Excellence Passion Integrity Responsibility GEA-versity

GEA Group is a global mechanical engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.



GEA shell & tube heat exchangers for the oil and gas industry

Reliable solutions for petrochemical systems around the world

GEA Heat Exchangers

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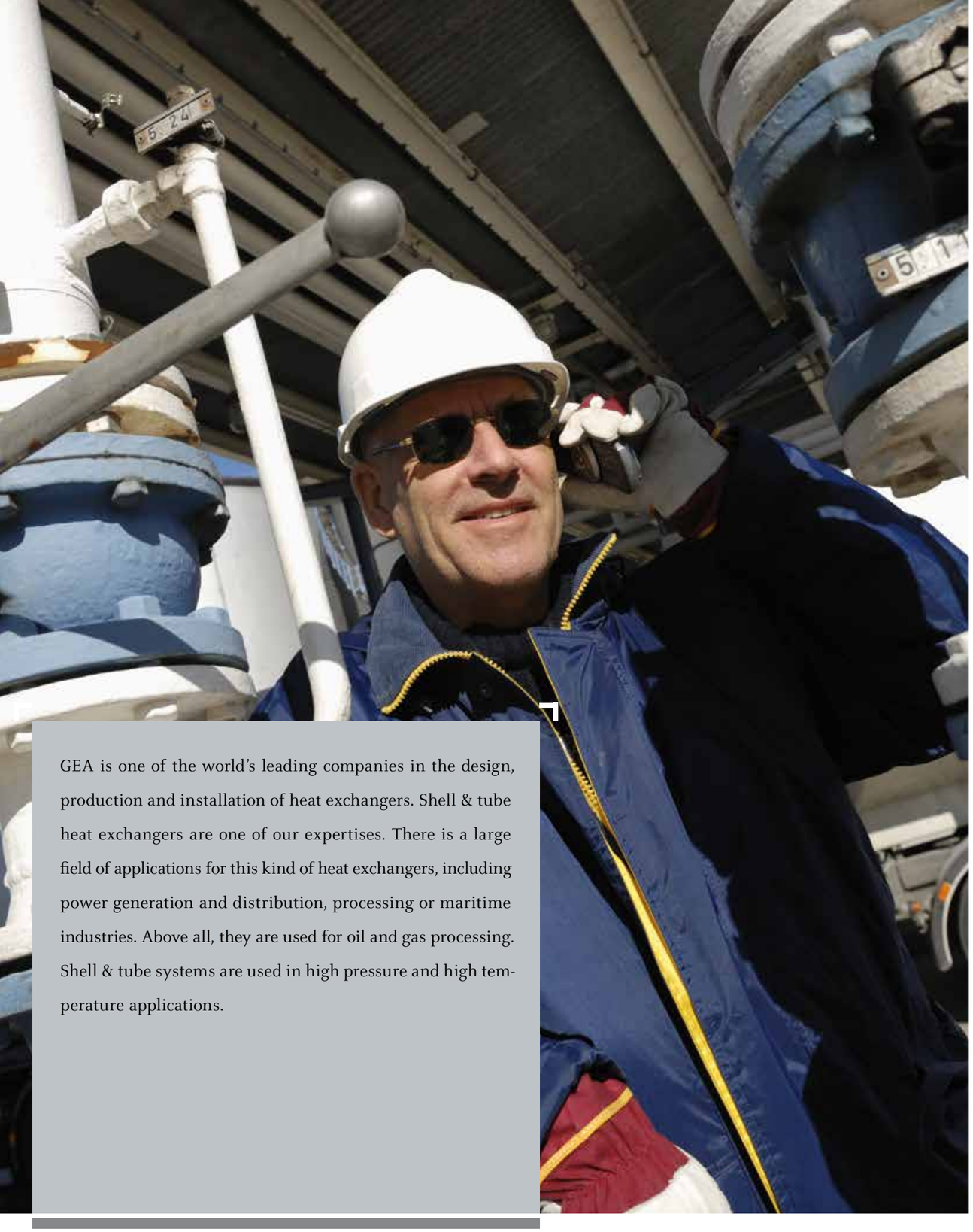
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engineering for a better world

GEA Heat Exchangers



GEA is one of the world's leading companies in the design, production and installation of heat exchangers. Shell & tube heat exchangers are one of our expertises. There is a large field of applications for this kind of heat exchangers, including power generation and distribution, processing or maritime industries. Above all, they are used for oil and gas processing. Shell & tube systems are used in high pressure and high temperature applications.

