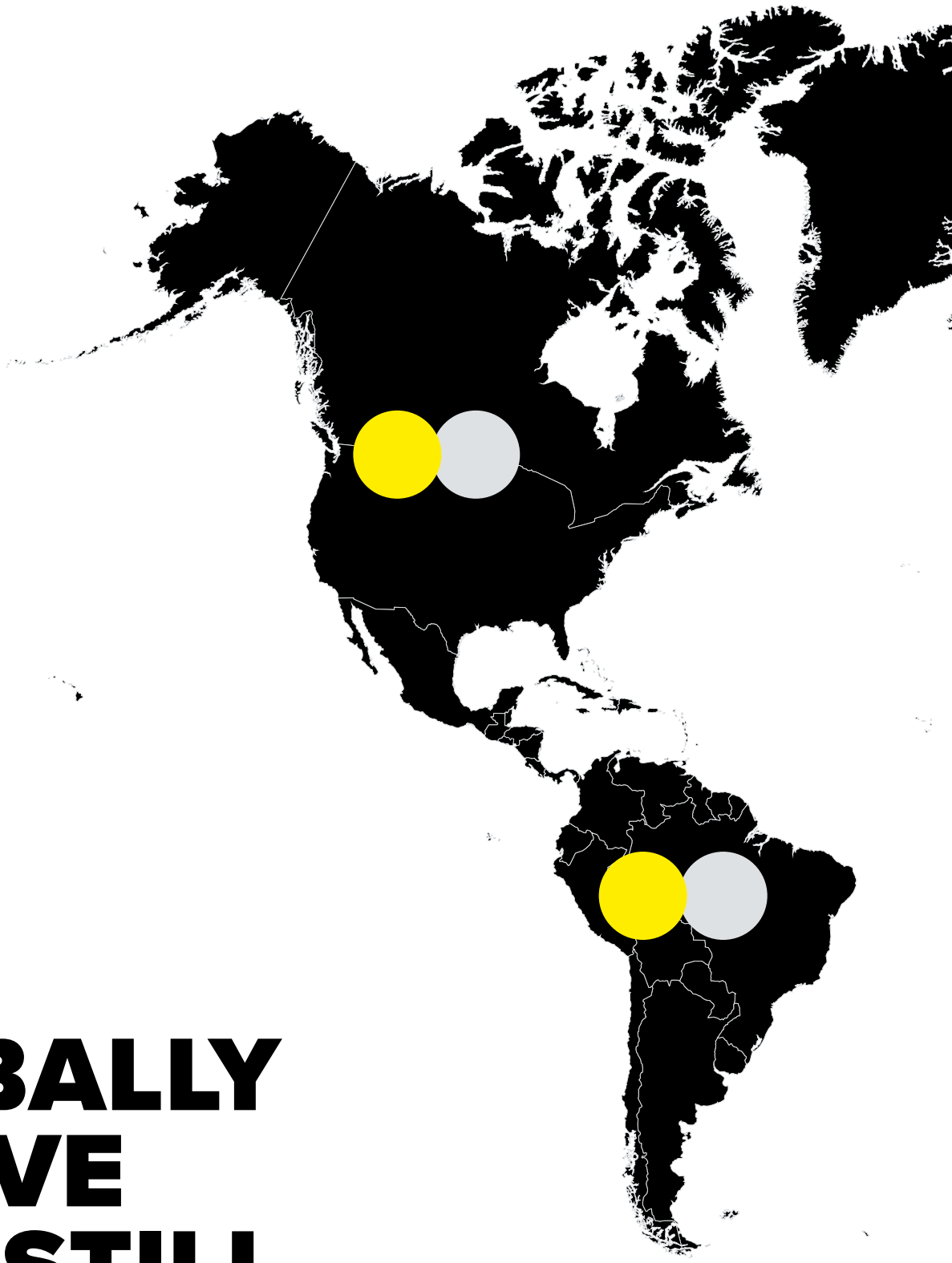
UPGRADES & REPLACEMENTS

ALL BRAND SERVICE

Besides being experts in our own products and our former brands, we also have the expertise to service other brands.

