Kelvion

THERMAL SOLUTIONS

Product line: Fully welded heat exchangers

HEAT EXCHANGER SYSTEMS FOR GAS/ GAS APPLICATIONS

Kelvion

LEADERS IN ENGINEERED THERMAL SOLUTIONS

Kelvion Thermal Solutions is your global partner for improved process efficiency.
We offer world class expertise and tailored heat exchange solutions that continue to set new standards.
As our name suggests, we are part of the Kelvion Group - a global manufacturer of industrial heat exchangers since 1920.

Our extensive know-how can be applied to a wide range of applications and industries, including **Data Centres, Hydrogen** production and distribution, waste to energy, **Carbon Capture** and Oil & Gas.In particular, we are supporting the reduction in fossil fuel dependency through Green-Tech and High-Tech oriented technologies, and through our capabilities to offer integrated solutions.Our sales organization and our engineering and manufacturing plants are present **globally,** allowing us to be your perfect partner for heat transfer solutions, **in every Region.**

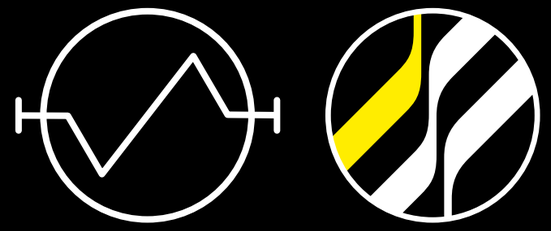
Developing, supplying products and solutions is one side of our business – comprehensive service offerings is the other. Supporting you after you have made a purchase is paramount. With our more than 30 service centers worldwide, we are always near by to ensure uninterrupted operation.

Kelvion Thermal Solutions – Leaders in Engineered Thermal Solutions!

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

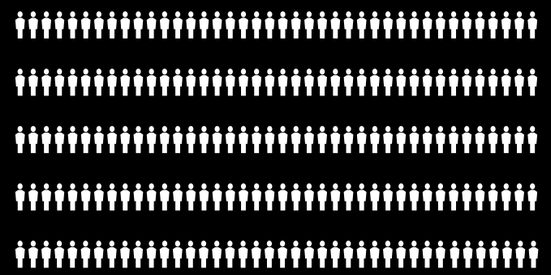
Lord Kelvin formulated the laws of thermodynamics and absolute units of temperature are stated in kelvin, in his honor.

OUR LOGO – INSPIRED FROM THE SCHEMATIC FOR HEAT EXCHANGER



SALES BRANCHES WORLDWIDE

1,500 EMPLOYEES WORLDWIDE



YOUR MARKETS ARE OUR MARKETS

- Carbon Capture
- Chemicals
- Data Center
- Heavy & Light Industries
- Hydrogen
- LNG
- Marine
- Oil & Gas
- Power

KELVION HAS A LONG HISTORY

2022 Reorganization of Kelvion into Product and Project Business

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

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 (Born 1882)

NO LESS THAN THE OPTIMUM

When we develop heat exchanger solutions, we are always thinking one step ahead. And this allows us to offer future-safe results today. With products featuring cost-savings, low energy input, high thermal heat recovery and excellent operational reliability.

KELVION HEAT EXCHANGERS: MASTERS OF EFFICIENCY

Heat exchangers for maximum operational reliability and minimum energy input

Success knows no compromises. And this is especially true in industry, where rising costs for energy and materials, stricter safety and environmental protection regulations combined with increased competition throughout the world, call for ever-improved standards regarding efficiency and functionality. And these are standards that can only be achieved quickly, simply and sustainably by high quality. Heat exchangers are the best example of this. Across the world an increasing number of industrial facilities – from chemical plants through power stations and other industrial facilities, from waste incineration units through to refineries – are operated using tailor-made heat recovery systems by Kelvion Thermal Solutions (KTS). For each application heat exchangers of the correct size, using the most suitable materials, with the right surface patterns, flow configurations and connection possibilities are available. An intelligent modular system that can be matched to individual requirements.

With our warmest recommendations
KTS heat exchangers for gas/gas applications are designed with efficiency as priority. In figures: our heat exchangers are capable of recovering more than 90 % of the input energy. The extremely high operational reliability is an additional benefit; guaranteed by the combined project expertise and process know-how of the KTS engineers, by the high quality of the materials and their processing, coupled with comprehensive project management. KTS supports projects at every stage, from planning, erection and startup through to service, maintenance and repair.

A level that makes KTS both market leader and technology leader in the heat transfer sector – and we strive to improve this further. At our globally networked manufacturing locations our specialists work on the development of new plate materials and welding technologies, developing thinner plates to offer improved wear resistance, new surface structures for better flow configurations and further improvements to continuously optimize the application stability of KTS products in the future.

KTS fully welded plate heat exchanger specialists:
- **Provide sophisticated solutions combined with reactor housings, channels, steel structures, etc.**
- **Support you as early as the project stage with in comprehensive engineering, process know-how and market expertise**
- **Supply components perfectly tailored to your overall plant configuration**
- **Accompany you from the planning of your heat recovery system through to after-sales service**

Fossil-fuel power stations, waste incineration plants
Combustion air preheating using the WAVE RECUPERATOR is especially suited for environmental protection applications aiming at denitrification. The heat exchanger can be installed above or attached to the catalytic converters to save space.

Chemical plants, refineries
Wide range of applications: Combustion air preheating, denitrification or post-combustion system in the environmental protection sector or cooling of flue gas or product gas.

Other branches of industry
- Steelworks
- Cement
- Wood processing
- Papermaking
- Systems for denitrification, gas cooling or heating

WAVE RECUPERATOR gas preheater and WAVE RECUPERATOR air preheater

GIGANTIC PERFORMANCE. MODEST SPACE REQUIREMENTS.

Whether in fossil-fuel power stations, in waste incineration and chemical plants, in refineries, steelworks, in wood processing and papermaking, whether in cement works or many other branches of industry: the recuperative KTS Wave Recuperator (gas preheater) and Wave Recuperator (air preheater) heat exchangers are capturing the markets, particularly thanks to the significant technological advantages in comparison with conventional solutions. For example in increased operational reliability: the fully welded passive and static KTS systems, in contrast to conventional regenerative active systems, have no need for bearings or motors because there is no motion at all. This minimizes maintenance and installation expenditure as well as wear.

