Thermo-Star

PRODUCT CATALOGUE

For the glass and ceramics industries

QUALITY MADE IN GERMANY

www.thermo-star.de

Sep. 2015

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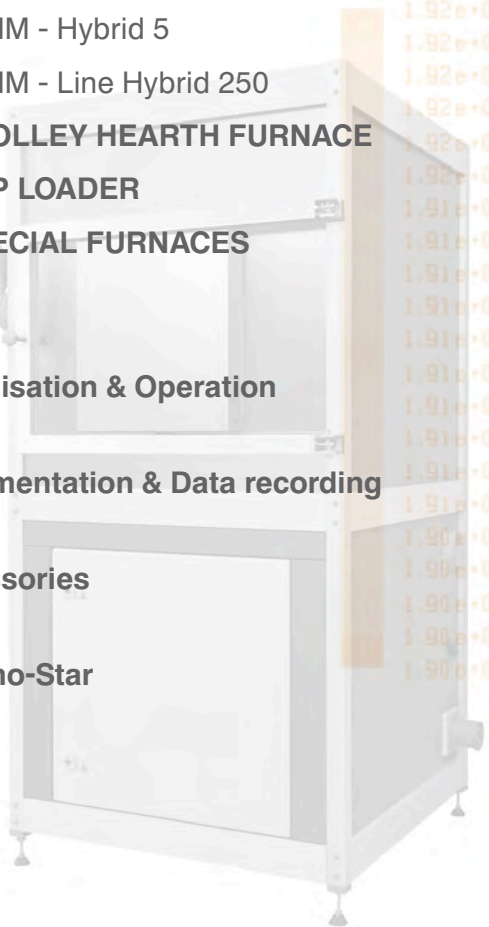
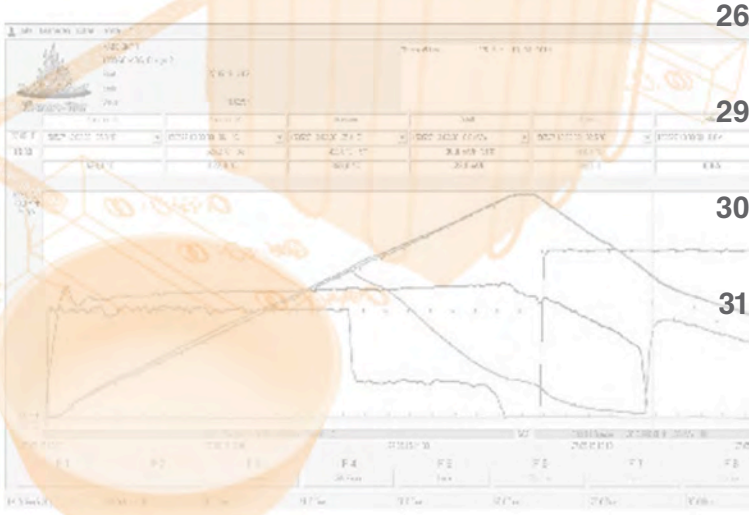


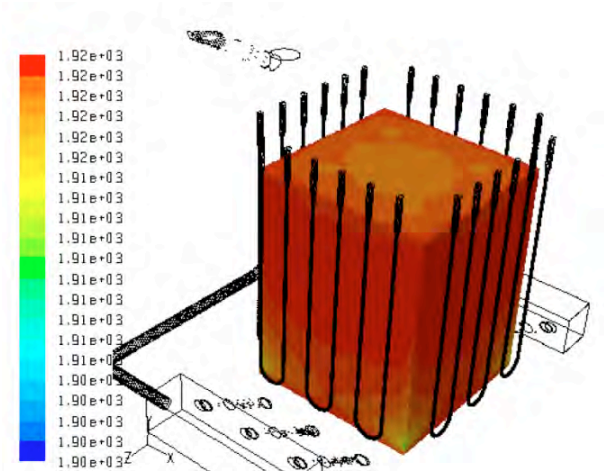


HOMOGENEOUS TEMPERATURE

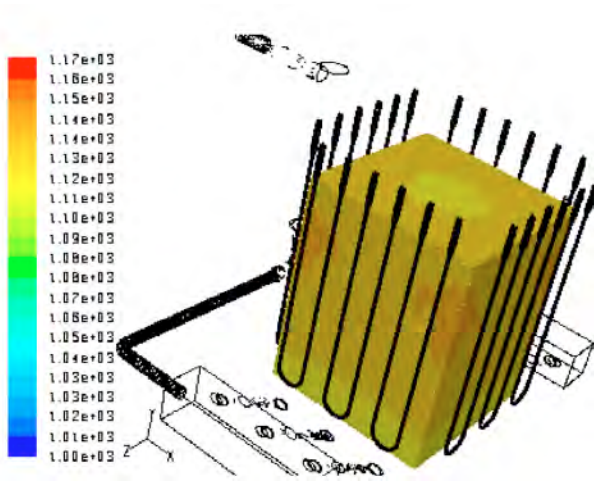
One of the most important prerequisites for the high temperature technology sector is the precision of the temperature within the chamber.

