

Kelvion



Energy market

# THE **POWER** OF INTEGRATED SOLUTIONS



**Kelvion –  
a tribute to  
Lord Kelvin**

**70 branches and  
sales partners  
worldwide**

**More than 4,000  
employees  
worldwide**

Lord Kelvin (1824 – 1907) formulated  
the laws of thermodynamics



# EXPERTS IN HEAT EXCHANGE – SINCE 1920

Welcome to Kelvion. As successor to the GEA Heat Exchangers Group, we continue to break new ground, making discerning customers more successful than ever with our integrated heat exchanger solutions.

**Our solutions for your applications:**

We offer our customers one of the world's largest product portfolios in the field of heat exchangers. It includes individual solutions for practically all conceivable applications and complex environmental conditions: plate heat exchangers, shell and tube heat exchangers, finned tube heat exchangers, modular cooling tower systems, and refrigeration heat exchangers.

**Your markets are our markets, too:**

The markets in which you and we together operate are among the most important in the world: the chemical industry, food and beverages, the heavy industry, climate and environment, marine applications, the oil and gas industry, energy, refrigeration technology, sugar and transportation. We provide every single market segment with solutions of outstanding efficiency, safety, and sustainability.

**We are highly committed to earning your trust:**

We want to win your trust with everything we do and convince you with the solutions we offer. With this high aim in mind, we invest our extensive know-how, our great precision, and our passion in everything we do: including product development, manufacturing, installation, and after-sales support.

**Seeing things from the customer perspective:**

Your specific requirements count – and nothing else. Whatever we offer you, it must meet these requirements. Our entire way of thinking and working is geared towards this aim. Our customers truly appreciate this: after all, this is how we make their companies more efficient.

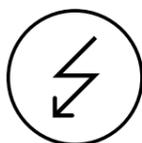
**We are at your service.**

Kelvion – Experts in Heat Exchange.



## The energy market – facts and figures

# THE FASCINATION OF A MARKET THAT MOVES THE WORLD



Gazing into the future, wherever you look, it's all about growth, growth, growth.

### The world's population

During the next 20 years, the world's population is set to grow to almost 8.8 billion people: i.e., 1.5 billion more than at the present time. And they will all need energy.

### Economy

A growing population also means a higher level of economic activity. The global GDP is therefore predicted to double by the year 2035. This economic growth, mainly driven by China, India, and the emerging markets, will greatly increase the demand for energy.

### Generating energy

More than half the growth in global energy demand will go into generating electricity. In the process, natural gas and renewable

sources of energy will increasingly replace coal. More than one-third of the growth in generating electricity could be attributable to renewables. A similar trend is recognizable in the global growth in primary energy: here, as a quarter of this volume could be covered by renewables.

### Solutions

For coal, oil, gas, wind, or water: Kelvion has the right solutions when it comes to generating and providing energy. Our products are used in power plants worldwide. Irrespective of global trends, our expertise and knowledge involving the fuels powering the world economy will continue to be in demand.

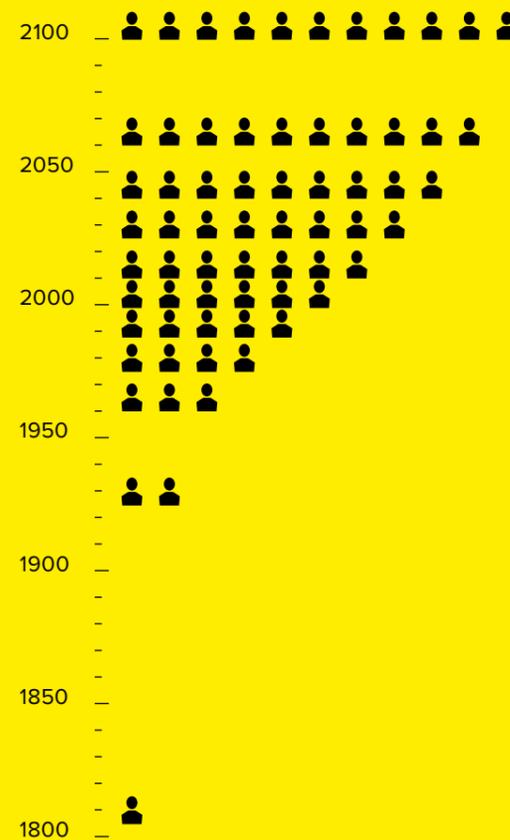
The predicted facts and figures are based on the "BP Energy Outlook 2035."

The source of energy that continues to dominate:

## IN THE YEAR 2035, FOSSIL SOURCES OF ENERGY WILL ACCOUNT FOR ALMOST 80 PERCENT OF ENERGY SUPPLIES WORLDWIDE.

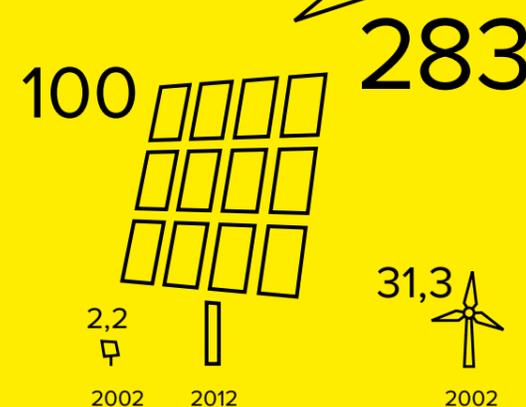
### Development of the world's population in billions

The global population first reached the one-billion mark in 1804. By 1927 the figure stood at two billion, in 1974, four billion. In 1999, the world's population surpassed the six-billion mark – which means it almost quadrupled within a single century. Meanwhile, the seven-billionth person was born in 2011. And this trend shows an even more rapid increase.



