

Customized Furnaces

Special furnace up to 1100 °C

Chamber furnace for testing fire protection plates and fire protection glass, up to 1000 °C in 10 minutes. Thickness of test plates between 25 - 100 mm. Max. temperature up to 1400 °C and slight over pressure are optional available.

Chamber furnace with protective gas atmosphere up to 1700 °C

Chamber furnace with water cooled, gas tight chamber. The furnace can be used up to 1700 °C with protective gas atmosphere. An oxygen sensor monitors the O₂-content in the exhaust gas. To increase the purity of the atmosphere, a vacuum pump can be used to evacuate the chamber before starting the process.



Apparatus for Hot Modulus of Rupture (HMOR) tests

This furnace system was developed to investigate the hot modulus of rupture of new refractory materials. The furnace has a maximum temperature of 1600 °C. The gas tight design allows different gas atmospheres to be used. The oxygen partial pressure is monitored online through an oxygen sensor.

A walking beam system is installed so that 6 samples can be introduced simultaneously. The transport of the samples is semi-automatic. A sample size of 25 x 25 x 150 mm can be tested according to the three-point-bending method. All relevant process and experimental data are registered by the software supplied.



Customized Furnaces

Calibration furnace up to 1700 °C

The furnace shown was designed for high temperature calibration of thermocouples. Several thermocouples can be calibrated at the same time. The heating is splitted in 3 independently zones.

All 3 zones are controlled by a DC power pack, the furnace casing is water cooled.



Rotating tube furnace up to 1600 °C

This rotary tube furnaces can be operated up to 1600 °C under inert gas atmosphere. The ceramic tube has an inner diameter of 80 mm and a total length of 1600 mm. In spite of the inert gas atmosphere, the product can be introduced and discharged continuously through sewer ports. The vacuum pump supplied can be used to evacuate the system before purging the tube with inert gas and start the process.



Multi-purpose furnace 1700 °C / 1200 °C

The photo shows a high temperature box furnace for 1700 °C. Two tube furnaces for 1200 °C are installed on one side of the box furnace. This combination of three different furnaces is used to investigate highly corrosive materials in the glass industry.

The bottom drives up and down electromechanically and can be rotated simultaneously at predefined speeds.

Through the opening in the roof of the box furnace and by means of a lifting and turning mechanism specimens can be transferred between the three furnaces.



Special tube furnace for pyrolyses

This custom designed tube furnace for pyrolysis on a pilot scale contains 4 working tubes. The heated length of 1.5 m is divided into 3 heating zones. The furnace can be operated up to 1250 °C. Each working tube has an inner diameter of 110 mm and a total length of 2.5 m. A special system compensates the thermal expansion of the ceramic tubes.





Furnaces and plants for production

For all important heat treatment applications THERMCONCEPT supplies a wide range of furnaces and plants for production. Please ask for our special catalogues.

- Chamber-, bogie hearth-, hood- and pit-type furnaces
- Electrically heated or fuel-fired
- Large range of standard furnaces as well as tailor made furnace lines
- Normal- and protective gas atmosphere
- From manually up to fully automatic controlled operation



High temperature chamber furnace up to 1600 °C

The shown chamber furnace with lift door is used for sintering of technical ceramics at high temperatures. The furnace is heated by MoSi₂-heating elements. The usable volume is 43 m³, the usable dimensions are 13200 x 1800 x 1800 mm (wxdxh).

Elevator furnace

Large scale elevator furnace up to 1800 °C, with up to 2000 litres inner volume and 1 t charge weight for sintering of insulation panels.

Both bottom hearths will be driven for loading and unloading to the left and right side. Due to the control system a fully automatic operation is possible.



Chamber and bogie hearth furnaces up to 1400 °C

Electrically heated chamber and bogie hearth furnaces for up to 1400 °C, with heating wire on support tubes in 5 sides of the furnace.

Upon request with cooling system, lift door, multi-zone control, waste gas purification or protective gas operation. Bogie hearth furnace are also available with 2nd bogie, 2nd lift door, electric bogie drive and transverse shunting device.

Individual furnace sizes with inner dimensions adapted to customer processes are possible.



Furnaces and plants for production

Furnaces for debinding and sintering

Electrically heated air circulation furnaces for debinding up to 750 °C or chamber furnaces for sintering up to 1800 °C. Alternatively Combi-furnaces with air pre-heating system for both processes in one furnace are available.