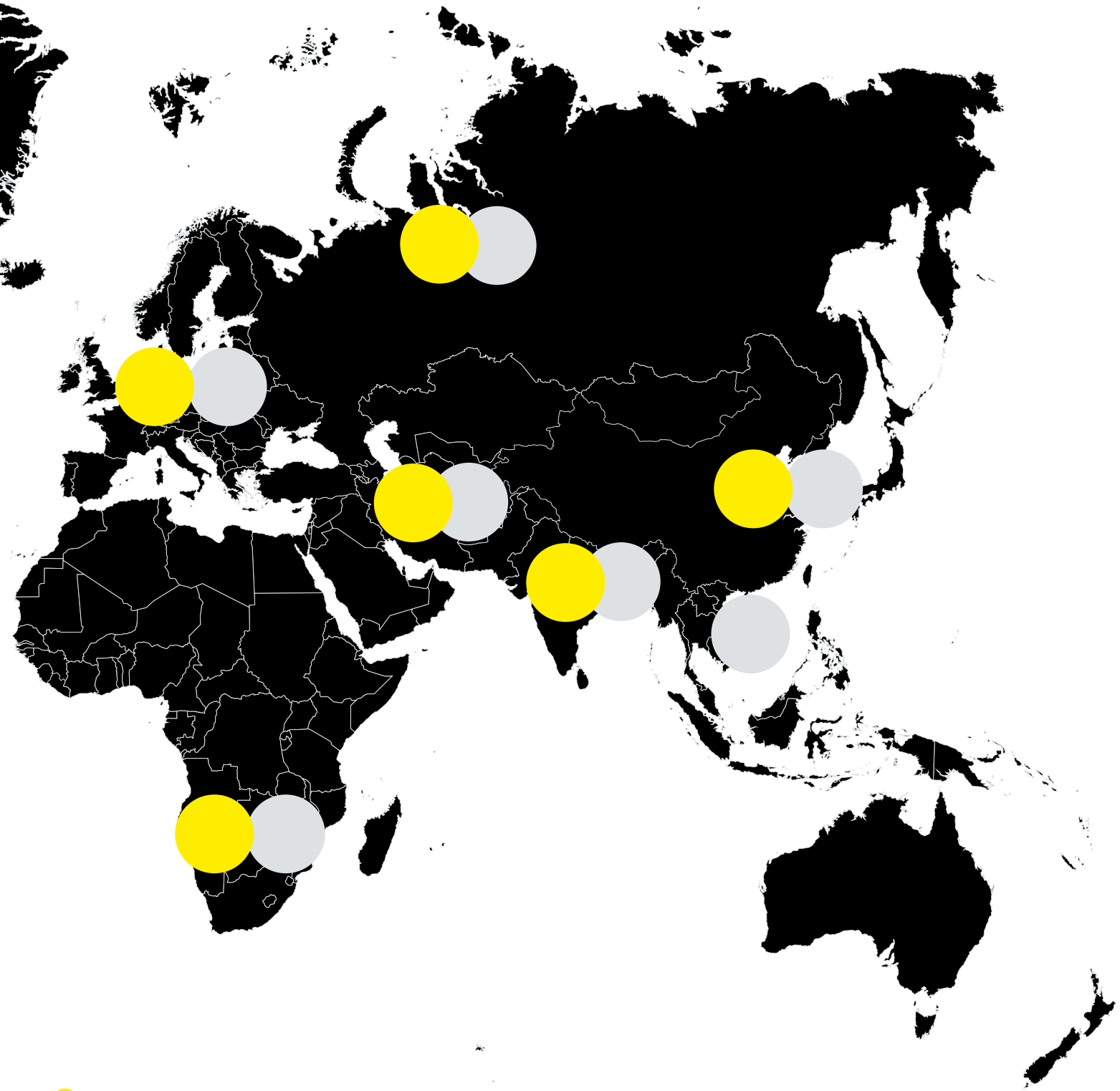
PERFORMANCE AGREEMENTS

We offer individually tailored service solutions for the services in our extensive portfolio. They maximize your return on investment, ensure continual performance excellence and make budgeting simpler.



GLOBALLY ACTIVE AND STILL CLOSE BY

No matter where your market is, regardless of country, we are never far away. We are always happy to answer any questions you may have and meet your requirements. Even the largest, most successful project begins with an initial, profitable conversation. We look forward to hearing from you.



- Global production footprint
- Global sales and service

Just scan this QR code with your smartphone or visit our website at: www.kelvion.com – there you will find a highly competent contact in your immediate vicinity.

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