CeraCon **Thermal** systems

Automated temperature treatment

CeraCon

More than you expect.

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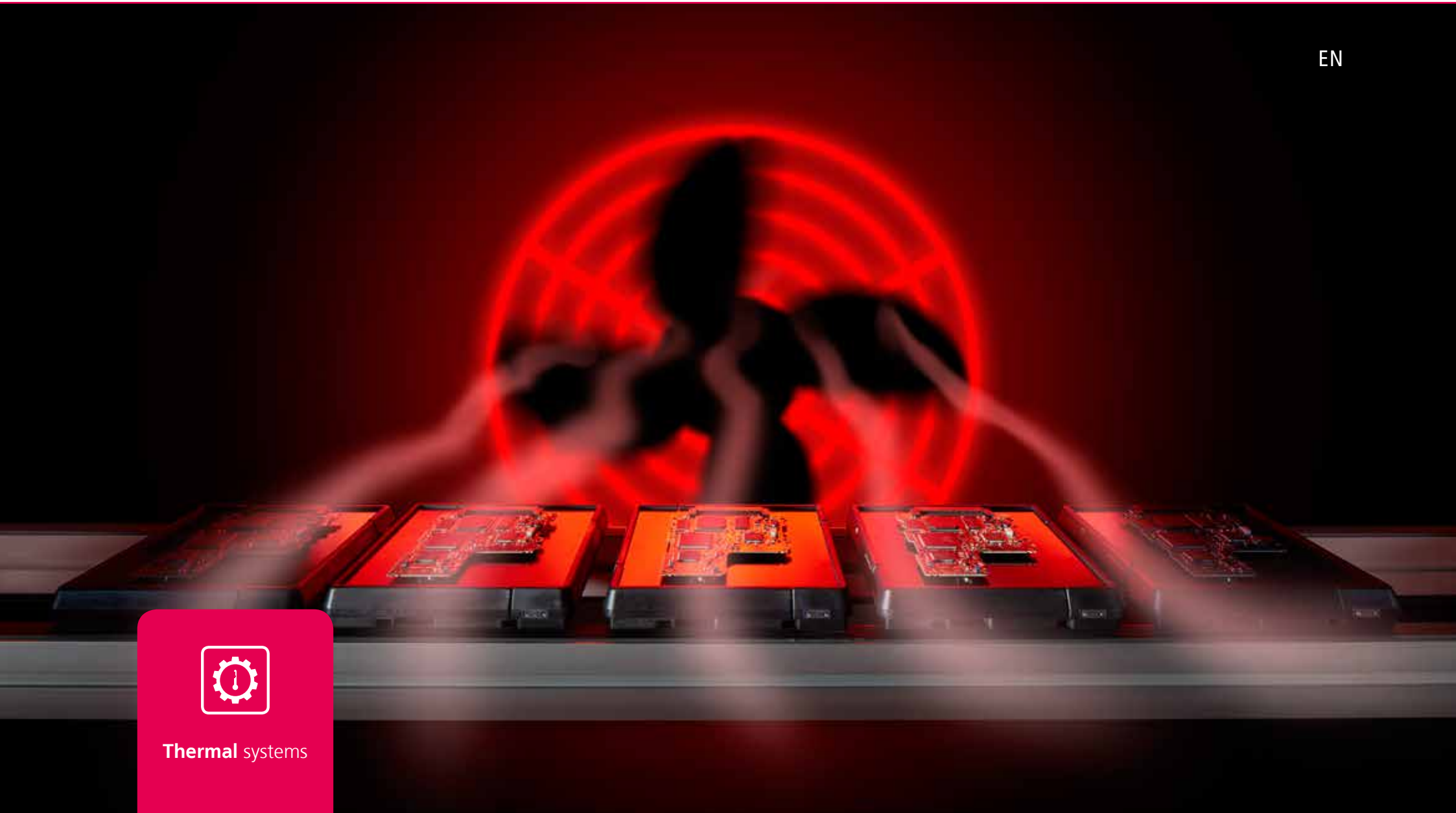


Thermal systems

We are specialists in offering precise and cost-effective thermal processes

Ovens from CeraCon are industrial systems to heat up products and parts to a desired temperature up to 220°C and to cool them down afterwards.

