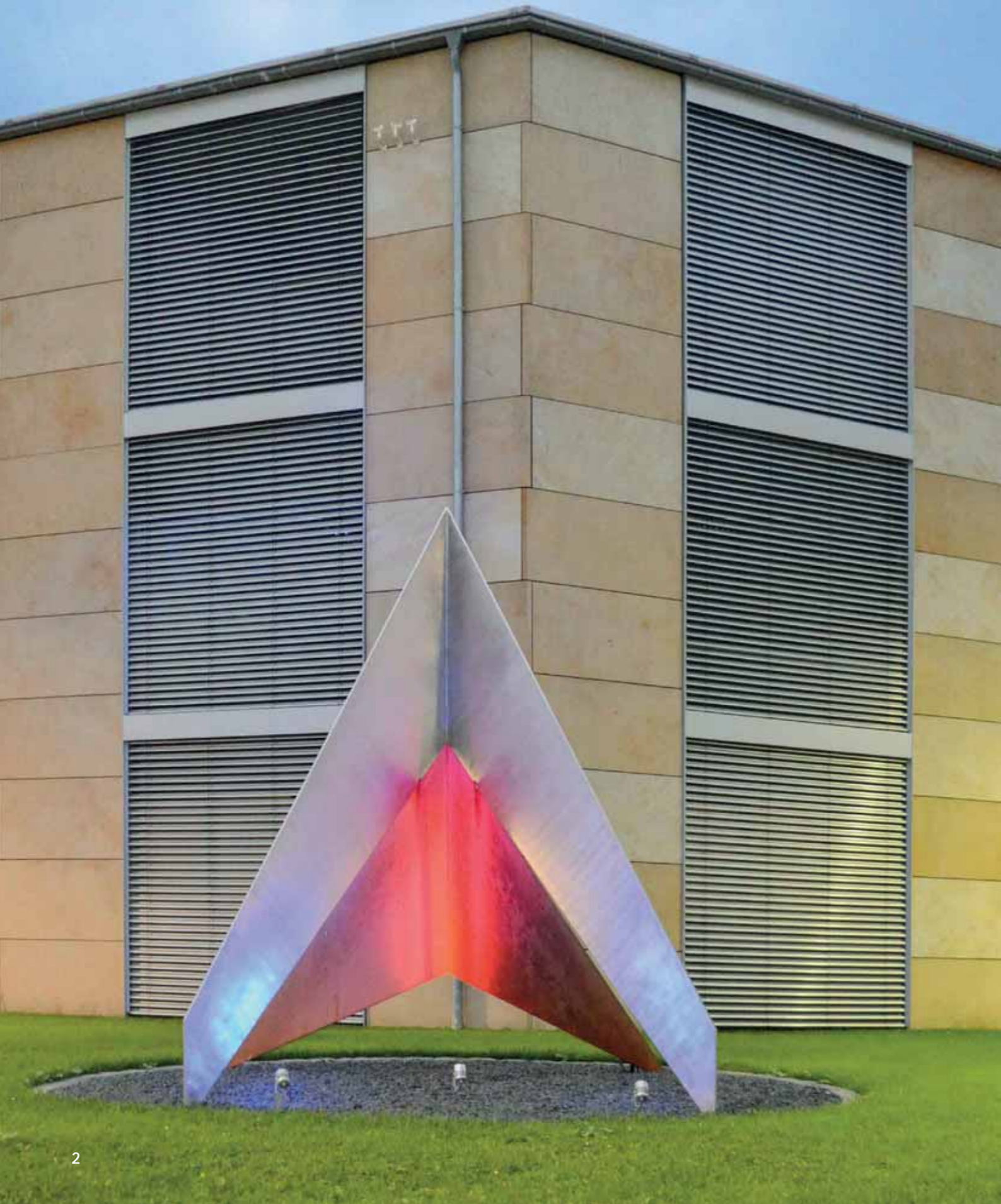


**Customized
Heat Treatment Systems
from the global
market leader**

schwartz

Quality and innovation for
more than three decades



Dear business partner or prospective customer,

This brochure will tell you more about the schwartz group's achievements on a nostalgic journey through more than 35 years of our corporate history. Numerous technological advances and breakthroughs have been milestones marking our path. Nowadays, we offer you a range of unique products, technologies, and services that we have developed, and continue to develop, for all our customers' benefit.