Upon request also with catalytic or thermal waste gas purification system.



Gas-heated furnaces up to 1600 °C

Gas-heated furnaces are supplied as chamber, bogie-hearth and hood furnaces for applications up to 1600 °C. For more information please ask for our special brochures.



Low-temperature ovens up to 450 °C

Air circulation chamber ovens for a temperature range up to 250 °C and 450 °C for pre-heating, drying, etc. With horizontal or vertical air stream, swing door and furnace base to allow charging by fork lift stacker.

Upon request with automatically driven vapour vent flaps, cooling system, electro-hydraulic lift door or bottom design for loading on floor level.

Special dimensions according to customers demand are possible to realize.



Catalytic and thermal purification of exhaust air

Many thermal processes in technical ceramics, dental ceramics and other fields result in the release of volatile organic compounds. Compliance with emission limits requires the use of downstream exhaust air purification systems. THERMCONCEPT supplies catalytic and thermal exhaust air purification systems that are customised for the specific processes.

Catalytic exhaust air purification system

THERMCONCEPT catalytic converters work with honeycomb ceramics that are coated with needle-shaped Perovskite crystals and which have a high resistance against most catalyst poisons.

Catalytic exhaust air purification systems are designed according to the volumetric flow of exhaust gas and the composition and concentration of the organic compounds. Depending on the specifically intended use, these compounds are catalytically oxidised at temperatures between 280 °C and 500 °C and are entirely converted into carbon dioxide and water.

THERMCONCEPT supplies integrated plants consisting of the furnace system, the catalytic exhaust air purification unit and a PLC controller for the entire process. The plant also includes the required safety equipment in accordance with the EN 1539 standard and also can be supplied, on request, with a matching exhaust pipe.



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Furnace system for medical application

The photo shows a furnace system for medical application with catalytic exhaust gas purification incl. honeycombs for pre-cleaning, fine-cleaning, filter separator system against catalyst poisons, prepared for a flow rate of 80 nm³/hrs.

- ① Catalytic exhaust gas purification system KNV 300
- ② Catalytic exhaust gas purification system KNV 600 for the tyre industry
- ③ LaboKat KNV 50
- ④ Furnace system for medical application with KNV 150

Thermal exhaust air purification systems

THERMCONCEPT designs, builds and supplies thermal post-combustion systems for different applications. This robust and versatile type of exhaust air purification is generally deployed when an undefined crude gas is used, or when catalyst poisons exclude the use of a catalytic purifier. Organic components in the exhaust air are burned completely at temperatures of approx. 750 °C.

- Standing, lying or suspended design
- With noise control measures (installation of silencers, noise control booths)
- Insulation with high-quality ceramic fibres for combustion temperatures up to 1200 °C
- Heating by means of gas or oil burners; electrical heating also possible
- Volumetric flow rates of 50 nm³/hr to 15000 nm³/hr
- Optionally fitted with heat exchangers for heat recovery
- Exhaust gas chimney and pipes available on request
- System fitted with the required safety equipment

The THERMCONCEPT service range:

- Planning and design of exhaust air purification systems in new and old systems
- Support with official approval procedures and emission measurements
- Integration with upstream and downstream processes
- Integration in existing conveyor and handling solutions
- Tests in our high-temperature pilot plant

THERMCONCEPT deploys thermal post-combustion in furnace systems heated electrically or with gas. The priority is always to supply a customised turnkey solution for the user's specific process, comprising the furnace, thermal post-combustion unit, safety equipment and process control.



The photo shows a gas-fired furnace for dewatering with thermal post-combustion, program flow control and temperature regulation using a Siemens-PLC S7 313 with TP 170 touch panel.



Process control and documentation

State-of-the-art control technology is fitted as standard in THERMCONCEPT furnaces. Microprocessor controllers ensure precise furnace regulation of both simple and complex processes. The program controllers are extremely user-friendly. The wide range of standard controllers matches the various types of furnaces and covers most customer requirements.