GEA shell & tube heat exchangers

We work best when the heat is on and the pressure high

We provide engineering, manufacturing and after sales services in the area of shell & tube heat exchangers, and we have been doing so for many years, around the globe. The longstanding experience of our worldwide team is one of our distinguishing traits. Another is our know-how. GEA is an orchestra of specialists working closely together, bridging the theory of physics of heat exchanging and its practical application. This allows us to be specialists and generalists at the same time. This also allows us to come up with tailor-made solutions for you. Each and every one of our systems is individual, as are the specific requirements of our clients.

We see the bigger picture. And that is a big advantage when it comes to heat exchanging in a complex facility such as a refinery. For only rarely are shell & tube heat exchangers applied as the only heat exchanging devices. Rather, to stay with the idea of the orchestra, in a large processing facility various such systems need to work in concert. Our experience, our knowledge, our versatility let us become the conductor of that concert. Because we can provide you with all the different heat exchangers needed, as with air fin coolers, cooling towers and much more along the downstream process. We understand them all and what's more, we understand the way they work and fit together.

Of course, our shell & tube heat exchangers comply with all safety standards. Their design is as maintenance-friendly as it is robust; proven corrosion-resistant materials are selected by means of technical, but also economical criteria. But more than that, as we see the whole, we are able to prevent problems in advance or detect them earlier on. Actually, the problem-eliminating process starts long before the installation of the parts. GEA is constantly optimizing and developing their products, focusing on extending applications, applying new materials and designs, but above all: enhancing the safety and efficiency of heat transfer.

As a one-stop service provider, we support you not only during the process of designing and installing your systems. Our commitment starts with careful consultancy in advance, and it does not end after installation: GEA's After Sales & Services provide continuous support on an in-house basis, including fast and efficient supply of spare parts, re-tubing, upgrading, refurbishment of older equipment, cleaning of heat exchangers, capacity control and other such functions.

So, getting shell & tube heat exchangers from GEA means you can keep your cool.



GEA stands for

- World-leading company in heat exchangers
- Longstanding experience
- Great expertise through global network
- Taylor-made, specifically designed applications
- Robust high-quality materials
- High efficiency through synergy
- compliance with strictest safety standards
- comprehensive and fast service through more than 140 offices worldwide



German engineering around the world

- Tailor-made, robust designs
- Efficient solutions
- Durable high-quality materials
- Worldwide knowledge and experience

Meet GEA. Because GEA meets the challenge.



The oil and gas industry is constantly facing new challenges. On the one hand, the global energy demand is steadily increasing, due in particular to growing economies around the world. On the other, exploiting and developing oil and gas reserves has become ever more difficult and risky. More expensive too. On top of that, energy resources such as unconventional gas or oil shales or oil sand have come to the fore. Oil and gas developers also have to consider the fact that each reservoir is unique: While the crude oils produced in Venezuela, for example, have a relatively high viscosity, crude oils from Saudi-Arabia are thinner and thus more easily developed.

There are two constants, though: Whatever kind of oil and gas you deal with, wherever you do it, you usually deal with corrosive media, high temperatures and pressures, as well as polyphase mixtures. Constant is the uncompromising reliability of GEA shell & tube heat exchangers.

In a business where efficiency, versatility and safety are deciding competetive factors, GEA is always the right choice. Why?
Because each and every GEA shell & tube application is tailor-made for you, with robust, low-maintenance designs that are specifically laid out to suit your individual needs.
Because optimised resource deployment, intelligently connected material flows makes your GEA shell & tube heat exchanger very efficient.
Because every single part is made of the most durable and resistant materials and undergoes meticulous testing before installation.
Because all the knowledge and the experience shared by our engineers worldwide have gone into its design.
Because GEA is close to your challenges and located on the petrochemical hotspots of the planet.



Quality & competenz in manufacturing

certified quality you can rely on:

EN ISO 9001

ISO 14001

OHSAS 18001

ASME U und U2

Meet the highest standards.