As a reliable specialist, we will be at your side from the initial inquiry right through to completion of the project. We also offer after-sales support and services for heat treatment systems.

See for yourself how our products and services can work for you!

Your schwartz group team

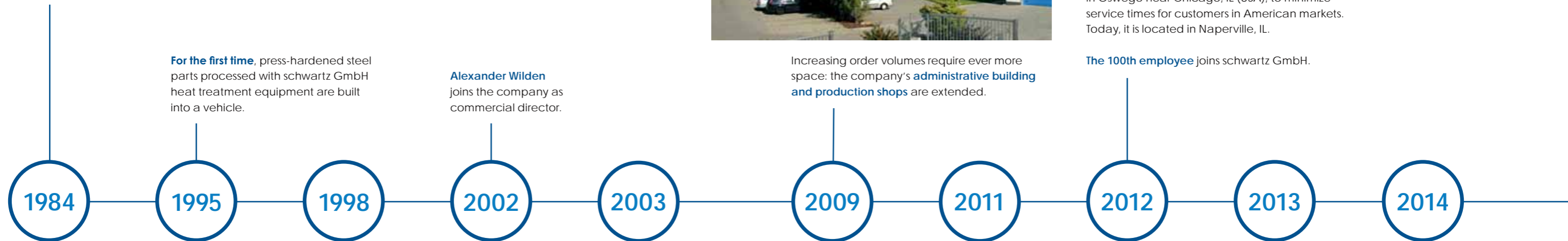
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Our success story: From one-man business to global market leader

Rolf Schwartz, Head of Design at the Otto Junker GmbH factory at Gevelsberg, sets up his own business when that site closes: schwartz GmbH manufactures and designs heat treatment systems for steel, aluminum and non-ferrous metals.



For the first time, press-hardened steel parts processed with schwartz GmbH heat treatment equipment are built into a vehicle.

Alexander Wilden joins the company as commercial director.

Increasing order volumes require ever more space: the company's **administrative building and production shops** are extended.

The **100th employee** joins schwartz GmbH.

The company moves to **Simmerath**, where a two-story office building with adjoining production shop is erected on the Rollesbroich industrial estate.



schwartz GmbH receives its first contracts from **Volkswagen** for heat treatment equipment for press-hardening lines.

In order to improve delivery to a growing customer base in the Asia-Pacific region, a subsidiary trading as **schwartz Heat Treatment Systems Asia** is founded in Kunshan near Shanghai, PR China, to produce heat treatment systems to German standards and provide extensive local customer support from the subsidiary's own service team.



Alexander Wilden becomes the **sole Managing Director** of schwartz GmbH.

Over 80% of all press-hardened steel parts used in cars worldwide are heated in schwartz heat treatment equipment.

schwartz GmbH commemorates the **30th anniversary of successful business** and Alexander Wilden acquires the **majority of shares in schwartz GmbH**.



As the company's administrative building, enlarged once in 2009, can no longer accommodate the growing workforce, several departments are relocated to a **new office complex** erected nearby.

schwartz GmbH ranks among Germany's **500 fastest-growing companies** according to a survey conducted by FOCUS news magazine in cooperation with the Statista statistics portal.



Production capacity at the **Simmerath headquarters** site is expanded again.



Relocation of Hütte GmbH from Düren to Aachen-Schleckheim, which increases Hütte's production space from 2,500 m² to over 14,000 m².



schwartz Heat Treatment Systems Asia opens an additional customer service site in Beijing.