Source: United Nations, World Population Prospects: The 2012 Revision, 2013

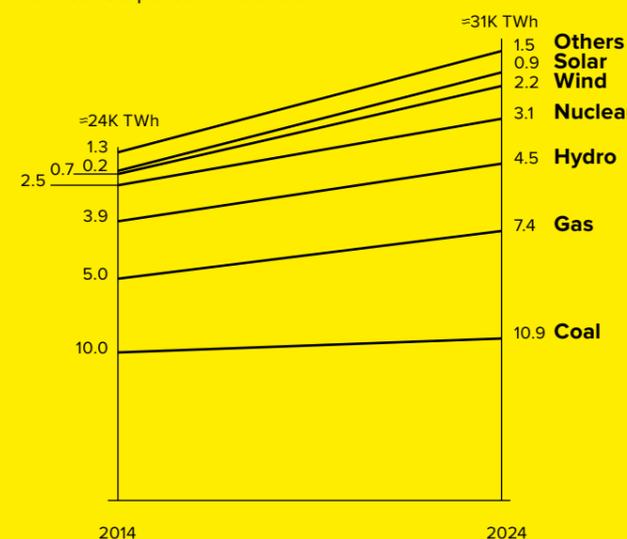
### Development of the world's solar and wind power capacities in gigawatts



Source: REN21 Renewables 2013 Global Status Report

### Energy needs show continuous growth

Energy demand is predicted to increase by around 3 percent per annum between 2014 and 2024. Gas as an energy source is forecast to experience greatest growth, with an almost 50 percent increase.



Sources: World Bank, IEA, IHS, EIA, EPR, Navigant, Brattlie, GE

### The main drivers of increasing energy demand



Economic growth (GDP per capita)



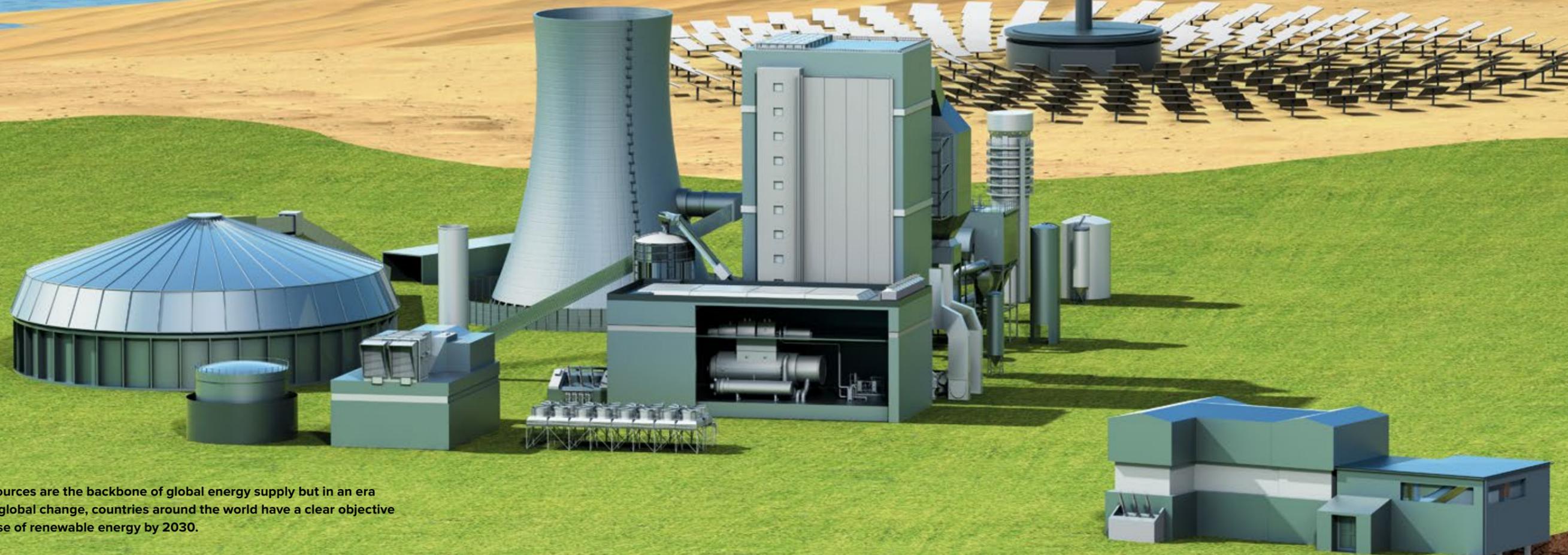
Population growth



Energy efficiency

Source: McKinsey Global Energy Perspective

# HEAT EXCHANGERS FOR **POWER PLANTS:** WE SUPPLY EVERYTHING FROM ONE SOURCE



**Fossil energy sources are the backbone of global energy supply but in an era of accelerating global change, countries around the world have a clear objective to double the use of renewable energy by 2030.**

Increasing worldwide demand for energy, combined with diminishing supplies of fossil fuels and the need to reduce the risks of climate change, are driving an upsurge in renewable solutions for generating power. By 2040, power generation by renewable energy is forecast to equal that provided by coal and natural gas.