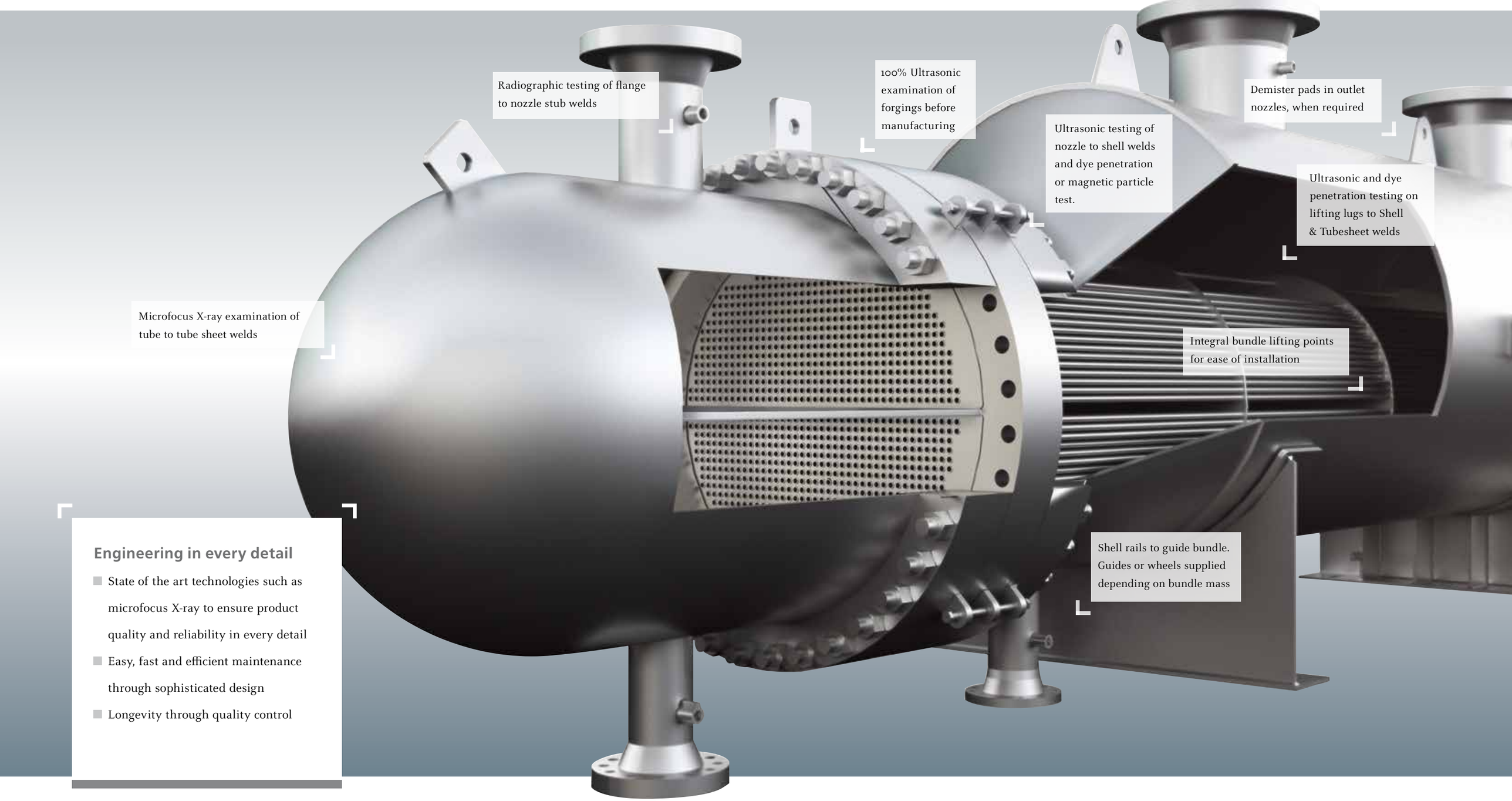
GEA – certified to be among the best

Quality. Safety. Sustainability. Reliability. Responsibility. In a word: Trust.
In our business, trust is as valuable a resource as those which our clients process. You need to rely on the durability, efficiency and, above all, the safety of GEA shell & tube heat exchanging devices. Our employees, co-workers or suppliers need to be able to trust us, too. That is why we regularly undergo certification in order to ensure that we meet the strictest safety standards. Or, for that matter, any other standard that allows us to perform at the highest level. And that means international standards. There are not many competitors certified to work in as many countries as we are.