Opening of a further **production site** in **Kunshan/PR China**.

schwartz GmbH expanded its product range with a new business segment in the field of heating systems for the **NF metal industry**



For its innovative work in heat treatment equipment for press hardening, schwartz GmbH receives the **AC² Innovation Award of the Aachen Region** – the innovative system is capable of producing different, narrowly defined temperature zones in one blank.



schwartz GmbH is officially acknowledged by the University of St. Gallen, Switzerland, as the **global market leader in the field of heat treatment systems for press-hardening** applications.

The schwartz group acquires **Hütte GmbH, Düren**.



Alexander Wilden becomes the **schwartz group's sole shareholder**.

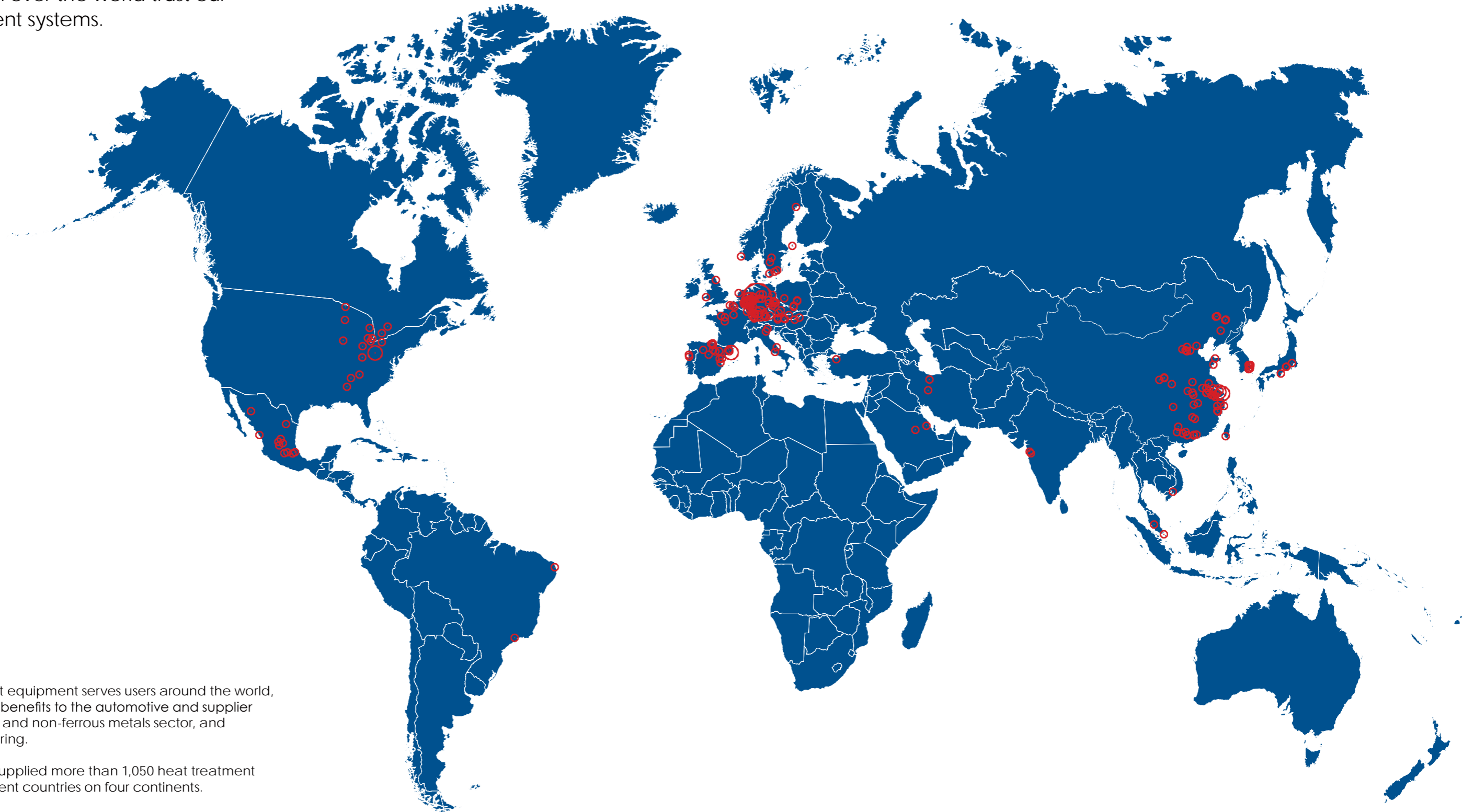
schwartz Heat Treatment Systems Asia opens two more service sites at Chongqing and Guangzhou, China.