The main sources of renewable energies, derived from natural processes that are replenished constantly, are sunlight, wind, rain, tides, waves, and geothermal heat, as well as biomass, biofuels and hydrogen.

Efficiency is the key to making renewable energy a commercial success. We offer a wide range of shell and tube heat exchangers for the storage of energy in solar thermal power plants, plate heat exchanger solutions for geothermal power generation and air coolers for wind and biomass power plants. Whatever the renewable source, we have the right heat exchange solution.



# OPTIMAL SOLUTIONS FOR YOUR PROCESSES

## FOSSIL ENERGY

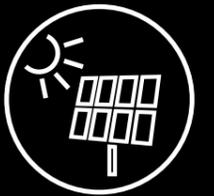
Carbon fuels such as coal, oil or gas are burned to generate steam that drives large turbines for producing electricity. These plants can generate electricity reliably over long periods of time. The main driver may be a steam turbine, a gas turbine or, in small plants, a reciprocating internal combustion engine. All plants use the energy extracted from expanding gas, either steam or combustion gases. Fossil fuel power plants will continue to contribute significantly to a needs-oriented power supply. They form the basis of a working energy mix, which is indispensable for meeting the major challenges of today and tomorrow.



## SOLAR ENERGY

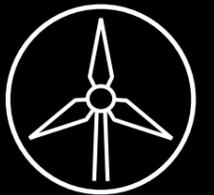
One of the main advantages of harnessing solar energy to generate heat or electricity is that it can be operated independently or in conjunction with traditional energy sources. The three main technologies that use the sun's solar radiation are:

- ▶ photovoltaic, which directly converts light into electricity
- ▶ concentrating solar power, which uses the heat from the sun to produce the required steam for a turbine and
- ▶ heating and cooling system, which collects the thermal energy to provide hot water and air conditioning.



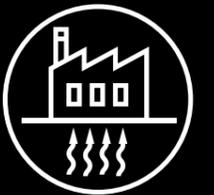
## WIND ENERGY

Wind energy is probably the world's fastest-growing energy source. It doesn't pollute the environment and has zero water consumption. Energy created by the wind is converted into electricity by means of a rotating propeller around a rotor. Ensuring the long-term, stable operation of wind technology depends on the research and development of cooling systems with high efficiency and low energy consumption.



## GEOTHERMAL

The natural heat of the earth is always available 24 hours a day/365 days a year. Some 20% is derived from the original formation of the planet and 80% from the continuous decay of radioactive isotopes at the earth's core. Geothermal energy can be performed on a small scale to provide heat for a house (via a geothermal heat pump), heating and cooling (for district heating and industries) or on a very large scale for energy production through a geothermal power plant.



## BIOMASS ENERGY

Renewable organic waste, such as wood, that would otherwise be dumped in landfill sites is burned to generate heat or electricity. Combustible wood gas is created in this process. In biomass power plants steam from the boiler powers the turbine, connected to the gas generator. The advantage is that burning biomass produces fewer carbon emissions than with fossil fuels. Simultaneously it is accelerating the change to ecological energy generation solutions.



## Heat recovery

# NEW IDEAS AND METHODS – ALL PART OF OUR SYSTEM

Rising energy costs call for new ideas and methods of heat recovery – and we have them in the Kelvion portfolio.

Our heat exchangers are made of optimal materials to assure effective cooling, heating, condensing, and evaporating a wide variety of media. And our efficient heat recovery systems make it possible to extract powerful energy streams from exhaust gases.

### Kelvion solutions:

Heat recovery steam generators, Economizers, Double-tube safety heat exchangers, Exhaust gas coolers



### Heat recovery steam generators

Our heat recovery steam generator (HRSG) is generally recognized as the industry standard for small to medium-sized applications with exhaust gas turbines (1-30 MW). It is frequently used in CHP (Co-Generation), Combined-cycles and District heating applications within the Pulp & Paper, Food & Beverage, Textile as well as Flue Gas Incineration System industries. Our HRSG reliable design features a natural circulation design through the water-tube section, promoted by heated risers and unheated down comers. With our standardized modular design the main advantages are modularization reception on site of the different parts which are manufactured and tested in our workshops, short erection and commissioning times as well as easy exchangeability of the different components.



### Economizers

Our economizer is a tube heat exchanger that recovers energy from exhaust gas or other gases and transfers it to another medium: e.g., water and heat-transfer oil. We design our economizers to suit the needs of our customers, either with a housing and a bypass and connections, or as a simple heat exchanger. We adapt the material, tube, and fin geometry to satisfy on-site requirements.



### Double-tube safety heat exchangers

Our double-tube safety heat exchangers are used in power plants as gas pre-heaters to enhance efficiency by using waste heat from oil and condensate. Depending on the application, we design and manufacture our double-tube safety heat exchangers in any desired shell, header, and gasket variant. In these double-tube models, various materials can be combined for the inner and outer tubes – which means that double-tube safety technology can be used in a wide range of applications.



### Exhaust gas coolers

Our exhaust gas coolers use the energy recovered from the exhaust gases of diesel and gas engines in power plants and cogeneration plants: for example, to produce hot water. These compact, modular stainless steel heat exchangers are integrated in a housing specifically adapted to customer requirements and are very easy to replace and clean.

## Generator cooling

# ALL PART OF THE KELVION PORTFOLIO: FOR GREATER OVERALL EFFICIENCY

Our solutions are installed not only in new power plants: they also raise the overall efficiency of existing systems in cases of refurbishing and modernizing.