The heating process generally makes use of electrically heated circulating air*, while cooling takes place using air circulation and heat exchangers. By providing a variety of basic designs, we adapt our thermal systems so that they are ideally suited to your products, process requirements, production environments and investment budgets. Our broad range of standardized models makes a substantial contribution towards the cost-effectiveness of the technology.

For many years now, the customized versions of our systems have enabled CeraCon to become the preferred partner of blue-chip customers when it comes to carrying out prestigious automated temperature processes.

*Depending on requirements, these can be enhanced by means of infrared radiation or induction.

From small to oversized, from standardized to custom-made. A selection of our vertical thermal systems can be seen here.

By linking a number of modular vertical systems together, complex temperature profiles and long tempering periods can be accommodated within a space-saving installation.

What we can do for you

Curing, drying, gelling

When subjected to temperature, certain materials undergo „physical changes“, e.g. viscous substances cure when heat is applied and moist materials dry out or evaporate.

Examples:

- Curing and gelling of composites for air bag controls
- Drying and outgasing of adhesives and auxiliaries used to produce the centre consoles of cars

Tempering, detensioning

Extreme temperatures during a production process can cause structural tension in certain types of materials. These can be gently reduced using thermal processes.

Examples:

- Stress relief of tail lights after ultrasonic welding
- Tempering of shaft seals to get the final dimension

Pre-heating

Heat changes the physical properties of materials, e.g. their viscosity or their willingness to react. It may also change, affect or suppress the course of specific processes.

Examples:

- Pre-heating of headlight plinths to improve the uptake of potting compounds
- Heating up of distance sensors prior to electrical function testing

Cooling

Generally speaking, the desired purpose of heat treatment within the manufacturing process is closely restricted by time and spatial factors. Returning parts to room temperature makes it easier to carry out downstream production stages.

Examples:

- Cooling down powermodules after heat testing
- Cooling of injection-moulded parts after production

The CeraTHERM® model range

CeraTHERM® batch

The robust, industrial quality of our standardized heating cabinets mean that they are also suitable for use in harsh production environments. The automatic door makes it easy for loading and unloading. Fumes from volatile components can be extracted from the cabinet via ventilation and extraction connections.

To take account of customer-specific temperature and process requirements, we can construct individual models.

CeraTHERM® tunnel

The horizontal continuous oven systems from CeraCon were developed as a means of providing precise, cost-effective and automated heat treatment of parts. Our tunnel systems may be fitted with a variety of conveyor types. These standardized dimensions and the components used ensure that they are suitable for use with a variety of product and application processes.

They are the ideal solution if the time of exposure to the temperature is rather short or the cycle time is longer.

CeraTHERM® paternoster

In this special type of vertical system, the parts are transported using movable gondolas that are firmly mounted inside the thermal systems. They move in a circular manner, just like a traditional paternoster.

The system structure and the control have been kept simple, so that our paternoster ovens are able to provide a high degree of reliability at a realistic investment level.

Cera**THERM**® catena

These vertical systems from CeraCon utilize the available room height and therefore save a great deal of space. Chain strands running vertically lift the product carriers using drivers, taking them from the entry position and transporting them up the thermal processing system. At the top of the oven system, the parts are transported to the other side and move down in stages, before emerging from the outlet.

Cera**THERM**® stack

The stack systems are also based on the vertical principle of upward and downward runs, including a mechanism to transfer the products from one side to the other. The parts are however transported using a special stacking technique, which especially favours the tempering of flat parts. Different temperature zones can be established within individual runs. Our stack systems are also suitable for use in clean rooms as standard.

Cera**THERM**® multilevel

Multiple horizontal temperature tunnels are configured vertically on top of one another and brought together to form a multilevel horizontal system. At both ends of the tunnels are lifts or robots that transport the product carriers from one level to another.

Horizontal transportation within each level takes place by means of a conveyor belt system or on a minimum-abrasion basis using a "push-to-move" system in the form of a roller conveyor. Each level forms an individual temperature zone of its own.

Cera**THERM**® batch

The standardized heating cabinets from the batch range are fitted with recirculation air-temperature control and their robust, industrial quality also makes them suitable for use in harsh production environments. Using a foot pedal, the door of the thermal processing system opens pneumatically, so that the operator's hands are kept free in order to manually load or unload products from or into the device. Trays that can be inserted at multiple levels enable the packing density of the parts being tempered within the 720-litre heating chamber to be individually determined. Volatile components can be extracted from the processing chamber (e.g. during the curing process) via ventilation and extraction connections.