schwartz's position as **global market leader in heat treatment systems for press hardening** applications is again confirmed by the independent World Market Leader Index.

The schwartz group – a global success

Customers all over the world trust our
heat treatment systems.



Our heat treatment equipment serves users around the world, delivering multiple benefits to the automotive and supplier industries, the steel and non-ferrous metals sector, and aircraft manufacturing.

To date, we have supplied more than 1,050 heat treatment systems to 30 different countries on four continents.

Customized heat treatment systems for press hardening



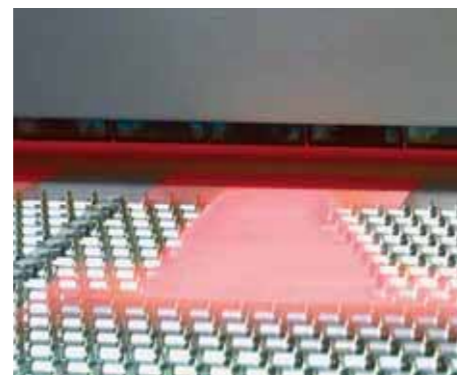
As the global market leader in heat treatment systems for press-hardening production, we mainly supply automotive manufacturers (OEMs), their suppliers (tier 1 and tier 2) and the steel industry. All equipment leaving our factories is custom-designed and built to match our global customers' production needs.



Hundreds of installations in a more than 35-year success story



We are the global market leader in heat treatment equipment for press-hardening applications.



In more than 35 years, we have designed, built, integrated and commissioned hundreds of heat treatment systems for press-hardening processes all over the world.

Building on this vast experience and backed by ongoing product improvements, we offer innovative and customized heat treatment solutions to meet your specific press-hardening production requirements.

Satisfied customers and the resulting brisk demand have gained us the **global market leadership in heat treatment systems for press hardening.**

Our portfolio includes equipment characterized by:

- diverse designs, e.g., vertical or horizontal twin-type or single line
- heat treatment of coated and uncoated blanks
- operation in normal atmosphere, dried air, or protective gas
- gas or electric heating, or a combination of both
- integrated thermal printer



The thermal printer for lightweight bodywork components



In lightweighting today's car bodies, hard and soft areas are the key.

The thermal printing technology, first launched and established on the market by our company, allows two or more different temperature zones to be realized in the same blank. The distinct regions are subjected to a selectively focused heat treatment, i.e. application of locally modified time-temperature curves.

This means that besides the hard martensitic areas obtained by conventional press hardening, soft zones can be produced as well. In this manner, multiple zones with different strength and elongation behaviors can be created in a single component. Moreover, the defined transition areas between these zones are adjustable in width to satisfy individual requirements.

During subsequent pressing of the blanks, distinct hardness levels are thus imparted to the specified areas. This technology gives our customers in the automotive manufacturing and supplier industries numerous new options in the production of safety-relevant body parts. Conventional press dies can continue to be used for the forming of blanks treated in the thermal printer.

The use of our thermal printer system enables substantially lighter car bodies to be built, making **vehicles more fuel efficient and eco-friendly.**

Whatever part geometry or temper zone layout you need, **we can build you a custom-designed thermal printer** to perfectly match your schwartz heat treatment system.

Our heat treatment systems are suitable for all aluminum parts in the automotive, aircraft manufacturing, and building construction industries.

Whether you need to process forgings, castings or metal sheets, we will design and build the perfect system for you.