Space-saving at every location
Thanks to their no-compromise compact design Wave Recuperators can be perfectly adapted to every process-engineering or space situation. The space-saving design allows fast installation, with short, vertical flow channels to simplify cleaning. Easy handling and considerable potential savings – meaning genuine progress.

At the forefront of heat recovery
Generally speaking, Wave Recuperators are suited for both small and very large flow rates involving air, flue gas or other gases. Both systems demonstrate their strengths in particular as heat recovery units between two gaseous media, e.g. for combustion air preheating, for catalytic denitrification plants in low-dust ranges, thermal gas scrubbing, drying, gas cooling or gas heating. Efficiency rates in excess of 90 % and leak tightness rates of 99.9 % are possible.

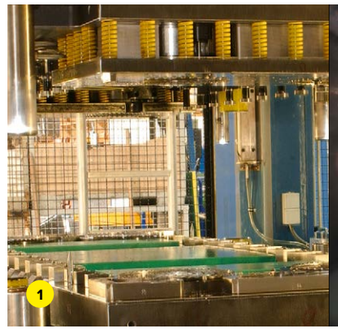
Your benefits at a glance:
- **Low energy input**
- **Maximum leakage tightness**
- **Highly compact and space-saving design**
- **High thermal efficiency**
- **Modular assembly, resulting in fast installation and optimum adaptation to processing and facility situation**
- **Easy cleaning thanks to short, vertical flow channels**

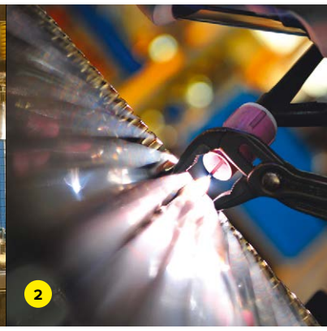
WE ENSURE PERFECT CONNECTIONS ...

... using the following welding methods: roller seam welding, spot welding, manual GTAW, partially mechanical GTAW, micro-plasma, laser welding, FCAW, manual, etc.

Manufacturing quality and production competence

CERTIFIED SAFETY YOU CAN RELY ON





1 Fully automatic pressing lines ensure consistent product quality.

2 Highest manufacturing know-how guarantees tight weld seams.

By definition welding means “the permanent bonding of components”. And this is a claim that does not provide for any exceptions or permit any weaknesses – and why absolute perfection is called for. That “permanent bonding” does not necessarily have to be a permanent problem is demonstrated impressively by our experts in the widest variety of tasks they solve using a wide range of welding methods, always selected to match the specific process demand, but never without a maximum of diligence and experience.

Whether roller seam welding, spot welding or laser welding, either manual or partially mechanised GTAW, manual FCAW or microplasma: the art of welding is very diverse at KTS. Performed by highly qualified employees with an extraordinary level of expertise, skill and experience in every area – for example in the welding of housings, vessels and pressure parts. And this know-how is continuously expanded by further training and experience. This is also guaranteed by a consistent quality management system to ensure that both our expertise and our products continue to reliably achieve the highest quality level.

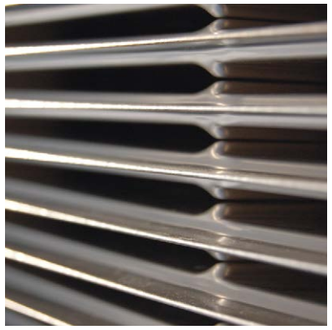
On-going personal certifications to DIN EN ISO 9001 guarantee that the processes mentioned above and many others are implemented at the highest level of precision. With an accuracy that means that even X-rays cannot identify any inclusions.

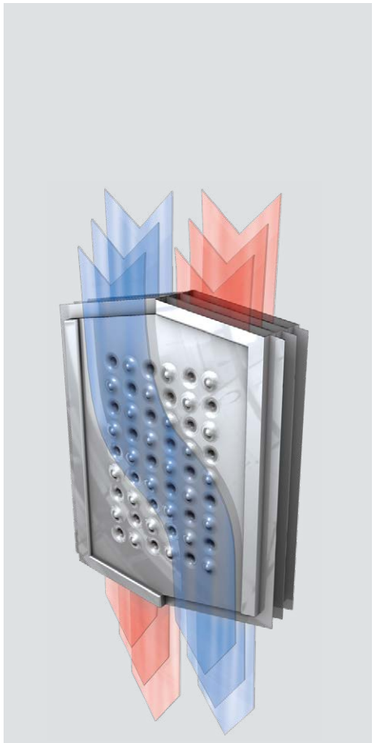
WAVE RECUPERATOR: Manufacture and engineering at the highest level
Manufacturing the Wave Recuperator plates demands the utmost from the vast know-how and precision of the KTS welding specialists. For example, the Wave Recuperator cassettes made of plates welded to each other must guarantee a gas tightness of 99.9 %, which of course calls for the highest manufacturing quality. Another example for major challenges is the welding of formed sheets, such as are used for the embossed Wave Recuperator plates. The objective here is to ensure reliable and permanent operation of the heat exchangers with no-compromise quality. Such superb welding craftsmanship is also to be found in all other KTS manufacturing sectors – maintained and encouraged by a quality management system confirmed by numerous certifications that represents a central pillar of the KTS corporate philosophy.

Certified safety:
- **DIN 18800-7**
- **Eurocode 3**
- **ASME**
- **AD-Merkblatt 2000 HPO (complies with Pressure Equipment Directive PED 23/97)**
- **ASME VIII, I**
- **ASME U-Stamp, S-Stamp, R-Stamp**
- **DIN-EN1090-2**

Quality for ultimate process reliability

WAVE RECUPERATOR MATERIALS

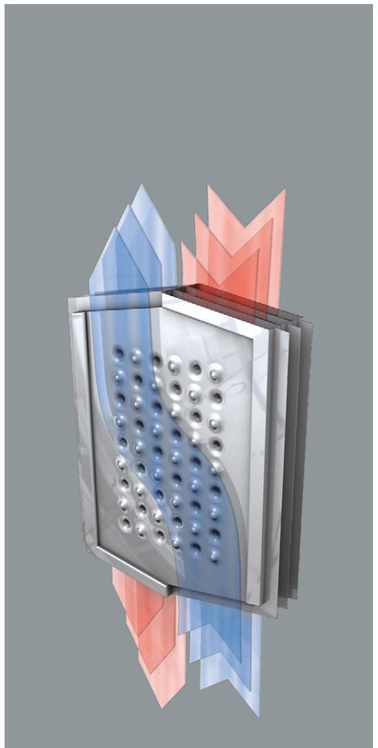




CO-CURRENT

Is used to prevent temperature falling below the dew point thanks to:

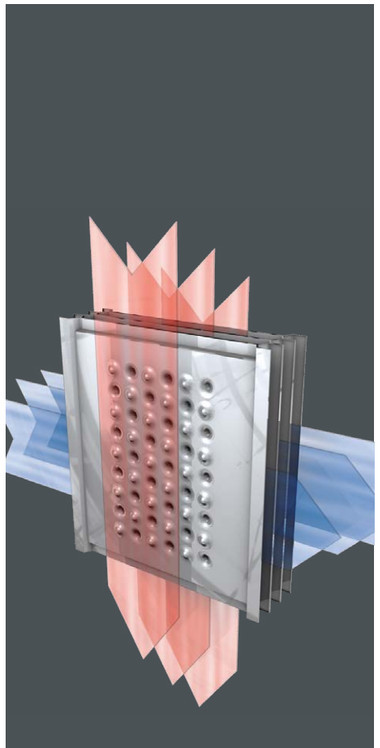
- Highest possible plate temperature
- Equal distribution of plate temperature



COUNTER-CURRENT

Designed for:

- Pure performance
- Highest thermal efficiency
- Maximum heat recovery of up to over 90 %
- Medium to very large flow rates
- Ultra-compact design



CROSS-CURRENT

Ideal for:

- Small to medium flow rates
- Very high particle loading on one side
- Low to medium heat recovery rate
- High operating temperatures

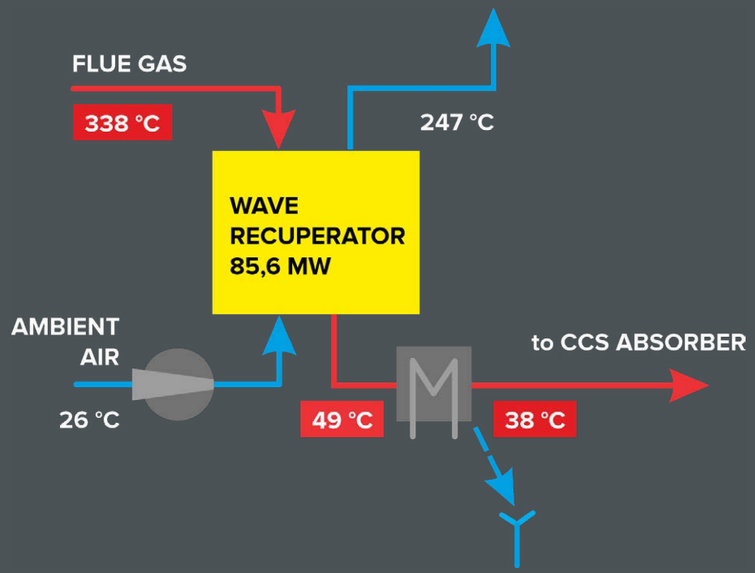
Technical data		
	Minimum value	**Maximum value**
Suitable for a volume flow of approx.	5,000 m^3/h STP humid	2,500,000 m^3/h STP humid
Heat transfer surface approx.	400 m^2	300,000 m^2
Thermal performance approx.	250 kW	200 MW
Operating pressure	- 400 mbar	400 mbar
Difference pressure		400 mbar
Utility space approx.	1.5 m^2	500 m^2
Overall height total system approx.	1.5 m	20 m
Shipping weight total system approx.	1 t	2,000 t
Transport sizes (width x depth x height) approx.	(1.5 x 1 x 1.5) m	(3.5 x 12 x 4) m
Transport weights approx.	1 t	150 t

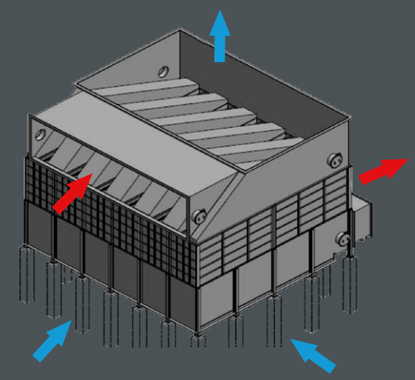
Plate materials								
	Materials							
DIN	1.0338	1.4301 1.4307	1.4404 1.4401	1.4547	1.4571	1.4539	1.4958	1.8965
Alloy UNS		S30400	S31600 S31603	S31254	S31635	N08904	N08810	ASTM A588 M Grade C
Trade name	DC04	304	316	254SMo	316TI	904L	800H	COR-TEN B
Plate thick-ness (mm)	0.8, 1.0	0.6, 0.8	0.6, 0.8	0.6, 0.8	0.6, 0.8	0.6, 0.8	0.8, 1.0	0.8, 1.0
Max. design temp. (°C)	490	650	620	500	620	500	800	400

Quality through individuality
To ensure efficiency and sustainability in every imaginable operating situation, Wave Recuperators systems are also tailored precisely to their intended application in terms of material selection. Criteria for material selection include temperature, pressure, gas composition and naturally the specific features of both the plant and its environment. This data is used to decide which metallic material should be used: carbon steel or stainless steel, heat-resistant and highly corrosion-resistant steels or nickel-based materials (Hastelloy).

Basically only first-class materials from certified European suppliers are used in making Wave Recuperator systems. Material quality, selection and actual manufacturing also meet highest standards. All joints within the modules and in the housing are welded. Kelvion offers a future-proof combination of material diversity, know-how and quality awareness to guarantee reliable and sustainable fulfilment of even the most stringent demands.

PROCESS FLOW SHEET (SAMPLE)





WAVE RECUPERATOR – Fully welded heat exchanger

HIGH EFFICIENT PLATE GAS COOLER

GREEN TECH

Wave Recuperator is a fully-welded heat exchanger that is used above all in the Green Tech industry as CCUS / CCS “Carbon Capture”. The function of heat exchanger is flue gas cooling.

It provides excellent efficiency with lowest possible temperature differences for gas to gas heat exchange. So it can be used to cool down the flue gas with ambient air between 0 °C and 40 °C as cooling medium. By replacing low performing combustion air preheaters with Wave Recuperator you can boost the productivity and reduce the fuel consumption of your plant. At the same time CO_2 emissions can be reduced.

Fully welded modules for assembly into flexible housing, wavy shape with turbulation dimples and support dimples. Design for low pressure besides pressure design codes.