Alongside the standardized version, we can also provide you with a custom-built chamber system that takes account of your customer- specific component properties and temperature and process requirements.

Your benefits

- Universally usable, irrespective of product dimensions
- A cost-effective system for running lower quantities of parts
- Automatic doors make manual loading easier

Cera**THERM**® tunnel

The systems that form part of the tunnel range are fitted with an individual processing chamber, through which the parts are conveyed horizontally. They are especially suitable if the time of exposure to the temperature is rather short or the cycle time is longer.

Standardized systems

Our standardized continuous ovens stand out due to the precise but cost-effective heat-treatment they provide for your coponents. They can be provided in the form of tunnel systems fitted with a variety of conveyor systems and their standardized dimensions and the components used mean that they are suitable for use with a variety of products and application processes. Each system consists of a conveyor inlet and outlet zone and a number of heater batteries (generally two to eight).

Custom-built systems

With our thermal systems, individuality and standardization are not mutually exclusive, as we combine standardized components, such as drive systems, PLC systems and pneumatic elements to form a solution tailored specifically for you, as our customer.

We will adapt our system to ensure it fully reflects your own individual requirements with regard to factors such as the dimensions of parts and product carriers and/or their weight, the required temperature profiles, processing times and the amount of space available in the production environment concerned. In accordance with your requirements, our Engineering department will put together a combination of heating and cooling zones, a suitable automation system and the relevant control technology that is ideal for you.

Your benefits

- Available in standard versions
- Different conveyor systems can be achieved
- A cost-effective first step into automated systems

Cera**THERM**® paternoster

The CeraCon paternoster systems are a special type of vertically-configured thermal systems. In contrast to our catena or stack systems, the parts are transported using movable gondolas that are firmly mounted inside the thermal system and move in a circular manner.

The entire process chamber therefore forms a single temperature zone. The system is generally loaded manually by an operator. Depending on the production process, the system can also be loaded automatically. The system structure and the control have been kept simple, so that our paternoster ovens are able to provide a high degree of reliability at a realistic investment level.

CeraCon paternoster systems are available in standard and custom-made versions.

Your benefits

- An operating principle that is simple
- Predominantly manually loaded
- A cost-effective first step when it comes to using vertical oven systems

Cera**THERM**® catena

The vertical catena systems from CeraCon are very space-saving industrial ovens. In contrast to horizontal continuous systems, these are constructed for each individual customer, based on the room height available. That way, they make it possible to save up to ten per cent of the production area, compared to the horizontal ovens.

Each system is made up of at least one processing tower, each of which includes an upward and downward line. First of all, the parts are conveyed up to the oven entrance. Using the drivers of a transportation chain system, they are lifted upwards within the thermal system. At the top of the system, the parts are transferred horizontally, before commencing their downward progress. A separate temperature zone can then be set up within each transportation run. By combining any number of towers, complex temperature profiles and very long curing times can be defined, according to the requirements of the process.

Suitable for inline use

As each one is constructed individually, catena systems can be seamlessly integrated into existing production lines. This can take place either on an "inline" basis, but also in the form of "bypass" integration by placing the parts on special multiple product carriers, thereby further reducing the amount of space required.

If the product carriers of the production line are temperature-resistant, they can be used directly inside the thermal system itself.

Your benefits

- Product carriers of your production line can be used directly for transportation
- Customized versions possible
- Easy to integrate within production lines

Cera**THERM**® stack

The vertical stack systems from CeraCon are extremely space-saving industrial ovens. Based on standardized production components, they can be configured individually for every customer, in order to utilize the available room height, thereby generating considerable savings in terms of production space compared to horizontal systems.

Similar to the systems that form part of the catena range, the stack systems are based on the vertical principle of upward and downward runs, including horizontal transfer. The products, however, are transported using special stackable carriers (known as trays), the spacing between which can be flexibly configured, according to the height of the products being cured. In the case of very flat parts, such as films or circuit boards, it is possible to pack them closely together, thereby achieving a high packing density.