It is becoming increasingly important to make efficient use of existing thermal energy.

For challenges of this nature, we can individually adapt our products to meet customer requirements.

### Kelvion solutions:

Closed circuit cooler, Stator water cooler, Air fin coolers, Plate heat exchangers



### Closed circuit coolers

Our finned systems, which are individually developed to meet customer requirements, improve the heat transfer in tube systems and therefore require less material to assure the same performance. The tubes of each system can be flexibly configured. Our classifications and certifications allow us to design and manufacture closed circuit coolers for all fields of application.



### Stator water coolers

The water cooling of stators in generators is now increasingly being based on plate heat exchanger solutions developed by Kelvion – which we offer as individual components or as complete skids. They offer a high degree of heat recovery, ease of maintenance, compact design, and low investment costs.



### Air fin coolers

Whatever the specific requirements, Kelvion has the right air fin cooler to suit every customer's application and location. We are constantly underpinning our technological leadership with new product developments. They include special high-performance finned tubes with optimized material and design, enabling a more efficient heat exchange. For wind power generation, Kelvion offers a wide range of cooling solutions for different fluids, both for onshore and offshore applications. In addition, we are researching different fin coating materials to enable offshore technology to withstand corrosion.



### Plate heat exchangers

Our state-of-the-art plate heat exchangers have been used successfully for cooling and heating all types of fluids. They are particularly recommended for geothermal heat pumps, across a large temperature range, as well as for low temperature solar applications, such as heating tap water. In addition, Kelvion offers plate heat exchanger-based solutions for cooling generators in high-temperature solar power plants and wind farms; for steam condensing in geothermal power plants and for various cooling closed water circulation systems in geothermal, solar, co-generating and biomass power plants. All our heat exchangers are made from the highest quality materials, ensuring maximum heat transfer, high performance and a long service life.

## Cooling of gas and diesel engines

# LONGER SERVICE LIFE AT MAXIMUM PERFORMANCE

Gas and diesel engines are widely in operation worldwide in emergency standby power (ESP), limited time running power (LTP), prime power (PRP), and continuous power (COP) modes. When operating in ESP and LTP modes, the engines are used to supply emergency electricity in case of power outages in facilities that could be damaged by power loss. PRP engines serve to cover load peaks: for example, at electric utility companies and in energy-intensive industries. Engines operating in COP mode ensure permanent supply reliability. In all these applications, a wide range of thermal requirements must be satisfied. Kelvion solutions extend the service life of these engines and ensure optimal performance at the same time.

### Kelvion solutions:

Lubricating oil coolers, Charge air coolers, Exhaust gas coolers, High- and low-temperature coolers



### Lubricating oil coolers

State-of-the-art diesel and gas engines must be operated at the correct operating point to deliver optimal performance. Our compact, highly efficient plate heat exchangers guarantee, for example, the ideal oil inlet temperature for the lubricating oil circulation system of an engine. They thereby minimize mixed-friction effects as well as wear on the slide bearings of the engine.



### Charge air coolers

Our charge air coolers, designed for diesel and gas engines, have over the decades gained a favorable international reputation for their high efficiency and reliability. We develop solutions tailored to cover customer requirements in close collaboration with engine manufacturers and plant suppliers. In the process, we optimize the entire charge air module on one engine. By employing special-purpose materials, advanced coating techniques, and innovative finned tube systems, our charge air coolers can also be utilized in engines that run on biogas or other gas fuels.



### Exhaust gas coolers

Our exhaust gas coolers use the energy recovered from the exhaust gases of diesel and gas engines in power plants and cogeneration plants: for example, to produce hot water. These compact, modular stainless steel heat exchangers are integrated in a housing specifically adapted to customer requirements and are very easy to replace and clean.



### High- and low-temperature coolers

To prevent major damage, advanced, high-performance engines require efficient, powerful cooling for their high-temperature water circulation systems. This is where Kelvion state-of-the-art plate heat exchangers come in. The so-called HT water, also known as jacket water, is cooled by LT water. The LT water, usually a closed intermediate water circulation system, is in turn cooled by external media such as seawater, river water, or cooling tower water.

## Transformer cooling

# RELIABLE, EFFICIENT HEAT EXCHANGE

Kelvion systems for heat removal from oil-cooled transformers offer operation with the maximum of reliability and efficiency. You can confidently trust our long experience in the design and production of components and systems for this application. To reliably perform both these and future challenges, we are firmly committed to continually enhancing and improving our products.

### Kelvion solutions:

Transformer oil air coolers, Transformer oil pumps, Transformer oil water coolers

## Turbine cooling

# ONE OF THE **LARGEST** PRODUCT PORTFOLIOS ON THE MARKET

With our heat exchangers for turbine cooling in power plants, we offer our customers what is possibly the most extensive product portfolio on the market, with gasketed, brazed, or fully welded systems. The Kelvion portfolio also includes process-optimized model series that cater to every requirement.

### Kelvion solutions:

Lubricating oil coolers



### Transformer oil air coolers

We supply our transformer oil air coolers in a number of versions. In the standard version, air coolers are directly mounted on the transformer boiler. Freestanding transformer cooling systems designed to meet customer specifications are also part of our portfolio.



### Transformer oil pumps

Transformers designed for forced cooling require glandless pumps to transport the transformer oil. We design these pumps in accordance with your requirements and your operating conditions.