Eurotherm 3208/3204 temperature controller:

- 8 segments (4 ramps, 4 holding times)
- 1 program
- 1 programmable function
- Optional RS 232/485 and iTools
- Multi-zone control as option

Eurotherm 3508/3504 temperature controller:

- Total of 500 segments, freely editable
- 10 programs
- 7-day preselect clock for delay program start
- Optional RS 232/485 and iTools
- Multi-zone control as option
- Several programmable functions (optional)
- Cascade control system (optional)

Eurotherm 3216i/32h8i over-temperature controller:

- Alarm message in clear text
- Can be deployed as a temperature limiter or as a temperature selection limiter
- Alarms in accordance with FM/DIN 3440

Bentrup TC 505 temperature controller:

- 5 segments per program (2 ramps, 2 holding times, 1 cooling ramp)
- 30 programs (6 fixed, 24 modifiable)
- Programmable lead time (00.00-99.59 hrs)
- Optional RS 232/485 and software
- Multi-zone control (max. 3 zones) as option
- Several programmable functions

Bentrup TC 507 temperature controller:

- Up to 99 segments (ramp and holding time)
- Up to 99 programs can be stored
- Programmable lead time (00.00-99.59 hrs)
- Optional RS 232/485 and software
- Multi-zone control (max. 3 zones) as option
- Several programmable functions



Process control and documentation

The control system can be extended as required. Software packages for managing the controller and for evaluating the processes are available, as is visualisation software. On request, we can install Siemens S7 control systems featuring Siemens touch panels as user interface.

In addition to our proven standard systems, we also design switching and control systems according to customer wishes, in compliance with special plant standards and equipment regulations.

Siemens S7 controllers, Simatic Panel with remote maintenance:

PLC controllers based on the Siemens S7 controller, with remote maintenance option, are used to meet challenging requirements in respect of process control and documentation.

THERMCONCEPT user interfaces:

THERMCONCEPT designs its own user interfaces that meet most requirements for simple operation and monitoring even in the standard version. In more advanced versions, all functions and the entire process can be graphically displayed, stored and read out via various interfaces.

THERMCONCEPT software for control and analysis:

THERMCONCEPT supplies a range of software packages for programming, controlling, visualising and documenting temperature-related processes:

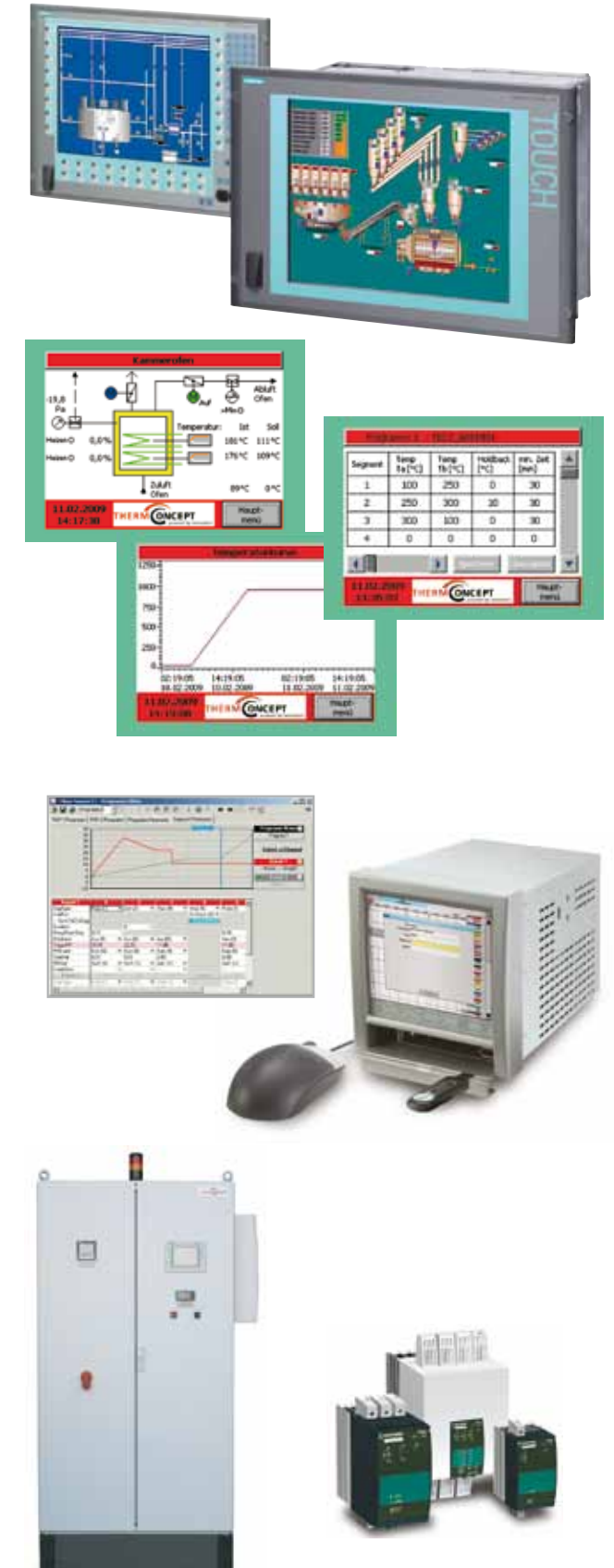
- Management of several furnaces simultaneously
- Furnace regulation from a central PC
- Detecting the temperature-time profile in accordance with DIN ISO 9000 ff.
- Documentation of batch data