Customized heat treatment systems for aluminum



High-efficiency heat treatment equipment for aluminum



Since our company's foundation in 1984, we have built and commissioned more than 200 heat treatment systems for aluminum, custom-designed to satisfy individual requirements. All these systems feature adjusted highly efficient atmosphere recirculation technology as well as product-specific nozzle systems to ensure fast, effective and uniform heating.

We hold patents on diverse heating systems and their applications.

Apart from applications in the aircraft industry, the share of aluminum parts is also of great importance in automotive engineering due to the need for light-weighting in connection with reducing CO₂ emissions.

Heat treatment in our equipment complies with current requirements for these components, e.g., SAE Aerospace Material Specifications (SAE AMS 2750) and the CQI-9 Heat Treat System Assessment.

When introducing and implementing the temperature uniformity survey (TUS) and measuring system accuracy tests (SAT), our customers benefit from the many years of experience and ongoing training of our personnel.

So whatever your needs in the fields of homogenizing, annealing, solution heat treatment or artificial aging of aluminum, **we will design exactly the right equipment for you!**

Our heat treatment systems come with highly efficient atmosphere recirculation technology.

In addition to our heat treatment systems for press hardening and for heat treating aluminum, we also supply systems for heat treating copper strips and coils as well as copper alloys in the nonferrous metals sector.



Customized heat treatment systems for
**copper and copper
alloys**



Heat treatment equipment for copper and copper alloys



In addition to our heat treatment systems for press hardening and for heat treating aluminum, we also supply systems for heat treating **copper strips and coils** as well as **copper alloys** in the nonferrous metals sector.

Products are heated to the desired temperature by convection. Depending on customer requirements, various hot-air or protective atmosphere flow management systems are implemented to ensure fast and uniform heating.

Our product line-up includes diverse design concepts such as continuous conveyor furnaces, chamber furnaces and roller hearth furnaces.

The Schwartz product portfolio includes a newly developed chamber furnace with adjustable and rotating nozzle arrays for heat treating non-ferrous metal.



In this furnace, coils of copper and copper alloy strip can be heated and cooled quickly and uniformly without causing mechanical damage to any part of the surface. The maximum temperature difference reached is 10K.

The patented nozzle walls prevent hotspots and any rolling oil escaping from the coils can evaporate unhindered.

The heat treatment and cooling processes take place in an atmosphere comprising a mix of nitrogen and hydrogen. Despite using a low proportion of hydrogen (maximum 5 percent), dwell times are achieved which in other

furnace systems are possible only with a much higher hydrogen concentration. This helps reduce operating costs. The furnace can be designed as a single-coil or multiple-coil system.

A safety concept for the furnace atmosphere and a simulation program for calculating the heat treatment, holding and cooling process are integrated into the system controls. The furnace with charging system is installed directly on the shop floor without the need for any complex foundation work.

Know-how and unsurpassed quality – from initial advice to starting up a finished system



We provide expert advice and address your individual production needs in planning your new system. Our sales team will be glad to visit you personally to discuss all details.

Relying on their profound expertise, we keep on refining our proven technologies. Our numerous patents are clear evidence of our innovativeness.

All systems are fully assembled at our production sites in Simmerath, Aachen and Kunshan. In implementing our high quality standards, we always use a fixed team of specialized personnel, as we do in commissioning the equipment's electrical and automation functions.



Upon completion and prior to delivery, each system is subjected to a function test. We thus ensure that all components work perfectly and you obtain a fully functional, high-quality installation. If required, you can conduct pre-shipment acceptance testing together with our specialists to reassure yourself of your system's full functionality.

Upon acceptance, we will disassemble your system, as far as necessary, and ship it safely to your production site using specialist carriers. On arrival, our experienced staff will be at hand to help integrate the new equipment into your production system and commission it on site.



Our experienced and trained engineers and technicians assume the planning and development of a system optimally designed for your application.



Competent service for your schwartz heat treatment system



Our lifecycle-based approach is intended to ensure that your schwartz heat treatment system will deliver unvarying performance at all times. You can rely on us as a competent partner from the date the system is installed in your production line to the end of its service life.