Up to 12 different temperature zones can be created within the upward and downward transporation lines.

Suitable for inline use

CeraCon stack systems can be seamlessly integrated into existing production lines. his might take the form of 'bypass' integration, for example. Multiple products can also be placed on the system's trays where possible, which further reduces the system's space requirements. Our wealth of experience in this field enables us to provide the necessary automation technology with expertise.

Variable stacking heights

According to the height of the parts concerned, the gap between the product carriers can be freely adjusted between 25 mm and 100 mm. This enables CeraCon stack systems to be used for a variety of heating processes for products of different heights.

Stacking technology suitable for cleanrooms

Before a new tray is taken into the system, the entire tray stack on the upward stack line is first lifted and fixed in place. The new tray is then positioned underneath the stack and lifted up together with it as a new element at the very bottom of the stack. The topmost tray of this stack is now transferred horizontally to the downward stack line and the principle continues in reverse in a downwards motion. This enables all trays to pass smoothly through the processing chamber.

Even the standard design of this stacking principle is suitable for use in production environments with clean room requirements up to ISO Class 7.

Your benefits

- Suitable for use in ISO 7 cleanroom room environments, as standard
- Standardized and flexible at the same time
- Especially useful for processing flat products

Cera**THERM**® multilevel

The multilevel systems were developed at CeraCon and form an extraordinary system that is based on our many years of process experience. They combine the simplicity and robustness of the horizontal thermal systems with the flexibility and optimum utilization of space provided by the vertical technology. Multiple horizontal processing chambers are configured vertically on top of one another and combined to form a multilevel horizontal system. At both ends of the runs are lifts or robots that transport the product carriers precisely and reliably from one level to another. The horizontal transportation within each level takes place by means of a conveyor belt system or by using a "push-to-move" system in the form of a roller conveyor. A separate temperature zone can then be set up on each level, including cooling and buffer runs. Flexibly combining the different levels makes it possible to carry out complex applications.

Suitable for inline use

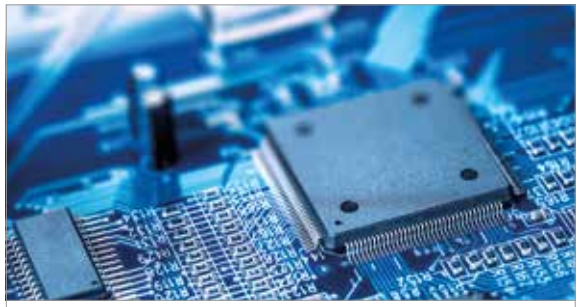
The use of placement systems (e.g. using industrial robots) makes the multilevel systems from CeraCon suitable for inline use. If the product carriers are not sufficiently temperature-resistant for the production line concerned, the products will be transferred by a handling system both before and after passing through the thermal system.

Your benefits

- Each level can be operated autonomously
- Custom-made versions are possible (including for use in cleanrooms)
- Ideally suited to larger and heavier component modules

The right type of tempering, also for your sector

Whether your requirement is for curing, pre-heating, tempering, detensioning or cooling, different applications and sectors impose differing requirements with regard to their tempering processes. Thermal systems from CeraCon are always used, whenever precision of temperature or state-of-the-art automation is required.



Semi-conductors / Electronics

Automotive / E-mobility

Medical technology / Pharmaceuticals

Plastics processing

Renewable energy forms

Domestic appliances

These customers are already placing their trust in our expertise

As your customers, you are always our first priority. Our company motto was conceived with you in mind: **CeraCon – More Than You Expect**. Put us to the test and we will exceed your expectations. From the first day we advise you to the final production day of your thermal system, and beyond!