### Transformer oil water coolers

This type of cooling is selected for special purposes such as for oven transformers, rectifier transformers, or for the cooling of machinery transformers in hydroelectric power plants. Kelvion transformer oil water coolers with double-tube technology are an operationally safe, environmentally friendly solution for this application.



### Lubricating oil coolers

Our highly efficient plate heat exchangers cool the oil circulation systems of advanced gas and steam turbines, using minimal differences in temperature. We also offer these plate heat exchangers as skid systems (2 x 100%): K°Skid. The standby cooler combined with integrated switchover fittings ensures uninterrupted turbine operation. Due to often very limited space system integrators appreciate the compact design of Kelvion plate heat exchangers.

## Steam condensation

# WATER-STEAM CYCLE, RELIABLE SOLUTIONS

Our steam condensing systems, including feed-water preheaters, surface condensers and air cooled condensers; enhance performance in solar and geothermal power plants. They are designed to recover the exhaust steam under certain atmospheric pressure, and also to remove non-condensable gases from the steam cycle. These solutions achieve optimal energy yield and maximum efficiency. We manufacture customized package solutions, including thermal and mechanical design, basic and detail engineering, procurement, manufacturing, testing, delivery and commissioning of turbine exhaust steam condensing units. Also we select materials to suit environmental conditions.

### Kelvion solutions:

Surface condensers, Air cooled condensers, Feed water preheaters, Plate heat exchangers



### Surface condensers

Performing vacuum in the most effective way in order to assure overall efficiency of the steam turbine cycle. Condenser, vacuum unit, condensate pumps, gland steam condenser, level control valves, steam duct from the steam turbine to the condenser. The cooling water side can be built in different materials or protected with coating systems – tubes of carbon or stainless steel, based on copper alloys, nickel alloys or titanium, depending on the nature of the cooling water.



### Air cooled condensers

Dry cooling systems offer the ideal solution in dry regions, enabling power plants to operate with minimum water consumption. In addition, under the European Program H2020, Kelvion is developing a hybrid dry/wet cooling system which can increase the net annual power output of concentrating solar power plants by up to 2%, reducing the water consumed for cooling by 75 to 95 %, compared to wet cooling. This hybrid cooling system has a significantly higher performance than the traditional dry cooling systems.



### Feed water preheaters

Steam boilers form a successful and reliable combination with our feed water preheater customized solutions. Preheating the water reaches an increase of the cycle efficiency and saving in the required fuel to heat the steam boiler. The preheating of the feed water also minimizes tension that can be harmful in the boiler water tubes.



### Plate heat exchangers

Our state-of-the-art plate heat exchangers have been used successfully for cooling and heating all types of fluids. They are particularly recommended for geothermal heat pumps, across a large temperature range, as well as for low temperature solar applications, such as heating tap water. In addition, Kelvion offers plate heat exchanger-based solutions for cooling generators in high-temperature solar power plants and wind farms; for steam condensing in geothermal power plants and for various cooling closed water circulation systems in geothermal, solar, co-generating and biomass power plants. All our heat exchangers are made from the highest quality materials, ensuring maximum heat transfer, high performance and a long service life.

## Cooling closed water circulation systems

# SOLUTIONS AT THE CRUCIAL INTERFACE

In power plants, external cooling water is separated by a closed intermediate water circulation system to prevent damage caused by contamination and/or corrosion. Our state-of-the-art plate heat exchangers provide the interface between the external water and the closed intermediate water circulation system.

### Kelvion solutions:

Closed cooling water (CCW) coolers, Cooling towers



### Closed cooling water (CCW) coolers

Depending on the cooling water used, our plate heat exchangers always offer the best solution: for example, the Kelvion NT 500 CCW plate heat exchanger, which has the highest throughput worldwide. Due to the extensive and varied range of materials for selection, our CCW coolers are effective for a broad range of water qualities, and are accordingly protected effectively from water corrosion. Moreover, our wide range of filter solutions provides them with ideal protection from contamination.



### Cooling towers

Kelvion cooling towers are designed to cool low to high water flows. We offer standard solutions to meet various capacity requirements in solar, biomass and geothermal power plants, as well as conventional power plants. Although standardized, our technology can be installed in various configurations and adapted to customer needs. The factory-preassembled modules are ideal for smaller projects, for which the customer enjoys significant cost advantages. For larger projects, field-erected cooling towers offer a more effective option. Our cooling towers can easily meet most cooling needs and space constraints, whether for a new project or replacing an existing tower.

## Preheating

# BOILER COMBUSTION AIR **OPTIMALLY** PREHEATED

Our wealth of experience over decades in design and manufacture has made us a leading provider of heat exchangers that preheat combustion air for generating steam in boilers. Our customers are continually pleased with the variety of the smooth and finned tube systems we offer them.

### Kelvion solution:

Air preheaters



### Air preheaters

Our innovative air preheaters are equipped with elliptical finned tubes. They keep temperatures constant in both winter and summer, thereby also meeting the most recent exhaust gas standards for applications in power plants. These air preheaters are effective not only for use in large-scale power plants, but also with smaller boilers used for firing biomass or waste. They boost performance and improve process efficiency.

## Thermal Energy Storage

# STORAGE SOLUTIONS FOR ENERGY EFFICIENCY

Thermal energy storage is a key component in a power plant to enable energy to be used more efficiently. It can be used in district heating or cooling systems, large industrial plants, combined heat and power plants or in renewable energy facilities, such as concentrating solar power plants.