The main advantages of Wave Recuperator are: very large surface in a single unit, most compact, lowest weight, cost saving for stainless steel moc, flexible design. Low temperature differences can be reached and all duct connections can be designed flexible.

THERMAL DESIGN (TYPICAL RANGE)

	FLUE GAS COOLER			
FLUID	**COLD SIDE AIR**		**HOT SIDE FLUE GAS**	
	INLET	OUTLET	INLET	OUTLET
OPERATING TEMPERATURE [°C]	0 - 40	80 - 200	135 - 200	45 - 80
OPERATING PRESSURE [kPa(g)]	0 - 10	-	-5 - 5	-
PRESSURE DROP [kPa]	1 - 5	-	1 - 5	-
HEAT DUTY (RANGE/AVERAGE) [MW]	0,5 - 85	-	0,5 - 85	-
WAVE RECUPERATOR SIZE RANGE [m²]	200 - 50000	-	-	-
OPERATION	continuous	-	-	-

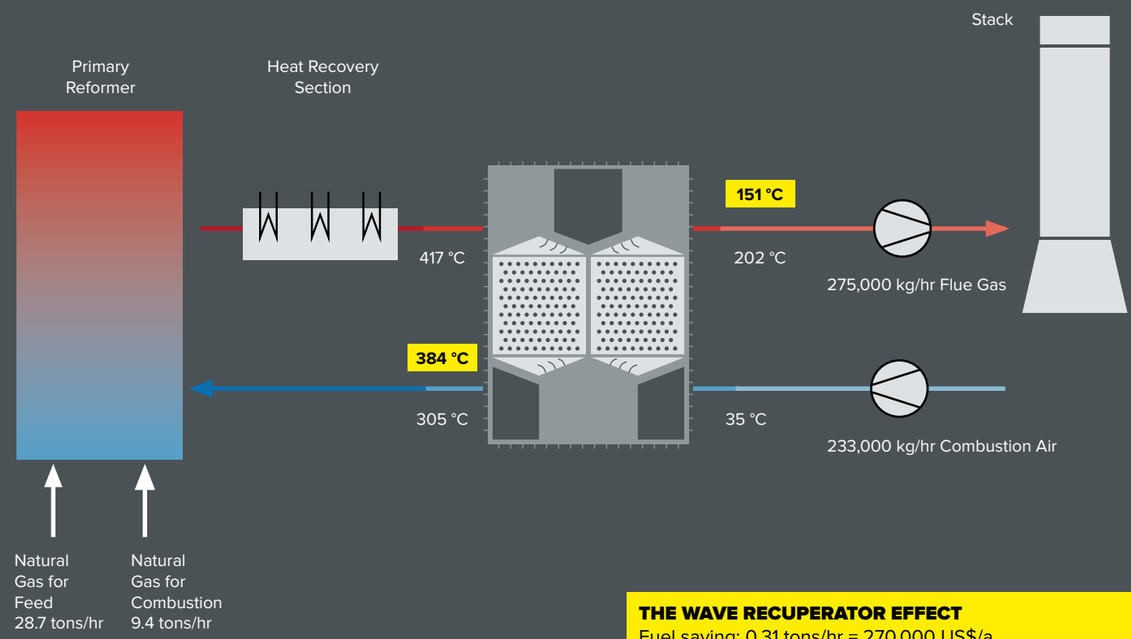
DESIGN LIMITS

LIMITS	**PLATE SIDE**		**SHELL SIDE**	
	MIN	MAX	MIN	MAX
OPERATING TEMPERATURE [°C]	-20	600	-20	600
MAX. OPERATING PRESSURE [barg]	-0,49	0,49	-0,49	0,49
MAX. DIFFERENCE PRESSURE PLATE/SHELL SIDE [bar]	0,4	-	-	-

USE OF WAVE RECUPERATOR AS COMBUSTION AIR PREHEATER

Cutting back on primary energy, but not on performance: the Wave Recuperator combustion air preheater recovers valuable heat from the waste gas line and feeds it directly back into the system. An efficient, but complex process that Kelvion makes really easy for clients using comprehensive project management with maximum know-how and commitment.

WAVE RECUPERATOR: COMBUSTION AIR PREHEATER BOOST YOUR PLANT



THE WAVE RECUPERATOR EFFECT
Fuel saving: 0.31 tons/hr = 270,000 US$/a
Increased production: 19.5 tpd (based on 2.5 US$/MMBTU)

Figures based on typical 1.350 tpd Kellog Ammonia plant

WAVE RECUPERATOR – Recuperative air preheater

MORE THAN JUST HOT AIR

Energy is becoming synonymous with success. When a company manages to reduce its primary energy consumption, the positive effect on the balance sheet is very evident – as are the benefits to the environment. Heat recovery has proved to be the most effective way of exploiting existing energy in secondary systems and processes, thus minimizing primary energy input.

The Wave Recuperator recuperative air preheater features maximum performance – developed for systems where at least one of the two media is ambient air. In the waste gas line the Wave Recuperator, transfers the waste gas heat to the combustion air, which is recycled directly to the combustion process. A healthy cycle offering primary energy savings for a wide range of applications: in power stations using fossil fuels (hard coal and lignite, natural gas, oil, waste, wood and industrial gases); in production plants for ammonia, methanol, ethanol or other combustion plants.