We place great value on safety, construction and material selection, to which our **ASME U** and **U 2** certificates testify. However, the safety for workers and employees is equally important. We meet the **OSHA 18001** standard, widely seen as the world's most recognized occupational health and safety management system standard. GEA commits to keeping the environment safe and fully subscribes to **ISO 14001**. Lastly, the **ISO 9001** standard, the most widely used and most significant quality management standard, ensures our approach to processes, management and decision making is state of the art.



True values inside



Engineering in every detail

- State of the art technologies such as microfocus X-ray to ensure product quality and reliability in every detail
- Easy, fast and efficient maintenance through sophisticated design
- Longevity through quality control



Innovation in manufacturing and coordination

These two case studies show GEA's expertise in handling complex manufacturing and installation processes.

Case studies I + II

South Africa and Brazil

South Africa: One Stop. No worries.

The extension of a petrochemical plant is not necessarily something unusual for us. It is, however, when not only is the task to supply all shell & tube heat exchangers and all air fin coolers for such a project, but also to deliver them to the construction site almost all at once. A challenge that requires a well-defined and coordinated manufacturing process.

This was precisely the challenge GEA had to face when we were contracted to outfit the extension of a petrochemical plant in South Africa. All in all, there were 23 heat exchangers to design, build and deliver, plus other pressure vessels and the air fin coolers. We lived up to the task because of our skills as an one stop shop for supplying and installing heat exchangers in petrochemical applications. For this particular project, we built our heat exchangers using different materials, including high alloys like duplex steel.

One thing that convinced the client to choose GEA for this project is our experience in handling projects of this size. Another was the combination of our inhouse thermal and mechanical design capabilities with our manufacturing capacities close to the client's construction site. We were also able to cooperate directly with the client's design departments. At the end of the day, our versatility and our all-in-one package made the difference here.

Brazil: Built to resist

GEA shell & tube heat exchangers are designed to work under high pressure, high temperature with aggressive, corrosive substances. One very aggressive cooling media is sea water. So, when GEA was asked to design, manufacture and install 12 shell & tube heat exchangers for an offshore-application at the Brazilian coast, one of the most daunting challenges was to build them in such a way that they would last and work in these extreme conditions for a long time.

To develop the heat exchangers, which were to be installed in two liquid processed gas terminals, the GEA design department worked closely together with the customer's own research and development department. The aim of the collaboration was to come up with a special surface coating. It is one thing to coat materials against sea water, but quite another to find a coat that also resists high heat loads, high pressure and compression stress. The coat had to cover every last bit of the surface of the heat exchangers, and in order to facilitate the surface application of the coat, the devices had to be designed without any sharp edges. The heat exchangers worked flawlessly from day one and they have been doing so for many years now.

Once again, the fact that not only was GEA able to provide the entire thermal and mechanical design but also to work closely with various departments of the end customer ensured that the latter decided to do the project with GEA.



Innovation in maintenance and refurbishment

These two case studies show GEA's expertise in complex maintenance and refurbishment processes.

Case studies III + IV

Qatar and South Africa

Qatar: Tricky titanium and other taxing materials

When you entrust your project to GEA, you do so because you know that GEA heat exchangers are reliable und durable and that, consequently, there is little need for extra maintenance. Sometimes, however, refurbishment is still necessary.

One fine example of our maintenance services comes from Qatar, where it became necessary to refurbish a heat exchanger in a liquefied natural gas terminal. The system was equipped with titanium tubes, which had to be replaced. This is a tricky task, since the installation of titanium tubes requires special attention so that they do not crack during the widening process. To make the circumstances of the refurbishment more interesting, the waterbox of the heat exchanger consisted of a special Inconel material that needs expertise and experience in welding. Well, there is a lot of that within our shell & tube heat exchangers network. So, technical supervision of the job was provided by GEA Nilenca in South Africa.

Next to the technical demands, the project involved a considerable challenge in terms of coordination and process management. The time period in which the refurbishment had to be completed was very short, as the heat exchanger was taken out of the production process during a scheduled maintenance. And, as you well know, time is money, especially in our business. One of the reasons for the customer to task GEA with this project was the fact that one of our workshops was close to the customer's site, allowing us to perform the refurbishment very quickly and in a very clean environment.

