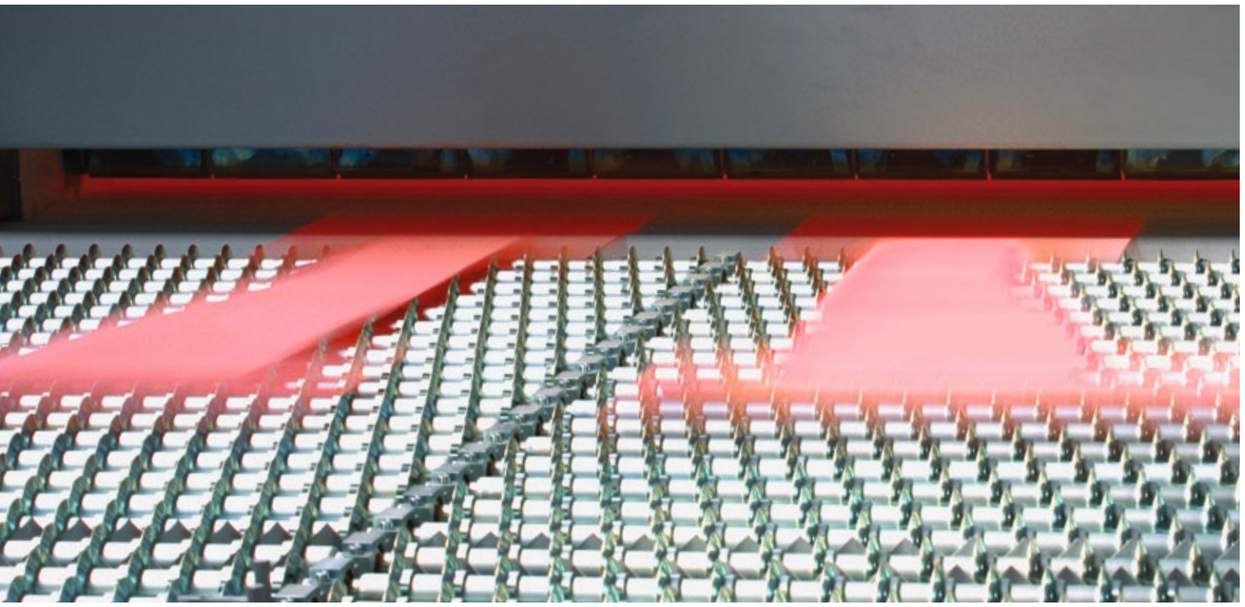
schwartz
Wilden Industries

# Customized Heat Treatment Systems for Press Hardening

# schwartz heat treatment systems – as unique as your production line




## Innovation based on vast experience

Since our company's foundation in 1984, we have been building custom heat treatment systems and associated handling equipment for our customers, tailored to satisfy specific manufacturing requirements. In addition, we offer a broad range of expert customer support services.

Working with the customer in a partnering spirit is always our key priority - from the first inquiry through system delivery and commissioning, to competent all-round after-sales support, we stand by your side with know-how and reliability, anywhere in the world. We thus achieve our ambition to supply made-to-measure equipment that will support your production needs perfectly.

Our specialty heat treatment systems for press-hardening applications have been defining success chiefly in automotive manufacturing (OEMs), its suppliers (tier 1 and tier 2), as well as in the steel industry. We custom-design, build and efficiently integrate all our systems into production lines all over the world.

And to safeguard our ability to fulfill your justifiably high demands on quality and innovative strength, we place special emphasis on continued education and staff training. Our experienced engineers and technicians bring leading-edge knowledge and up-to-date skills.

Heat treatment systems ‘made by schwartz', for press-hardening applications are matched to your specific production needs and combine dependability with high availability rates and low energy costs.

# schwartz heat treatment systems – your manufacturing advantage

All schwartz heat treatment systems stand for high availibility, low maintenance costs, and the ability to accommodate variable product dimensions.

In particular, our special heat treatment systems for press hardening give you field-proven technology intelligently designed down to the last detail for optimum manufacturing processes. In this way, they effectively help you maximize your operation's overall equipment efficiency (OEE) and uptime.

### Sophisticated technology as standard

One particular quality feature of our heat treatment systems for press-hardening lines is the multitude of individually adjustable parameters. This versatility ensures your heat treatment can be quickly and easily adapted to changing production needs.