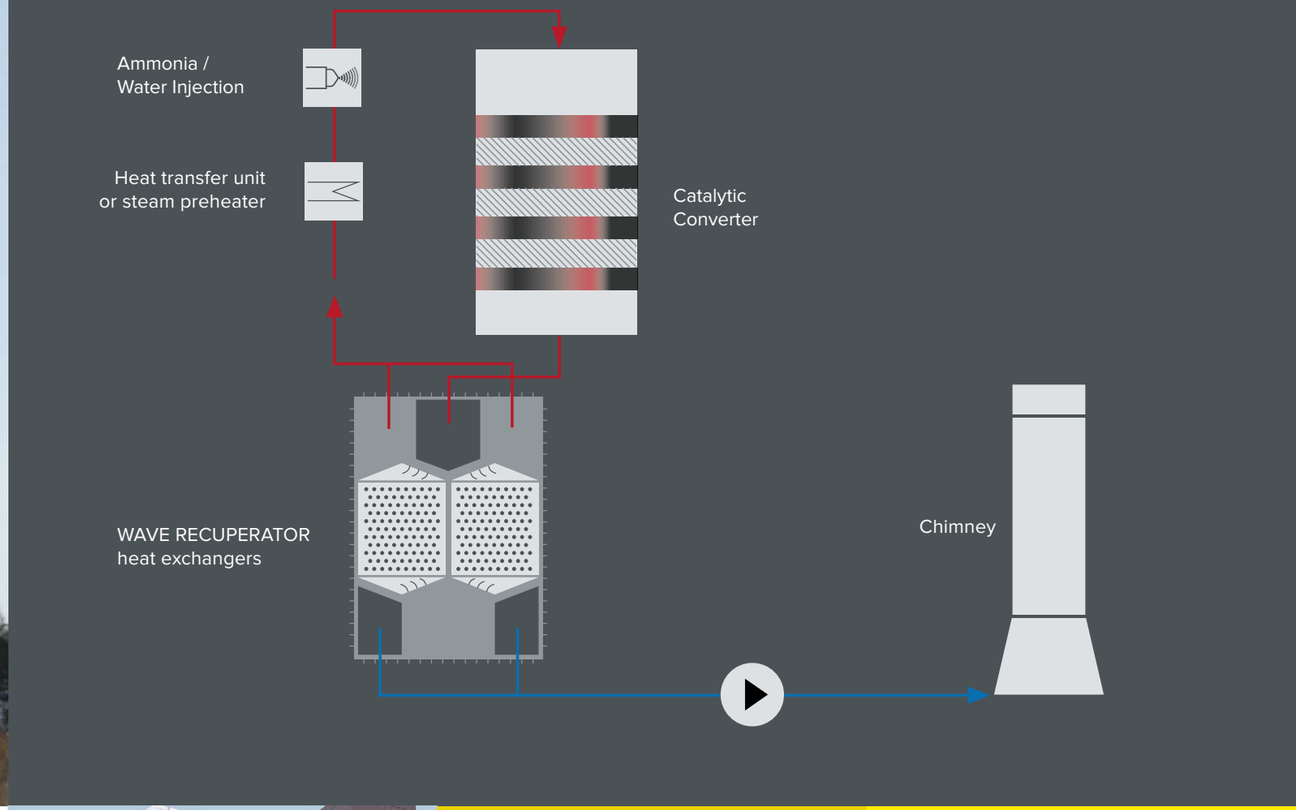
Depending on the plate geometry selected for the heat transfer surface this heat exchanger model is also suitable for high ash content in the flue gas.

Kelvion Project Management: Perfect Connections
Heat recovery plants are systems made up of innumerable different components from a range of manufacturers. This complexity requires perfect synchronization of the individual elements. Kelvion meets this challenge with an engineering and logistical project management to accompany, coordinate and implement every detail and every stage necessary for just-in-time installation of a Wave Recuperator heat recovery unit. This includes planning, construction and start-up, as well as service, maintenance, repair and competent consulting – also with regard to matters not directly concerning the Wave Recuperator.

Wave Recuperator in a methanol plant

EFFICIENT WASTE GAS CLEANING WITH WAVE RECUPERATOR

Heat recovery on a large scale: In the Rohrdorf cement factory near the German city of Rosenheim the world's first SCR unit ensures significant reduction in emissions. The heat transfer surface as the central component is the Wave Recuperator, welded from five modules to form a single unit.



WAVE RECUPERATOR – Recuperative gas preheater

EXEMPLARY EFFICIENCY

Proven use in waste incineration plants

Single-stage heat exchanger for flow rates up to 2,500,000 m^3/h

Two-stage heat exchanger for flow rates up to 2,500,000 m^3/h

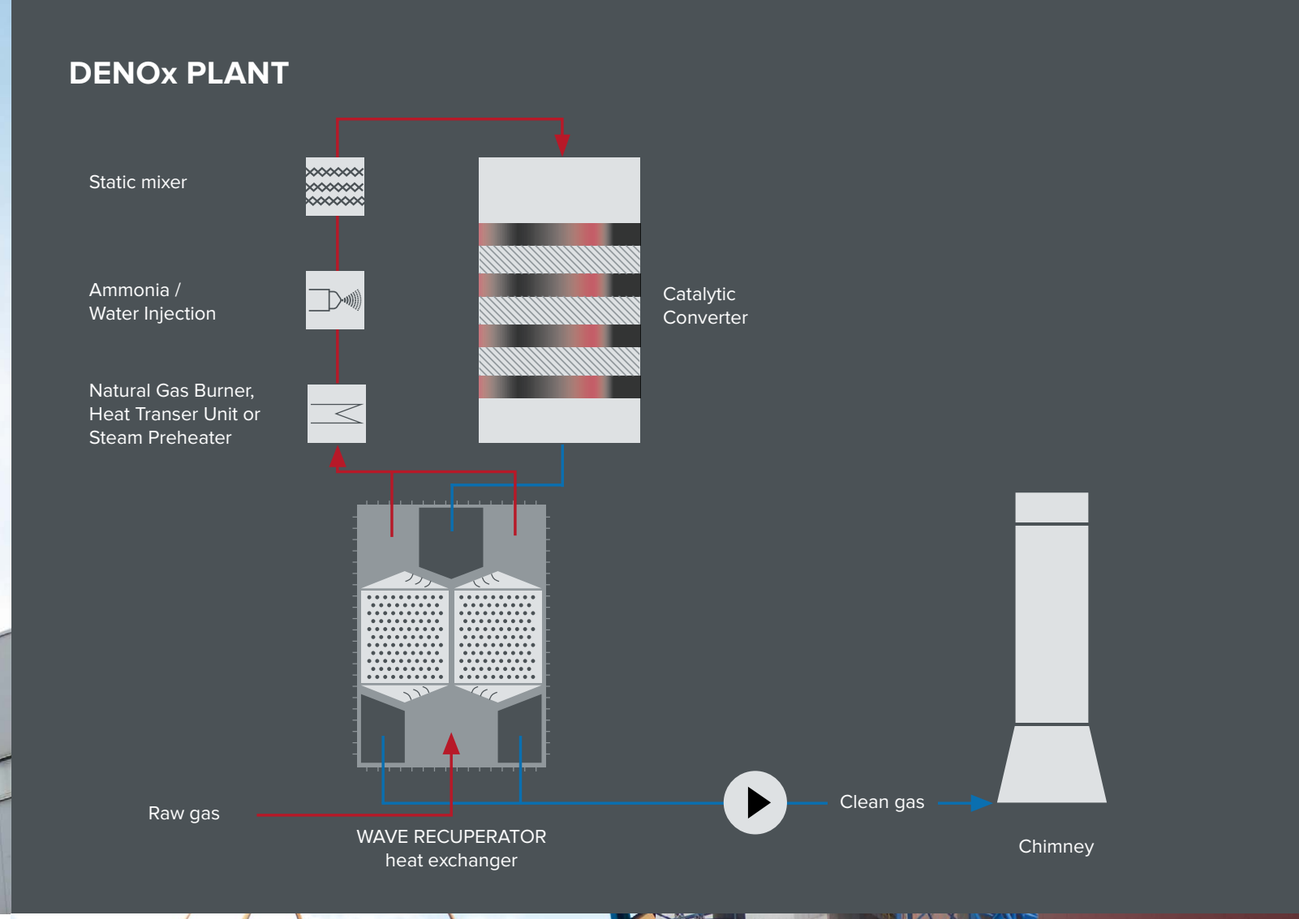
Emission impossible
A fine example of how complex technology can effectively benefit nature and the industry at the same time: The Wave Recuperator provides both budgetary and environmental advantages with its astonishing flexibility. Suitable for use wherever both media streams are flue gases or industrial gases, this powerful gas preheater (flow rates of up to 2,500,000 m^3) is used in a wide variety of industrial applications: in power stations, steelworks and cement factories, refineries, in waste incineration, etc.