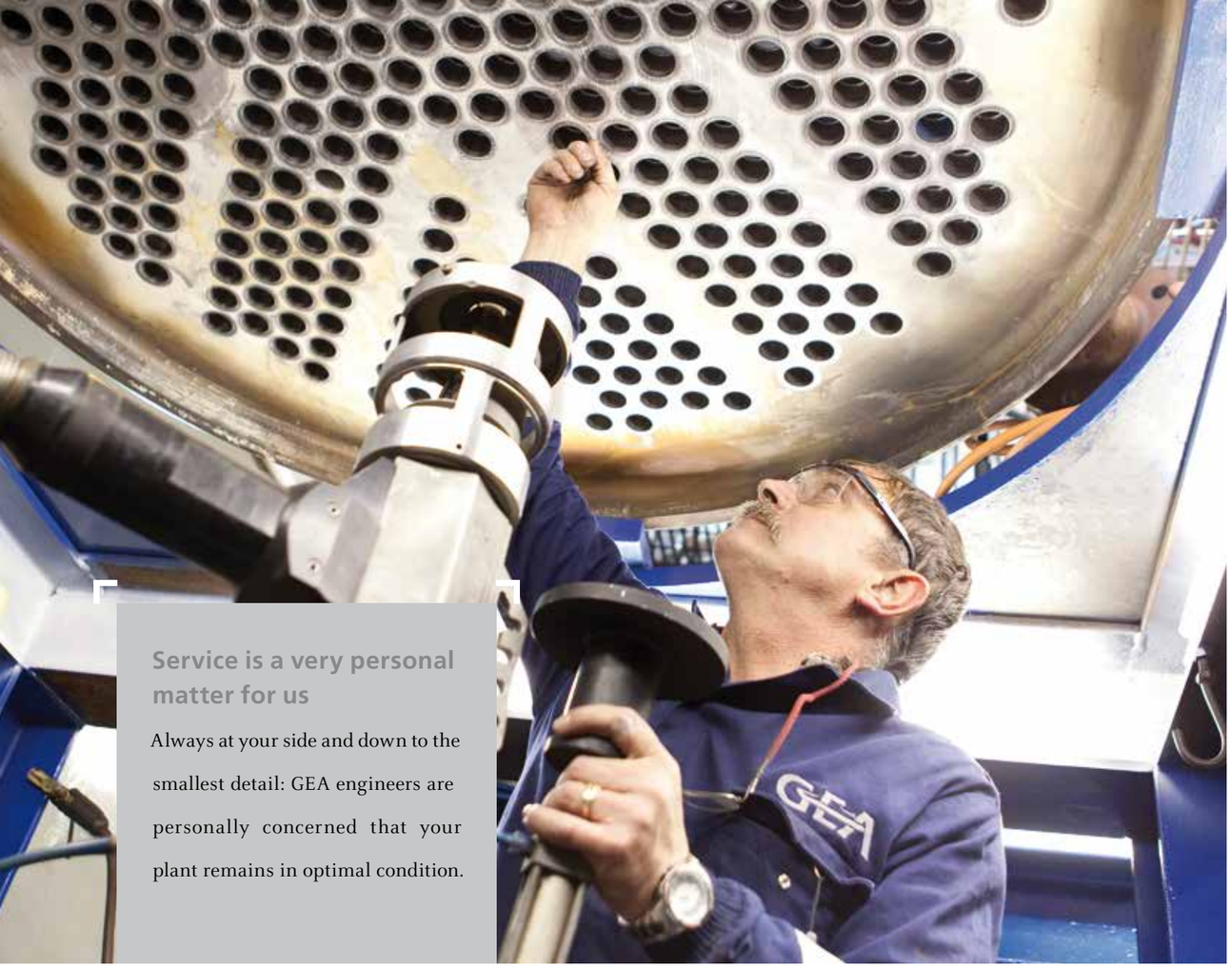
South Africa: Re-tubing on rails

Often, it is only under special circumstances that one's true qualities emerge. In a petrochemical plant in South Africa, such circumstances proved to be challenging when we were tasked to replace 3.570 tubes in a condenser. We discovered that the tube sheets and baffle plates were beyond restoration and that they had to be replaced before we could start replacing the tubes themselves. The real problem, however, was that the site was far too cramped for that. The condenser was situated in the heart of the turbine building, and apparently the original designers had not envisaged that repairs of this nature would ever become necessary.