To keep your system up and running, we also offer custom support geared to your needs. Our highly trained after-sales service staff will develop a made-to-measure, plant-specific maintenance concept tailored to your manufacturing cycles.



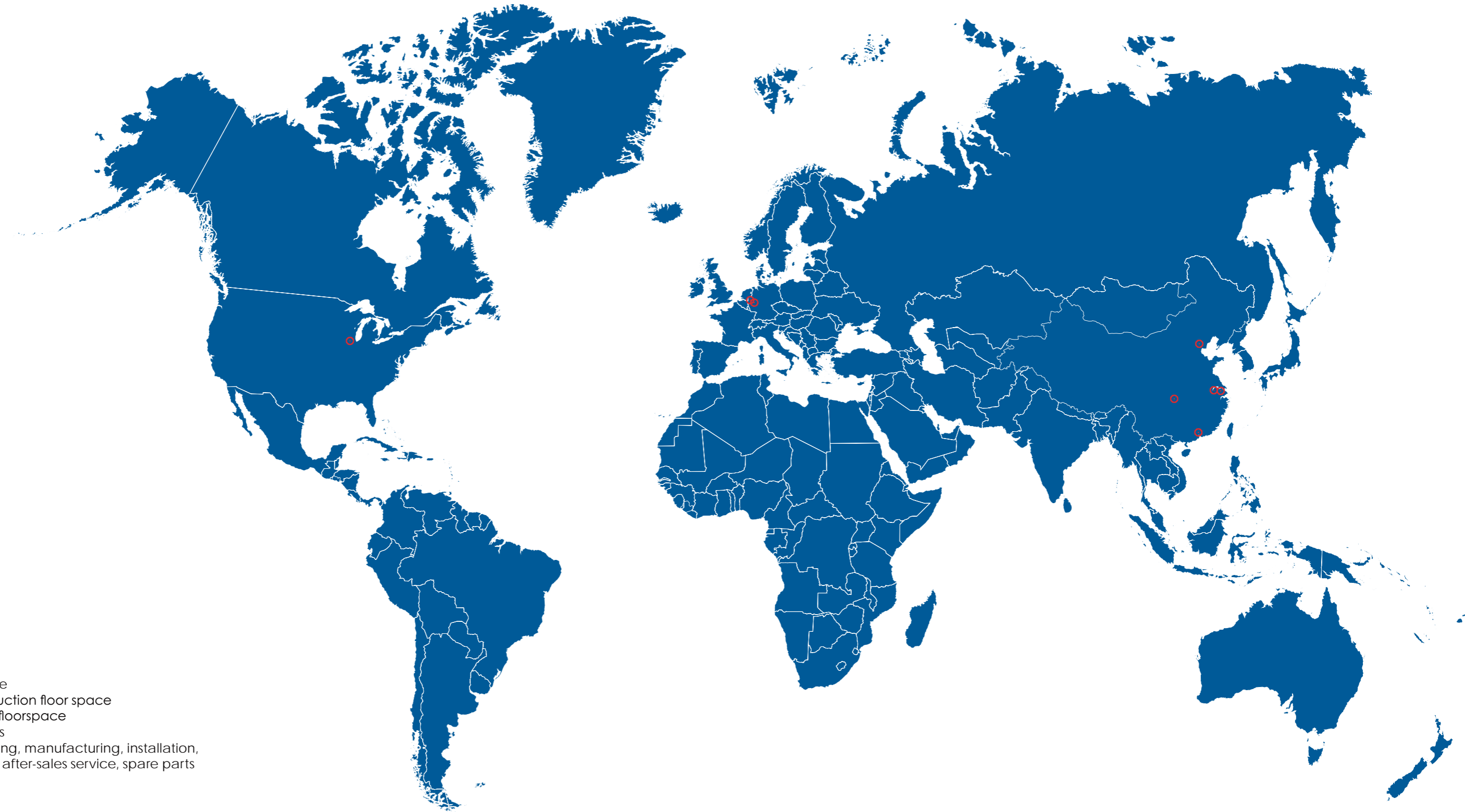
Based on the experience gathered from over 1,050 heat treatment systems built to date, we set high service standards and keep on improving them – so you enjoy the best possible service for your heat treatment system.