Process documentation:

Various graphics, line or dot recorders are available.

Switching technology:

- From contactor control systems to thyristor control units
- Multi-zone control
- Cascade control system
- Remote maintenance systems
- Heating control using DC power packs
- Frequency-regulated drive controller
- Drive controllers for linear drives
- Control panel according to customer-specific plant standards and guidelines
- Air-conditioning for control panels





Professional Service

With our skilled workforce we are able to provide you with a wide range of professional services relating to all furnaces, right from the beginning.

Our consulting is your success

Trust on our very long experience in the furnace business. We turn your special requirements into a successful and reliable solution.



Your application takes centre stage

Expert advice on applications and uses, to ensure you make the right investment decision.

Carry out a test

You want to test your tool and probes first under realistic conditions? No problem. For trails and tests our test field is at your disposal.



Everything from a single source

As system suppliers, we can also advise you on supplementary aids, tools and systems.

Our service and support is manifold

You can expect a large service package and a wide range of support:

- Installation, set-up and commissioning of furnaces systems
- Intensive operator training
- Retrofitting, up-grading and modernising of existing furnace lines
- Modernisation of control systems
- Accomplishing of furnaces according AMS 2750D, NADCAP, FDA
- DKD Calibration / plant calibration at site or in our laboratories
- Temperature uniformity tests with calibrated measuring devices acc. to certified procedures
- Regular maintenance and service at site
- Repairs, modifications and upgrades of furnaces, change of insulation materials or mechanical components. Also available for other furnace brands



- Fast spare parts service
- All necessary spare parts on stock
- Also for other furnace brands

The product range at a glance

Technical Ceramics, Advanced Materials, Waste Air Purification

THERMCONCEPT furnaces are used for many different applications e.g. for technical ceramics, semi-conductor production, photo voltaics, bio-ceramics etc. We supply also furnaces for debinding and sintering, for crystal growing and thermal analysis. Our chamber-, bogie hearth-, elevator-, hood- and continuous furnaces are either electrically heated or fuel-fired. All furnaces can be completed with catalytic converter or thermal afterburner.

Dental

For de-waxing and pre-heating of moulds, sintering of Zirkonia, firing of dental ceramic compounds and for CAD/CAM-systems THERMCONCEPT offers a wide range of furnaces for manufacturing of dental prothesis as well as for industrial production of dental materials.

Heat Treatment of Metal and Plastics

We supply industrial furnaces and plants for a wide range of different applications. Our furnaces and plants are used for annealing and hardening of metal and also used for tempering, ageing, pre-heating, drying and curing of metals and plastics. The product line consists of electrically heated and gas-fired furnaces.

Annealing, Hardening, Tempering

Here you will find furnaces, heat treatment systems and accessories for a wide range of applications in tool shops and metal processing industry. Nearly all important heat treatment processes can be realised with our demanding equipment.

Foundry

For foundries we supply electrically and fuel fired melting- and holding furnaces for light- and heavy metals. The range of furnaces include bale-out furnaces, tiltable furnaces and bath furnaces. For solution annealing and ageing of aluminium parts we have a wide range starting with air circulation chamber furnaces up to fully automatic heat treatment lines.



Brochure:
Ceramic, Glass, Solar



Brochure:
Dental Furnaces



Brochure:
Thermal Process Technology



Brochure:
Hardening, Tempering, Quenching



Brochure:
Melting and Holding of Non-Ferrous Metals



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powered by innovation



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