Instead of having some walls torn down in the turbine hall or dismantling a high voltage substation, the customer went for the only other option left: A specially designed bogie was put on rails to remove the old sheets and bring in the new ones. Also, special chemical anchors were installed into the roof, enabling our rigging equipment to hoist the tube sheets and baffles to the front end of the condenser shell.

But there was no lifting equipment inside the vessel on-site, and that is a problem when you need to put baffle plates of approximately 600 kg each into the perfect position for them to be welded to the shell. So, our site crew came up with some creative thinking and devised custom-made aids to solve the problem.

This is one of the more spectacular examples of what GEA can achieve with its wide-ranging experience and expertise, namely, maximum versatility and precision at the same time. Yet it is also a reminder of what can happen if your original design is not well thought through. That is why GEA's most important maintenance service, as it were, starts before anything is built and installed: It starts with careful planning and good advice.



Service is a very personal matter for us

Always at your side and down to the smallest detail: GEA engineers are personally concerned that your plant remains in optimal condition.

After Sales & Service

Global service from one source

- Global service network
- Synergetic knowledge transfer between R&D + Service departments
- Global, fast and easy assistance
- Wide spectrum of services
- Preventive services ensure longevity
- Thorough counseling prior to sales

Where oil and gas are being processed, GEA is not far away. We have offices in more than 140 countries, and our shell & tube expertise profits massively from this network of engineers, synergies, knowledge transfer. You profit from it, that is. And you do so in more than just one way. While GEA's synergistic power allows us to come up with complex, tailor-made, efficient and unconventional solutions for you, this power is still at work after that solution has been found.

Since our global competence network works alongside a unique service network we are able to provide global, easy assistance for you. Fast and 24/7. From the same source. Our After Sales & Service department covers a wide spectrum of services, always in close contact with the customer, ranging from short-notice availability of replacement components to refurbishments or meticulous maintenance and regular quality and performance inspections.

Our preventive services are a good example of the way in which our competence and service network interacts, or rather, becomes one and the same, really. When experienced engineers and technicians from around the world work together for a long time, what you get is a head start in the field of new and advanced technology. GEA is constantly exploiting that to develop and refine their products. But many insights and innovations can be used to improve, protect or enhance the longevity of systems that have already been installed. And that is the central, common aim of both our R&D and Service departments: the longevity, durability, reliability of GEA shell & tube heat exchangers.

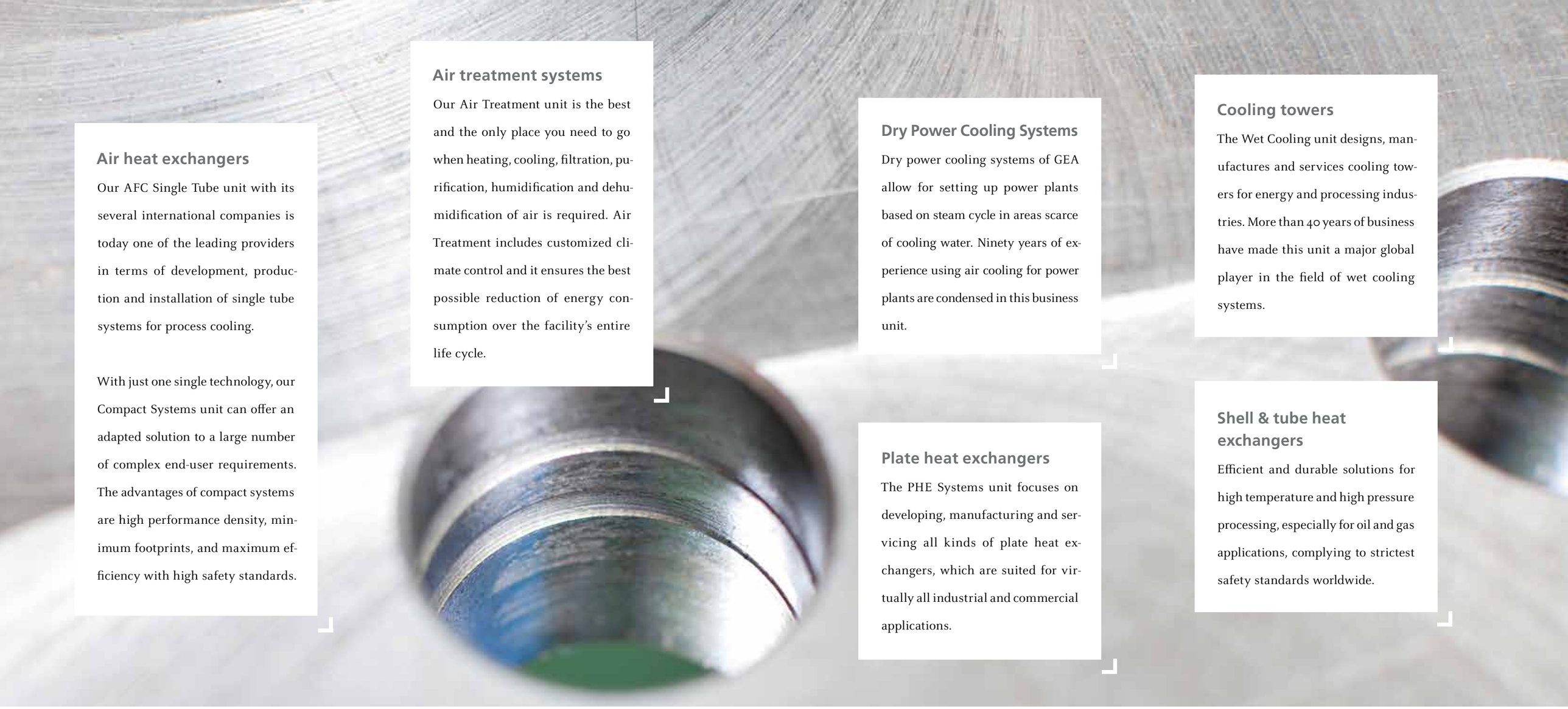
After Sales – and before.