On request, we can also provide production support or train your operators at your site or periodically at custom training programs conducted at our premises.

You can rely on us as a competent partner from the date the system is installed in your production line to the end of its service life.



The schwartz group – at your service worldwide



- 8 sites worldwide
- 20,300 m² production floor space
- 2,000 m² office floorspace
- 250+ employees
- Sales, engineering, manufacturing, installation, commissioning, after-sales service, spare parts



schwartz GmbH – Germany



Our competent service team is there to help around the clock.



The **schwartz group's headquarters** is located at Simmerath in North Rhine-Westphalia, Germany, and close to the Belgian and Dutch borders.

This plant has some 5,300 m² of production space dedicated to manufacturing our heat treatment systems.

More than 140 people are currently employed at Simmerath, including specialized teams of engineers and designers who will develop your system.

At our second German manufacturing site in Aachen, we have additional production floor space of 7,100 m² for manufacture and preliminary commissioning of our equipment.

Needless to say, we maintain a **professional service team** you can reach 24 hours a day. Key parts are stocked at our extensive spare parts warehouse.

All schwartz heat treatment systems (except those destined for the Asia-Pacific region) are fully assembled at our two German manufacturing sites in Simmerath and Aachen where they also undergo a function test (Factory Acceptance Test) prior to shipment.



Scan the QR code to watch our image film.



schwartz HTS – China



Our Chinese after-sales service sites enable us to respond swiftly to service and spare parts requests from our customers throughout China.



To be able to serve the Asia-Pacific region even better, we founded our company, schwartz Heat Treatment Systems Asia (Kunshan) Co., Ltd. (or, for short, schwartz HTS), near Shanghai in the PR China in 2011.

In Kunshan, we have around 8,000 m² of production floor space at two production sites enabling us to build and commission our heat treatment systems to German standards in the same quality as at our headquarters site. Here, too, we maintain a service center and spare parts warehouse where key genuine parts are always stocked.

In order to meet the rising demand on the Asian market, we intent to move into new production facilities in 2023.

In 2017, two additional Chinese service locations were opened in Chongqing and Guangzhou. Another service site was added in Beijing in 2018.

These 4 after-sales service sites enable us to rapidly deliver our services and spare parts throughout China.

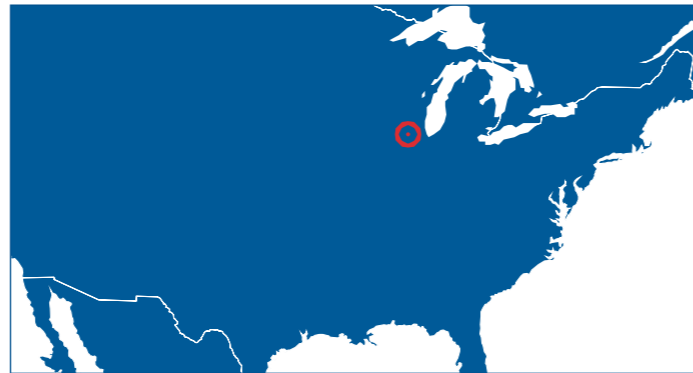




schwartz, Inc. – USA



In 2012, we established a presence in the US, which was moved to Naperville, IL, in 2017.



To provide fast service and a comprehensive selection of spare parts to our customer base in the USA, Canada and Mexico, we founded our **US-based service subsidiary schwartz, Inc. in 2012.**

Today, it is located in Naperville near Chicago, IL.

Selected references



A growing number of customers all over the world trust our product quality and high standards.

As your dependable partner for heat treatment systems, we will fully support you in providing exactly the right equipment and service you need – now and in the future.

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