Both Wave Recuperators DeNOx (see pages 16/17) were developed to handle heat recovery in catalytic denitrification and thermal waste gas cleaning.

Practically indispensable
In the meantime this technology has proven its practical value on a large scale. The Rohrdorf cement works in southern Germany – an innovation leader in this industry – features a 450 tonne, fully welded Wave Recuperator plate heat exchanger as the central unit in a special flue gas purification plant. In order to install the new equipment without interrupting production and to achieve optimum matching of the system components arranged on top of each other, a new 34-metre high operating tower was erected on an area measuring over 200 square metres on the facilities. This tower accommodates central components such as the Wave recuperator plate heat exchanger, a downstream heat transfer unit, and injection of the reducing agent ammonia (NH_3) and the catalyst. Using selective catalytic reduction (SCR) the nitrogen oxides are converted to nitrogen and water by adding ammonia – with minimum input of primary energy. The major share of energy for this process is recovered from waste heat, with the reliable support of the Wave Recuperator. The result is a cut in the annual emissions of around 800 tonnes NOx and 300 tonnes NH_3, which is equivalent to a reduction of 60 % and 95 % respectively. The heat recovery rate is 85 %. These are figures that speak for themselves – and for the efficiency and innovative performance of the Wave Recuperator.

SPACE-SAVING, AND STILL A GIANT

In the Linz steelworks reference facility of the Voestalpine Group simply everything is XXL. And this includes the process gas denitrification performance in the sintering plant.



WAVE RECUPERATOR – Compact DeNOx

THE POWERHOUSE

Transport and erection demand maximum commitment and expertise

Smooth erection processes: sub-assemblies are delivered just-in-time

The Wave Recuperator DeNOx, combined with a reactor housing for catalytic denitrification, offers huge benefits on a minimum of space. With its integrated design the system saves space, material and costs, but without making any concessions with regard to performance or safety. The perfect design down to the last detail guarantees maximum tightness. This reliably prevents any contamination of the scrubbed flue gas, caused for example by hot gases penetrating to the cold side.

Versatility in the smallest space
As far as space is concerned the compact DeNOx offers a wide range of opportunities: The catalytic converter housing can be positioned directly on top of the heat exchanger. Or the heat exchanger can be fitted directly below the housing. Another possibility is to install the reactor housing either above or below the Wave Recuperator. A further option is installing the compact DeNOx in a separate, self-supporting housing. Platforms, ladders and stairs can be affixed directly to the warm housing, which mostly dispenses with the need for further cold steel structures. Offering variations in power and flexibility.

Convincing properties
How a heat exchanger can reliably and efficiently reduce harmful nitrogen oxides is demonstrated by a Wave Recuperator unit in an innovative denitrification plant, developed and implemented in the Linz Steelworks of the Voestalpine Group. An ambitious project in every respect, demanding the highest quality and performance on the minimum of space, plus optimised investment and operating costs. The plate heat exchanger could convince across the board. In contrast to shell-and-tube heat exchangers it offers simpler installation and maintenance. This solution also offers 80 % space savings with the same performance, a reduced operating weight, and therefore much simpler integration into existing systems – a major argument for its use for this project. With the extremely high specific density the Wave Recuperator is also capable of heating up raw gas by 135 °C within a distance of just under three metres only. A perfect example of energy efficiency with reduced material input.

Gigantic logistics
Heat exchangers are no different to any other equipment: size is relative. The delivery and faultless installation of the 700 tonne heat exchanger alone in the steelworks in Linz, in spite of the extreme space constrictions, was both an engineering and a logistical challenge of the finest degree.

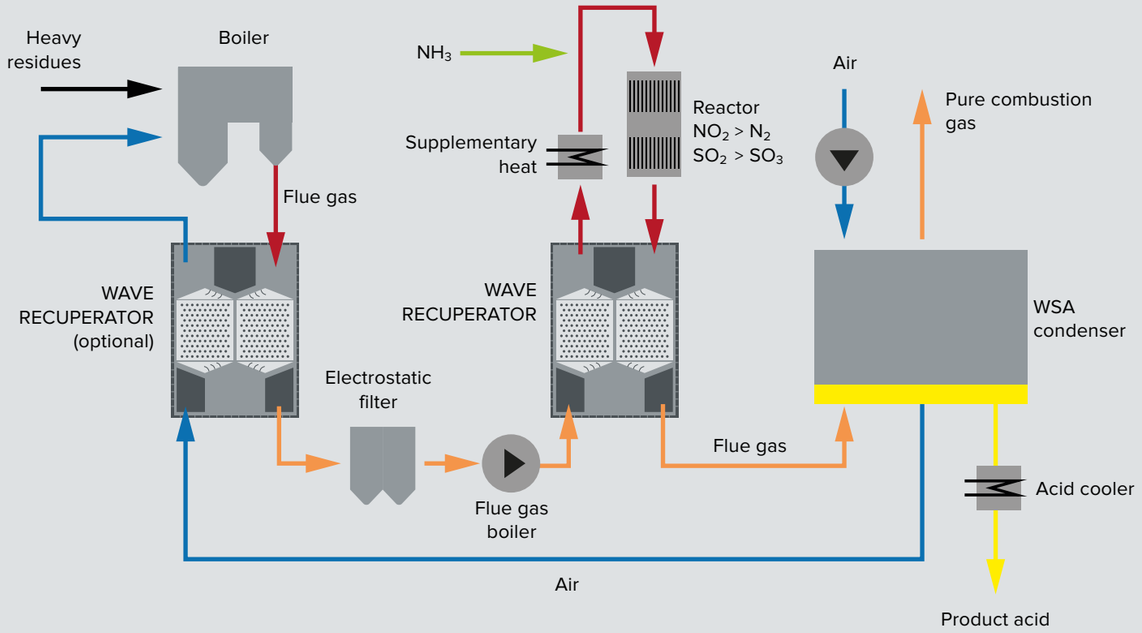
For example, the lower hood for the inflow section of the heat exchanger had to be pre-assembled to a single 70 tonne unit on the floor and then raised to a height of 32 metres, aligned and positioned as a single unit.