To ensure just that, the longevity of your system, our customer services begin before it is even born. We provide advice in terms of exactly which system would suit you best, how it would best interact with other heat exchanging systems or how to extend an already existing site. Regional issues, cost and time efficient installation and maintenance, safety: there is not a single aspect we do not discuss with you prior to any sales. That way you can be safe you get exactly what you need, that is, the best shell & tube heat exchangers there are. Which, in turn, means that you will not be needing our After Sales & Services department very much after all.









Air heat exchangers

Our AFC Single Tube unit with its several international companies is today one of the leading providers in terms of development, production and installation of single tube systems for process cooling.

With just one single technology, our Compact Systems unit can offer an adapted solution to a large number of complex end-user requirements. The advantages of compact systems are high performance density, minimum footprints, and maximum efficiency with high safety standards.

Air treatment systems

Our Air Treatment unit is the best and the only place you need to go when heating, cooling, filtration, purification, humidification and dehumidification of air is required. Air Treatment includes customized climate control and it ensures the best possible reduction of energy consumption over the facility's entire life cycle.

Dry Power Cooling Systems

Dry power cooling systems of GEA allow for setting up power plants based on steam cycle in areas scarce of cooling water. Ninety years of experience using air cooling for power plants are condensed in this business unit.

Plate heat exchangers

The PHE Systems unit focuses on developing, manufacturing and servicing all kinds of plate heat exchangers, which are suited for virtually all industrial and commercial applications.

Cooling towers

The Wet Cooling unit designs, manufactures and services cooling towers for energy and processing industries. More than 40 years of business have made this unit a major global player in the field of wet cooling systems.

Shell & tube heat exchangers

Efficient and durable solutions for high temperature and high pressure processing, especially for oil and gas applications, complying to strictest safety standards worldwide.

GEA product lines

More than the sum of its parts

GEA has a lean corporate structure which is organized according to product groups. That gives you an immediate transparent overview of our extensive product portfolio and provides close customer proximity through all dimensions. The interaction and the synergy between our product lines is one of our most important strategic and operative assets.

This asset becomes particularly relevant in terms of larger projects entailing more than the construction and installation of shell & tube heat exchangers (see, for example, case study South Africa). Just like the conductor of an orchestra, GEA ensures that each product lines works precisely, efficiently and reliably in itself, but, if needed, we also ensure the detailed, finely tuned and harmonic interplay of different units. The result is, invariably, more than the sum of its parts.