Our shell and tube heat exchangers and steam storage are designed and manufactured according to the client's specification, enabling an optimized design to suit the particular process.

### **Kelvion solutions:**

Shell and tube heat exchangers, Steam storages



### **Shell and tube heat exchangers**

Kelvion's shell and tube heat exchange technology plays a vital role in concentrating solar power plants that operate with thermal storage, using molten salts. On days with high levels of radiation from the sun, the heat exchanger heats the molten salts using excess energy from the heat transfer fluid (HTF). The stored energy in the molten salts tanks is then used to reheat the HTF on days with less direct sunlight, allowing the plant to operate in nominal conditions. We design our shell and tube molten salt to HTF solution according to customer requirements, including material selection, total length, pressure drop or electric heating to prevent the molten salts from solidifying.



### **Steam storages**

In order to provide extra energy when the demand exceeds the steam generating capacity, Kelvion offers Steam Storage for a wide range of pressures. This solution avoids any intermediary heat fluids because the charge/discharge is achieved directly with steam.

## Engine and turbine cooling

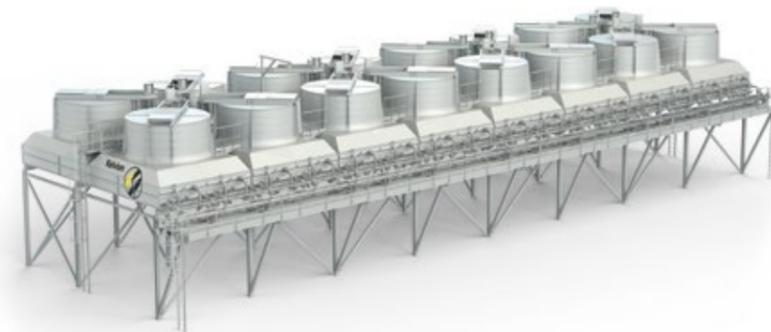
# AT HOME IN POWER PLANTS OF ALL TYPES

Our products are installed in stationary diesel power plants, gas turbines, gas and steam combined power plants, and multi-purpose units as well as in nuclear installations.

We design and produce made-to-measure, sustainable solutions for energy-generating processes. Moreover, we conform with all relevant standards: Codap, ASME, AD, BS, GOST, and all other applicable regulations governing heat exchangers.

### **Kelvion solutions:**

Adapted and modular compact radiators



### **Adapted and modular compact radiators**

Our special-purpose compact radiators can be adapted to suit all requirements, technical specifications, and key manufacturing regulations. Our modular, compact radiators are primarily used in large-scale power plants with major cooling requirements. They feature the impressive benefit of a flat design either used for generating sets with relatively small engines, or in large scale power plants with induced draft. One or two circuits can be configured to satisfy the requirements. A V-shape is also possible.

# WHAT WE ARE PARTICULARLY GOOD AT: STRENGTHENING OUR CUSTOMERS' PROCESSES

Climate-neutral city: When Düsseldorf meets this major objective in 2050, we at Kelvion will have made a major contribution towards achieving it – with a range of solutions installed in Düsseldorf's new Fortuna natural gas power plant, located in Lausward.

This power plant generates climate-compatible electricity and heat using natural gas. Fuel utilization efficiency lies at 85 percent due to the simultaneous generation of power and district heat by the CHP cogeneration process. For this reason, the district heat generated by the Fortuna unit is classified as primary energy factor 0 and is therefore legally equivalent to renewable sources of energy in terms of carbon emissions.

The heart of the power plant is a gas turbine, which serves as a source of heat for a waste heat boiler that generates the steam that powers the steam turbine. A generator that produces electricity is installed between the gas and the steam turbines. The