And thanks to precise matching of the furnace door opening to cycle times, our equipment stands for maximum energy efficiency. High-grade insulation ensures maximum utilization of heat.

Highly precise temperature control and monitoring plus infinitely variable roller conveyor speeds make it possible to adapt your process to varying blank dimensions. Upon request, your system can be supplied in a CQI-9 compliant version.



### Tailor rolled and tailor welded blanks

Based on programmable temperature profiles, blanks of different material thicknesses can also be heat-treated.

Monitoring devices in the entry section prevent double blank loading. After an unscheduled stop, the movement of blanks through the furnace will be automatically resumed. This will further increase the availability rates.

In the product unloading area, an optimized roller drive arrangement supports cycle times of less than 10 seconds. The heated blanks maintain their uniformly high temperature thanks to specially designed steel rollers. Blank centering units are of a maintenance-friendly design, and the lifters provide enough space for gripping each blank. As blanks exit the furnace at conveyor speeds of over 2,000 mm/s, they are centered quickly, yet accurately, for a shorter time on air. At your request, we can also supply fully automatic blank lifting devices with individually controllable lifter blades.

**We offer customized heat treatment systems for press hardening:**

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

**Clean conveying rollers for long life**
Our ceramic rollers are finished with a special coating we exclusively developed in cooperation with the Technical University of Aachen (RWTH). As a result, roller contamination with molten AlSi is greatly reduced and, with regular maintenance, the roller lifetime is significantly extended.

Our patented roller bearing assemblies featuring a particularly heat-resistant lubrication and custom-developed rinsing system, are offered with a 24-month warranty.

# schwartz press-hardening systems – tailored to your needs

### The right choice for all heating methods
Depending on your specific requirements, we supply heat treatment systems with gas, electric or hybrid (gas/electric) heating to maximize the cost-efficiency of your process.

### Gas firing system
Gas-fired systems can use both natural gas and liquefied gas. As a general rule, these systems feature recuperative burners with fuel efficiencies of up to 75 %. Burners yielding a higher efficiency (up to 85 %) are available upon request.

### Electric heating systems
Direct electric heating is provided by means of heat-resistant wire coils wound onto ceramic support tubes arranged above and below the furnace roller conveyors. An indirect (and hence, mechanically protected) electric heating system is available as an option.

The optimized arrangement of the heating elements ensures a uniform temperature distribution and high efficiency.

Upon request, the electric heating system can be controlled via clock-pulsed thyristor controllers. The furnace system guarantees a homogeneous temperature control of each individual heating zone.

### Try-out systems
For your die try-out heat treatment needs or small production runs, we supply various electrically heated chamber furnaces (including multi-layer chamber furnaces), and roller hearth furnaces with centering tables. These can be fitted with a matching automatic loading and unloading capability.

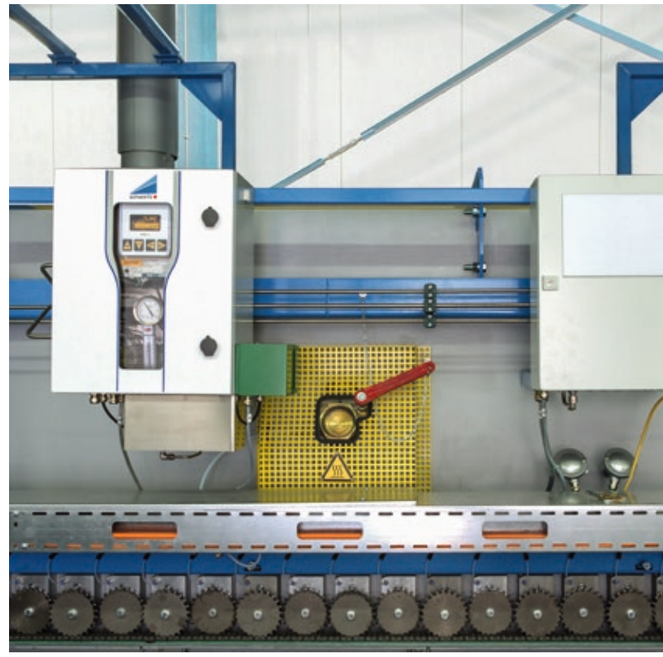
### Commissioning with all-round expert support
Needless to say, we will help you install the equipment at your manufacturing site. Our experienced crews will take care to integrate your new schwartz heat treatment system quickly and smoothly into the production line. Moreover, they will expertly program the interfacing with upstream/downstream equipment so that the heat treatment system will perform perfectly in your line from the start.