GEA shell & tube – your local support

Spanning the globe with our centers of excellence

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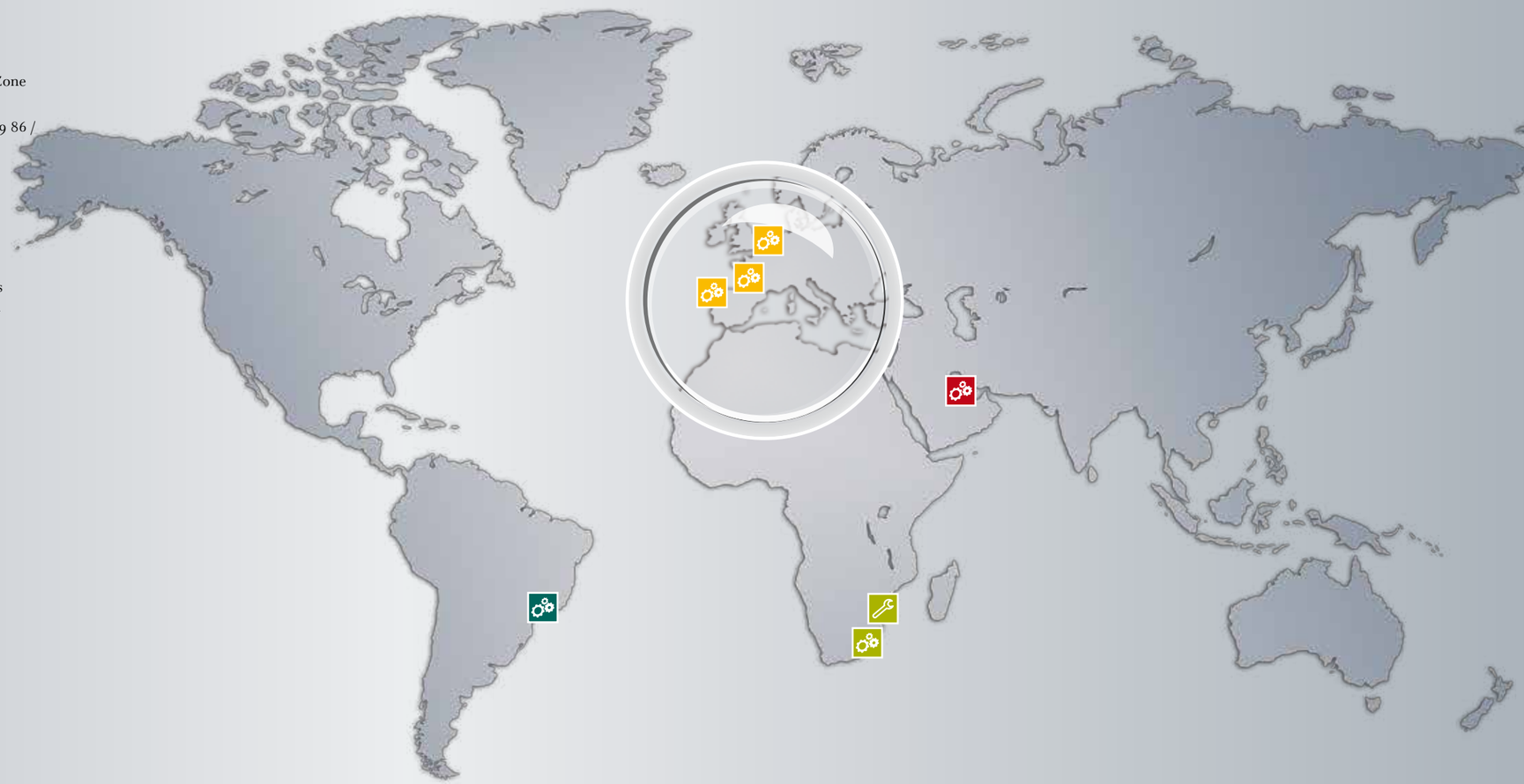
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Sales/Distribution

Services

Production/Manufacturing

Where we are is where you are: at the global hotspots of oil and gas production and processing. With our basis of a tightly meshed global network of manufacturing and service facilities that work in close synergy, GEA shell & tube heat exchangers are able to provide you with top services. And with one-stop solutions. Anytime, anywhere. Whether installation, maintenance or fast delivery of spare parts: we ensure availability, efficiency and longevity. Anytime, anywhere.