The building roof, originally designed for loads of 300 tonnes, had to be strengthened so that it could bear not only the heat exchanger but also the catalyst unit. Our expert Kelvion team handled both the complex heavy-load transport and the on-site installation without any problems or delays.

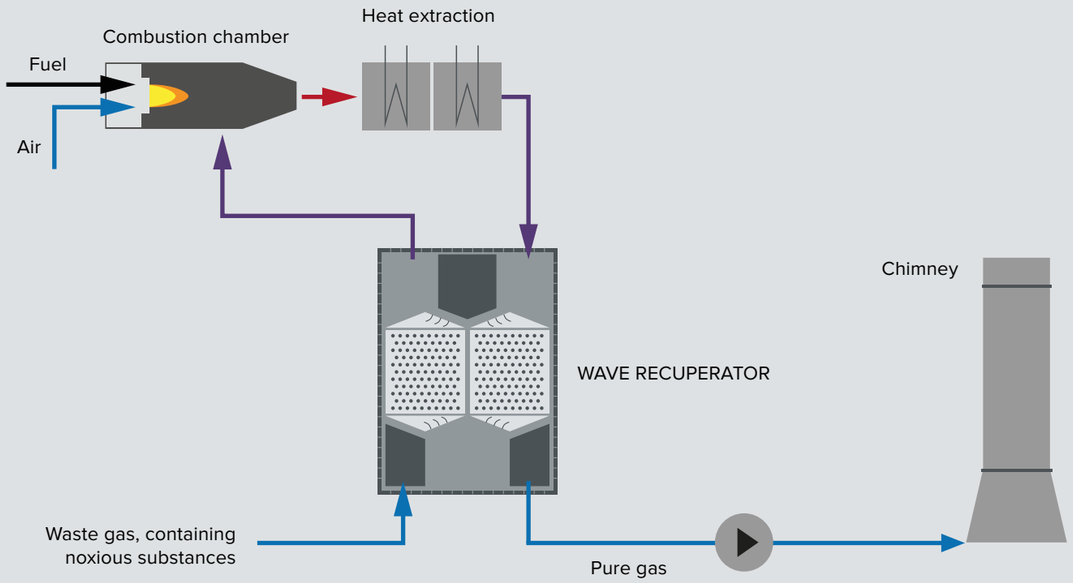
WAVE RECUPERATOR – DeSNOx

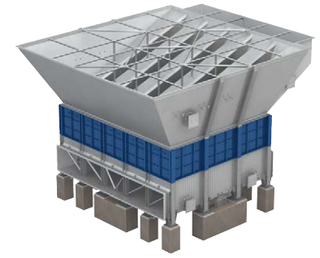
BUILT FOR MAJOR TASKS

SNOx PLANT



THERMAL POST-COMBUSTION PLANT





WAVE RECUPERATOR for an oil refinery

CATALYTIC DENITRIFICATION AND DESULPHURIZATION

Triple performance: In the SNOx unit at the Schwechat OMV Refinery the Wave Recuperator provides a perfect combination of heat recovery, catalytic denitrification and desulphurization sintering plant.

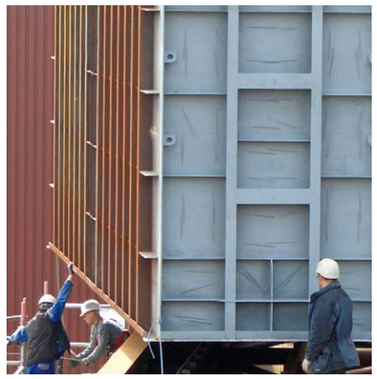
Sometimes only the best is good enough: The Wave Recuperator DeSNOx, as a combined downstream heat recovery, flue gas desulphurization and denitrification plant, is the solution for three highly complex processes at the same time. The core components for the plant at the OMV refinery in Schwechat, one of Europe's largest inland refineries are: gas/gas heat recovery system, NOx reactor, SO_2/SO_3 converter and a sulphuric acid condenser. With the installed recuperative Wave Recuperator plate heat exchanger around 900,000 m^3/h of standard condition/wet cold flue gas are fed to the NOx reactor and the SO_2/SO_3 converter. In the heat recovery stage this gas is heated to 380 °C, then it flows through the plate heat exchanger again and is cooled. The plate heating surface of 95,000 m^2 (more than 15 football pitches) transfers the heat from the hot flue gas to the cold flue gas – at a performance of 61,000 kW and a heat recovery rate of 86 %. Furthermore the Wave Recuperator DeSNOx also provides an astonishing physical performance: This gigantic system supports the weight and loading of the NOx reactor and the SO_2 converter, in total more than 2,000 tonnes! A wide range of applications – and a top performance in every regard.

Clean solution: thermal post-combustion
The high-efficiency waste gas cleaning process is a key factor in removing hazardous organic substances. In a combustion chamber noxious substances are oxidized at high temperatures (in the range from 750 to 1,000 °C) and converted to carbon dioxide and water. The use of a range of heat utilization stages and heat recovery systems leads to clear savings in primary energy.