### The right solution for any atmosphere
Blanks can be heat-treated in diverse atmospheres. Regardless of whether you are using AlSi or zinc-coated or even uncoated blanks, we can supply a furnace providing just the right atmosphere.

In addition to normal air, heat treatment can be performed under inert or reactive gases or dried air. The supply of protective gas into the furnace is automatically controlled. Gas escaping at the furnace entry and exit ends is extracted away.

### Advanced in-furnace dew point measurement and control
The risk of hydrogen-induced delayed cracking associated with the heat treatment of AlSi-coated blanks (as a result of hydrogen inclusions in the product) can be substantially reduced by running the furnace in dried air.

To this end, our equipment comes with a newly developed laser-based dew point measuring and control system providing automatic dew point monitoring and control at several points in the furnace. The dew point measuring and control system is self-calibrating to minimize maintenance.



# Pinpoint accuracy:
# Individualized heat treatment


### Thermal printing – Tailored tempering

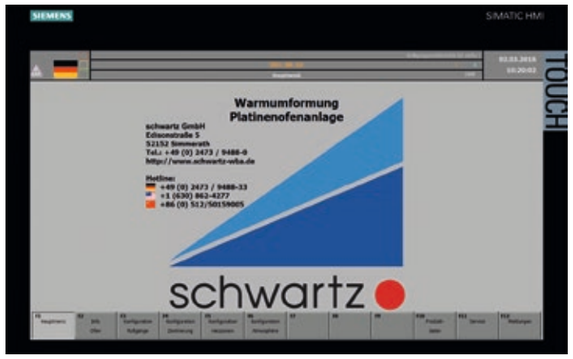
With our thermal printing technology, we have launched an economical method of obtaining parts with customized properties – so-called tailored blanks – and have consistently advanced this capability to the industrial viability stage. Thermal printing can create multiple regions of different strength and elongation behaviors in a single component, each with a defined transition zone of distinct narrowness or width.

Conventional press dies can continue to be used for the forming of blanks treated upstream in the thermal printer.

The thermal printer retrofits to virtually any existing schwartz heat treatment system designed for press-hardening applications.

This technique opens up a host of new manufacturing options to you.

# Clever solutions for optimum process performance




### Easy maintenance

Our aim is not just to help you achieve production excellence, but also to deliver a heat treatment system providing maximum ease of maintenance. To this end, our equipment for press-hardening lines embodies well-conceived technology, enabling you to handle any necessary maintenance quickly and conveniently.

Our systems offer diverse advantages, e.g., the subdivision of the furnace lid into individual sections that can be lifted quickly and easily by means of manual lifting devices. Motor-operated lifting units are available as an option. The lid segments require no storage or support area as they can be held in raised position indefinitely. This design guarantees rapid cooling and a very well-lit furnace interior at the same time.

Once the furnace has cooled down fully, it can be accessed easily and safely thanks to the wide opening afforded by the raised furnace lid which is secured in position by a specially approved safety locking system.

### Cutting-edge control software – Industry 4.0 compliant

For monitoring and control, schwartz heat treatment systems rely on the latest Siemens PLC technology. Highly advanced HMI features make our equipment particularly straightforward and convenient to operate.