BOSCH	CONTINENTAL	HELLA
INFINEON	PHILIPS	ROCHE
SIEMENS	TDK	VALEO

CeraCon **Sealing** systems

Innovative foam sealing technology

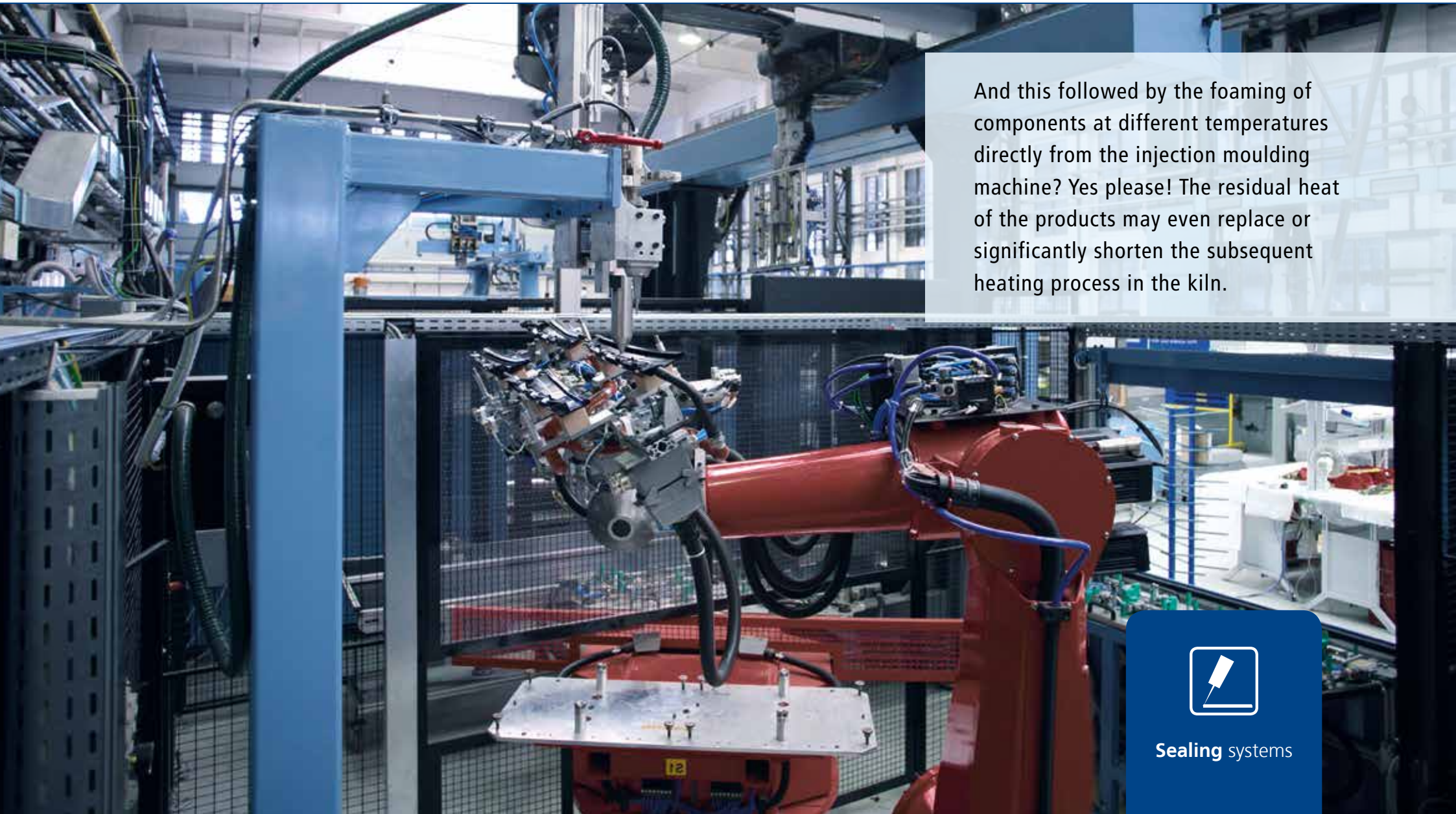
Applying foam sealants is finally an enjoyable process. That is what we aim to ensure and forms the basis of our promise to you. Our innovative foam sealing system offers two important strengths: a foam with very good sealant properties that is processed using a reliable and tried-and-tested system technology.

Our sealing technology is based on our excellent Cera**PUR**® sealants, combined with the new Cera**FLOW**® system technology and the engineering skills and service we provide.

Sealing systems

CeraCon **Sealing** systems

Innovative foam sealing technology



And this followed by the foaming of components at different temperatures directly from the injection moulding machine? Yes please! The residual heat of the products may even replace or significantly shorten the subsequent heating process in the kiln.

Sealing systems

CeraCon

More than you expect.

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Sealing systems

Thermal systems

Subject to
modifications and errors.