OMV refinery, Schwechat:
- **Heat recovery rate over 86 %**
- **Heat output 56,4 MW**
- **Flue gas flow rate per side approx. 900,000 m^3/h standard condition/wet**
- **Temperatures over 400 °C**
- **Heat transfer area approx. 95,000 m^2**
- **Heat exchanger construction volume: approx. 4,200 m^3**
- **Weight of heat exchanger: approx. 1,100 t**
- **Reactor weight incl. auxiliary components: approx. 2,000 t**

Service from A to Z

FROM PROJECT PLANNING TO AFTER SALES SERVICE



Perfect engineering is not enough and this is why Kelvion Thermal Solutions matches its pioneering qualities in plate heat exchanger production with an equally outstanding service. This includes all standard and specialised after-sales and service packages: from erection, servicing and spare parts supply right up to preventative maintenance checks. A global network of service locations ensures immediate availability.

But any service is only as good as the people behind it. And this is where quality is paramount for Kelvion Thermal Solutions: All of our employees are experts, experienced, creative and fast. They work in the interests of our customers, independent of manufacturer, and reliability is guaranteed in every single case. Kelvion Thermal Solutions customers benefit from permanent functionality, reliable efficiency and sustainable system availability. Making cost factors transparent and eliminating stress factors.

Pro-active perfection
Kelvion Thermal Solutions Service emphasises prevention – and this begins as early as with careful planning, component selection and precise erection, a fundamental prerequisite for longterm functionality and reliability of the system. Pro-active checks such as our innovative leakage tightness testing or visual inspections of the heat exchangers detect any soiling or wear in good time. Our Kelvion Thermal Solutions experts rectify minor faults such as these on the spot. They also prepare individual maintenance schedules, adapted to match the specific heat exchanger loading and offer expert consulting with regard to the condition of the heat exchanger and make recommendations for replacements before a defect has occurred. A complete all-round service. Throughout the world.

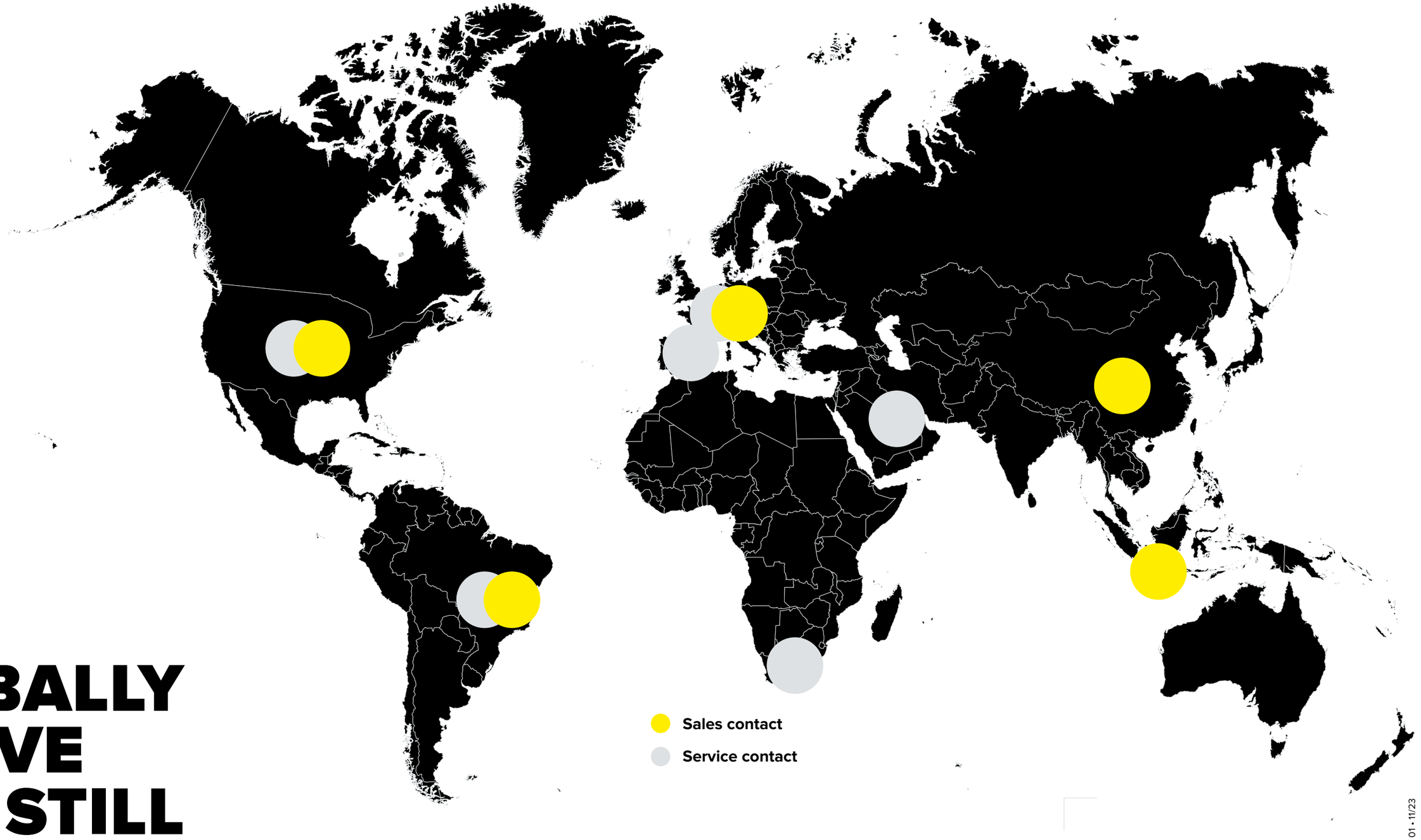
All-inclusive: Spare parts supply and accessories
Good service is essentially a question of time: Kelvion Thermal Solutions places great emphasis on being able to supply every spare part for plate heat exchangers of all series quickly, reliably and on time to any location in the world. Highest product quality and absolute fitting accuracy are self-evident.

High-quality extras:
- **Primer coat**
- **Measuring nozzles**
- **Manholes**
- **Insulation spikes**
- **Heat insulation**
- **Steel structures**
- **Stairs and platforms**
- **Channels**
- **Reactor housing**
- **Fan**
- **Flaps**
- **Stationary soot-blowers**
- **Manual cleaning jets**
- **High-temperature/high-pressure tubular heat exchangers for heat extraction**
- **Vapour preheaters**

ALL FROM A SINGLE SOURCE

Kelvion Thermal Solutions supports you throughout the complete process – from initial start-up through to detailed service

- **Consulting and planning**
- **Flow calculations**
- **Model tests**
- **Erection supervision**
- **Erection**
- **Maintenance**
- **Tests, measurements and investigations**
- **Repairs**
- **Supervision of manual cleaning work**
- **Manual cleaning work agreements**



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.

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

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