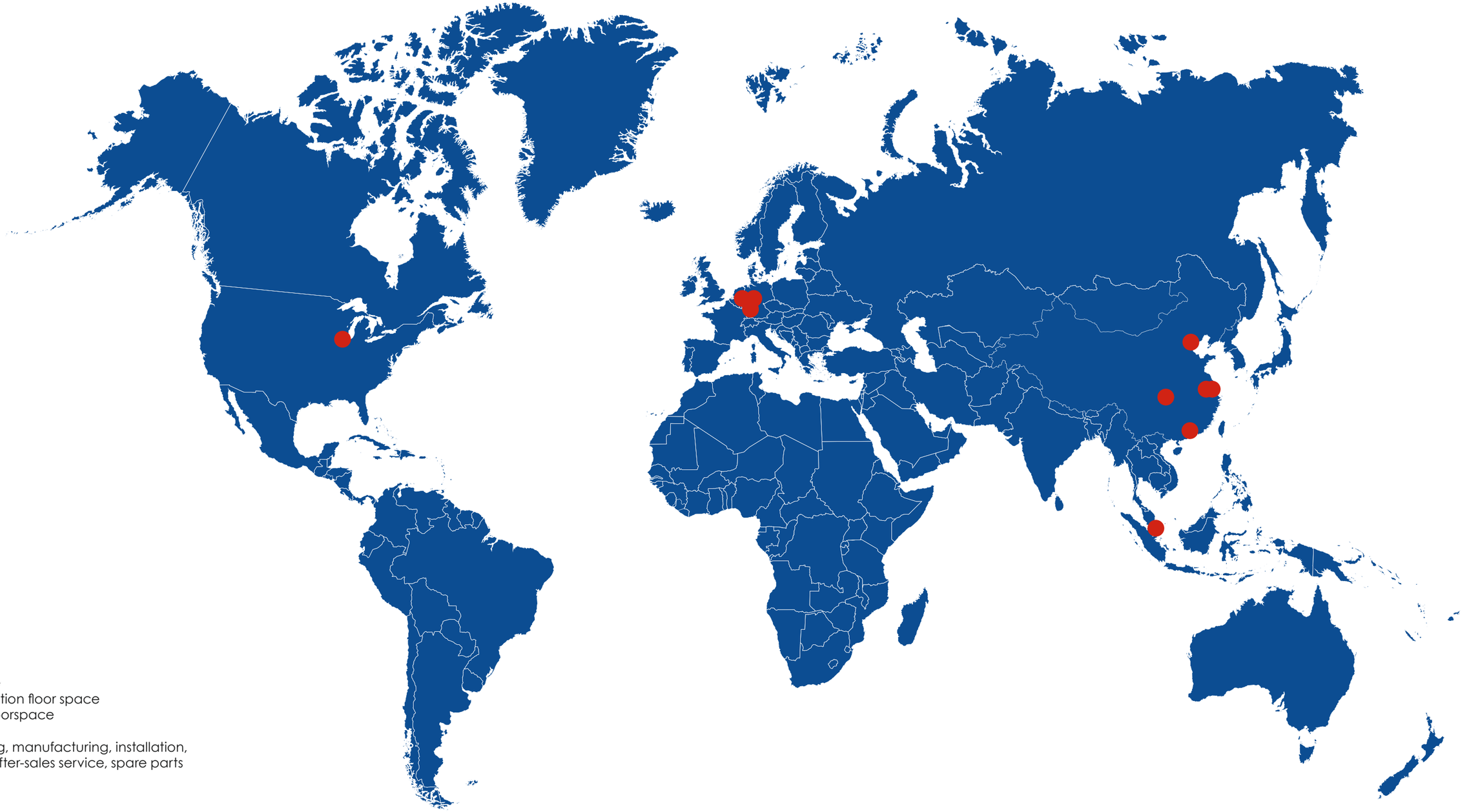
Maximum user friendliness is also characteristic of the application software. Integrating all peripheral systems, it is the key to full equipment performance. A shared database facilitates the selective use of all operating, machine and process functions.

In addition, schwartz heat treatment systems support energy-efficient operating regimes, e.g., by temperature reduction during weekend operation and special burner control technology.

Data interfaces for Industry 4.0 applications can be provided by integration into the controller. The control system comprises fault diagnostics function developed specifically for schwartz heat treatment equipment. Its diagnosis is displayed in the HMI system for a seamless production management.

A growing number of renowned customers worldwide place their trust in our product quality and high standards. You can count on us as a dependable partner in the field of innovative heat treatment systems for press hardening. We will supply just the right equipment and service you need.

# The schwartz group – present worldwide, always nearby: personal, capable and reachable at all times



- 10 sites worldwide
- 20,500 m² production floor space
- 2,000 m² office floorspace
- 250+ employees
- Sales, engineering, manufacturing, installation, commissioning, after-sales service, spare parts

Photos by: schwartz GmbH, Melanie Conrad-Franzen and Fotolia

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