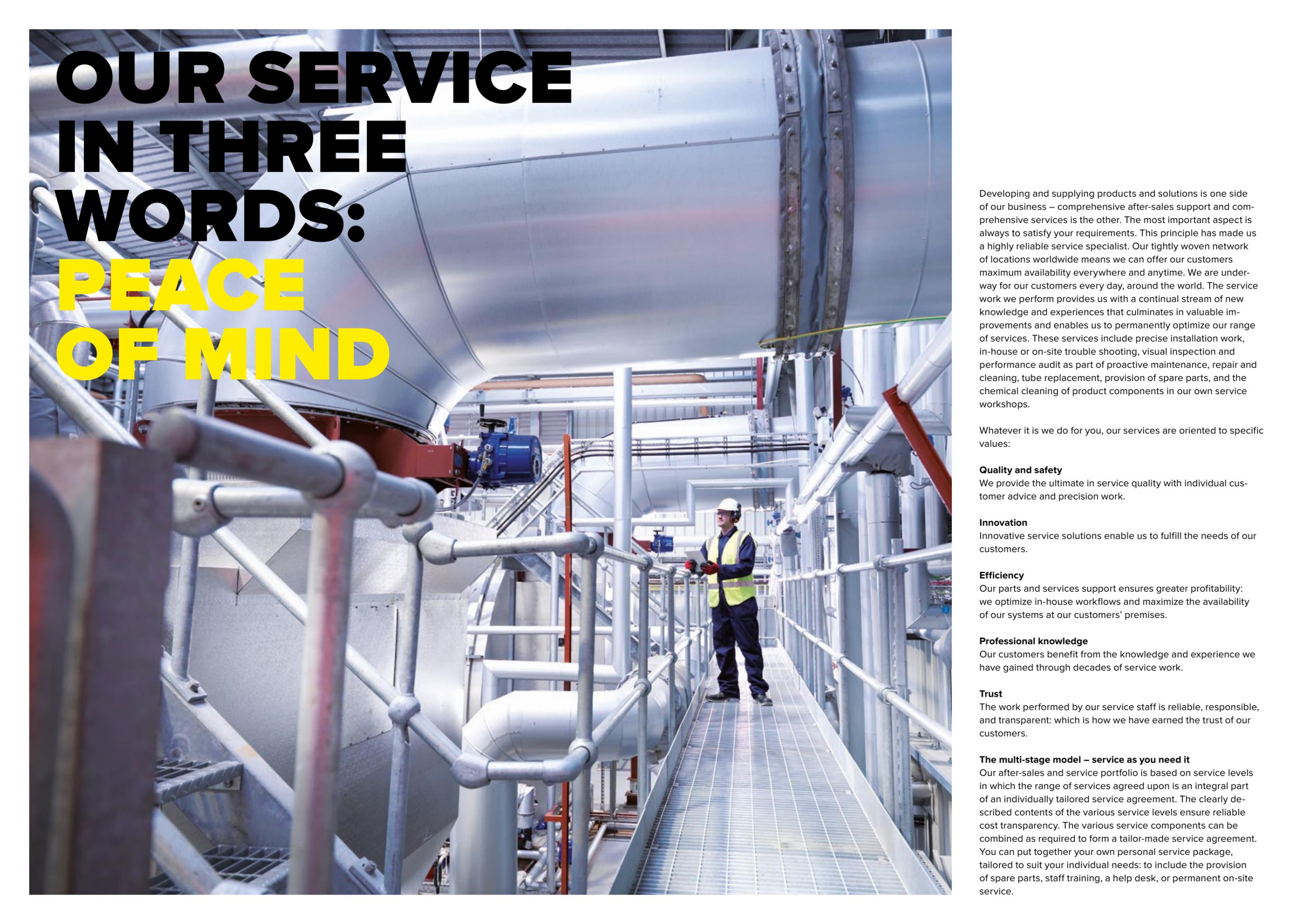
steam turbine and the connecting tubes feed the steam to the condensers of the district heat system via multiple extraction stages. The design of the steam turbine has been adapted to maximize the use of the steam generated with extremely low power losses.

The result has delighted our customer, the Düsseldorf urban utility company, as well as all of the industrial partners involved in the construction project. With an electrical output of around 595 megawatts and an effectiveness of more than 61 percent in terms of pure electricity generated, the Fortuna Unit is set to break world records. With the use of the existing heating energy for the city's district heating network, Düsseldorf is attempting to break a further world record. Never before have 300 megawatts of district heat been generated from one single power plant unit using only one single gas turbine. The new unit of the Lausward power plant can therefore achieve an overall utilization efficiency level of 85 percent in winter.



#### Kelvion in the record-breaking power plant:

- Hydrogen circuit coolers
- K°Skid plate heat exchangers
- Double-tube safety heat exchangers
- Natural gas preheaters



# OUR SERVICE IN THREE WORDS: PEACE OF MIND

Developing and supplying products and solutions is one side of our business – comprehensive after-sales support and comprehensive services is the other. The most important aspect is always to satisfy your requirements. This principle has made us a highly reliable service specialist. Our tightly woven network of locations worldwide means we can offer our customers maximum availability everywhere and anytime. We are under-way for our customers every day, around the world. The service work we perform provides us with a continual stream of new knowledge and experiences that culminates in valuable improvements and enables us to permanently optimize our range of services. These services include precise installation work, in-house or on-site trouble shooting, visual inspection and performance audit as part of proactive maintenance, repair and cleaning, tube replacement, provision of spare parts, and the chemical cleaning of product components in our own service workshops.

Whatever it is we do for you, our services are oriented to specific values:

#### **Quality and safety**

We provide the ultimate in service quality with individual customer advice and precision work.

#### **Innovation**

Innovative service solutions enable us to fulfill the needs of our customers.

#### **Efficiency**

Our parts and services support ensures greater profitability: we optimize in-house workflows and maximize the availability of our systems at our customers' premises.

#### **Professional knowledge**

Our customers benefit from the knowledge and experience we have gained through decades of service work.

#### **Trust**

The work performed by our service staff is reliable, responsible, and transparent: which is how we have earned the trust of our customers.

#### **The multi-stage model – service as you need it**

Our after-sales and service portfolio is based on service levels in which the range of services agreed upon is an integral part of an individually tailored service agreement. The clearly described contents of the various service levels ensure reliable cost transparency. The various service components can be combined as required to form a tailor-made service agreement. You can put together your own personal service package, tailored to suit your individual needs: to include the provision of spare parts, staff training, a help desk, or permanent on-site service.

# FAIRNESS FIRST: FOR CUSTOMERS, EMPLOYEES, COMPETITORS, AND THE ENVIRONMENT

Companies such as Kelvion that are internationally active are obliged to conform to internationally accepted conventions: of social, political, and legal nature. Our corporate code of conduct describes the principles and procedures behind our corporate actions. This code applies to all our employees worldwide. We ensure compliance with the regulations in a working environment that is characterized by integrity, respect, fairness, and responsibility.

## **We respect and observe the law.**

The basis for all action at Kelvion is the observation of all applicable laws and other regulations. We supplement these rules with especially designed, particularly strict internal guidelines and training with regard to certain aspects of the law.

## **We act internationally.**

Kelvion strictly observes as binding the statutory regulations that apply to our products and services involved in international commerce. We observe all applicable bans on exports and imports and observe all official authorization procedures.

## **We wholly reject corruption.**

Kelvion rejects any type of commercial corruption, both domestically and on foreign markets. In order to underline this fact, we have drawn up our own anti-corruption guidelines that enforce rules of proper conduct to which we adhere at all times. These rules apply both in our dealings with officials and with the bodies and employees of other companies.

## **We support fair competition.**

In a spirit of fair competition, we work hard, orient this work to our customers' needs and ensure the quality of our products and services. We observe all applicable domestic, supranational, and foreign anti-trust laws as well as any laws pertaining to unfair competition. We also expect this level of fairness from our competitors.

## **We ensure socially acceptable working conditions.**

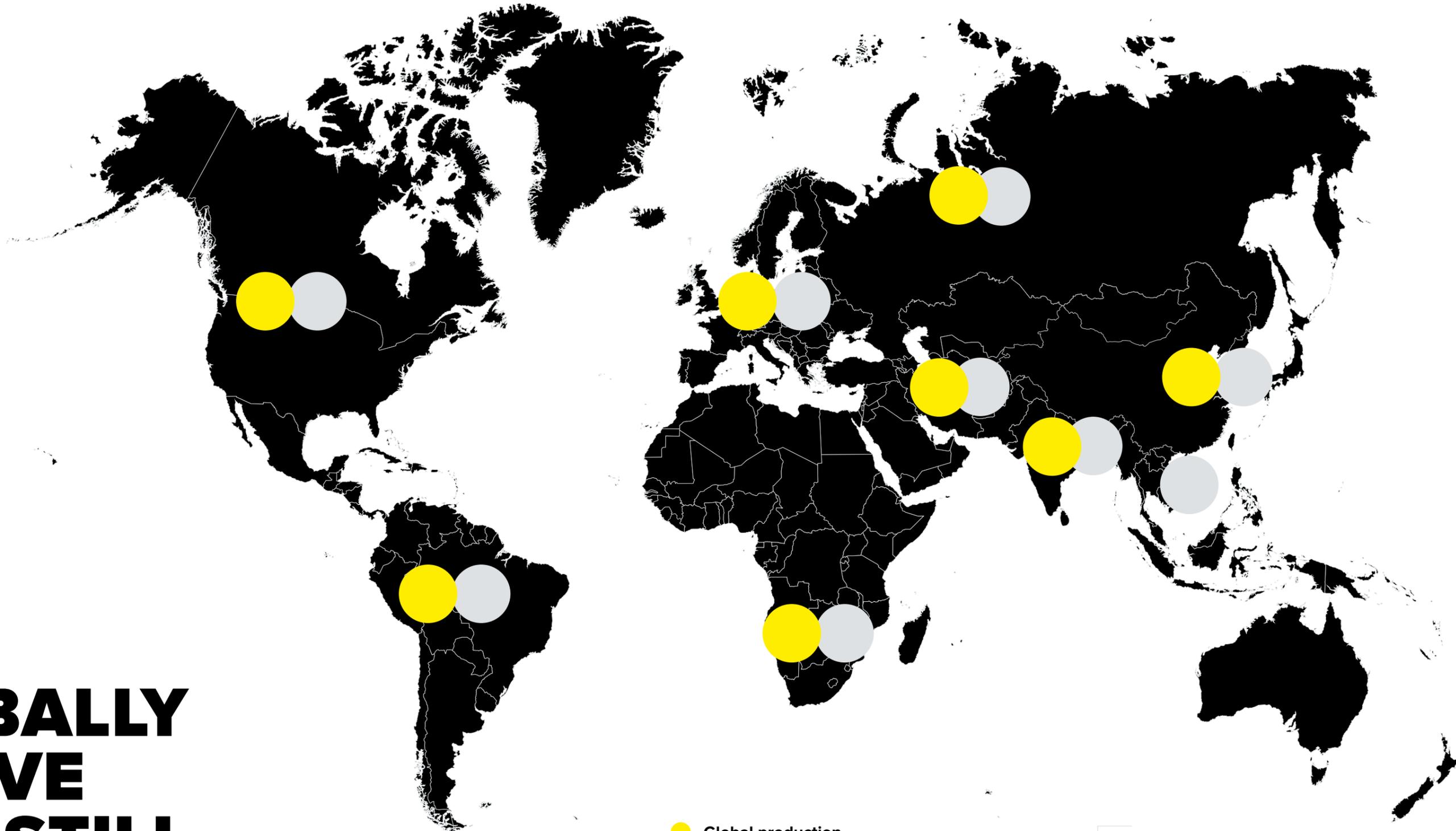
We are committed to the principles of social responsibility towards our employees and society. Kelvion offers its employees fair working conditions worldwide. We reject any form of discrimination, with respect to gender, sexual orientation, origin, skin color, or any other personal characteristics. We see ourselves as a socially responsible employer that treats its employees with respect.

## **We protect the environment.**

From development, to manufacturing, and to the sale of our products, we protect the environment throughout each of these phases. This principle applies not only to the energy we employ, but also to the protection of our natural environment at every workplace worldwide.

## **We ensure product safety.**

For our customers, we develop innovative, high-quality products and processes – and product safety enjoys top priority.



# 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](http://www.kelvion.com) – there you will find a highly competent contact in your immediate vicinity.

[www.kelvion.com](http://www.kelvion.com)