In order to ensure the highest possible level of accuracy in temperature recording, Thermo-Star only uses thermal elements that have been calibrated using special measuring devices and certified in accordance with DIN EN 60584-1. The test procedure is subject to the current version of the DAkkS-R 5-3 guideline.

Thermo-Star offers a wide variety of regulation systems on request. A very homogeneous temperature distribution can be achieved with the 4-wall regulation which is used in the majority of systems. The two graphics from precise test series clearly show that no noticeable temperature gradients occur in the chamber.



Here, each wall of the furnace forms a complete controlled section. In this way, the manufacturing-related performance differences of the heating elements are further equalised. This concept crates a new quality of processing since the usual downtimes of the controlled section can be eliminated and localised overheating can be avoided.



PRODUCTIVITY

The productivity of the system is a particularly important factorwhen it comes to serial production. For this reason, Thermo-Star has developed a heating element monitoring system.

The current of the heating elements are recorded individually, displayed and evaluated. This enables failures to be recognised and localised without the costly opening up of the system. Both warnings and deactivations of the running process are possible. This feature reduces downtimes considerably.

CHAMBER FURNACES

Atmospheric sintering furnaces for demanding thermal processes

Available as of: € 10.590*

h = 1.75m
(Q40)

Quis

Quality in series

Our newly developed Quis series is the result of decades of experience in the construction of industrial furnaces and combines tried and tested technology with innovative components. The Quis series offers a range of construction sizes with chamber volumes from 5 to 120 litres and is designed to meet individual requirements with regard to sintering furnaces for demanding thermal processes up to 1800°C.

On request from the customer, the system can be fitted with an automatic flap control which may be freely programmed by the user .

* plus VAT

Delivery time, 6 weeks according to availability. Financing and leasing options available.

This may be used to quickly extract generated emissions in the lower temperature range, or to enable shorter cycle times by opening the flap at a chamber temperature of 800°C in order to guarantee a greater cooling rate. Further, an air supply system, both with and without pre-heating of the air, process gas regulator or fibre-free insulation may also be offered as options.

The programming is carried out in the same way as the entire process control, using the tried and tested entry system we have developed, either via HMI or an industrial regulator.
The optimally arranged heating elements made from molybdenum disilicide or SIC ensure homogeneous chamber temperatures and sintering which is free from outgassing.
All heating elements are switched in parallel so that, in the event of one element breaking, only the affected object fails and the remainder of the operation remains intact. The symmetrical switching of and easy access to the heating elements makes them easier to replace.
The power supply to the heating elements is implemented by way of a robust and maintenance-free aluminium rail system.

Furnace versions

The Quis series consists of 7 furnace sizes each available for several temperature ranges (refer chart below) On request, both intermediate sizes and optional components may be implemented in order to improve your specialised process.
If you have any special manufacturing requests, we would be happy to check them for feasibility and make you an individual offer.

Basic data

- 2 sided heating
- Rapid heat-up rate and quick cooling
- Universal loading options
  Solid stone floor
- Failsafe sintering process/
- Heating elements connected in parallel
- Power supply to heating elements via maintenance free rail system
- SIC or molybdenum disilicide heated chamber
- Compact programme regulator with 5 adjustable programmes

Extras:
Fibre-free insulation
Active air injection (heated or unheated)
SPC controller
PC software, Ethernet and USB interface
Automatic exhaust air flap control

Model	measurements			Volume	Heating performance in KW	Electrical connection	max. temp. model:				Weight
	w	d	h	l			- 1450	- 1600	- 1700	- 1800	
Q 5	150	160	200	5	5	400V - 3 phase	1450	1600	1700	1800	200
Q 10	200	250	200	10	8	400V - 3 phase	1450	1600	1700	1800	220
Q 20	280	280	260	20	10	400V - 3 phase	1450	1600	1700	1800	280
Q 40	300	400	360	40	15	400V - 3 phase	1450	1600	1700	1800	370
Q 60	340	400	450	60	18	400V - 3 phase	1450	1600	1700	1800	500
Q 80	400	400	500	80	20	400V - 3 phase	1450	1600	1700	1800	650
Q 120	500	500	500	120	25	400V - 3 phase	1450	1600	1700	1800	750

CHAMBER FURNACES

QD series up to 1320°C

Available as of: € 3.700*

Figure: Furnace chamber with ribbed stone
Door with exposed heating spirals
(bridged door safety switch)

Like all furnace models produced by Thermo-Star, energy utilisation is very efficient due to the use of particularly high-quality insulation materials and specially calculated heating performances. This interplay enables a particularly good distribution of temperature in the combustion chamber.

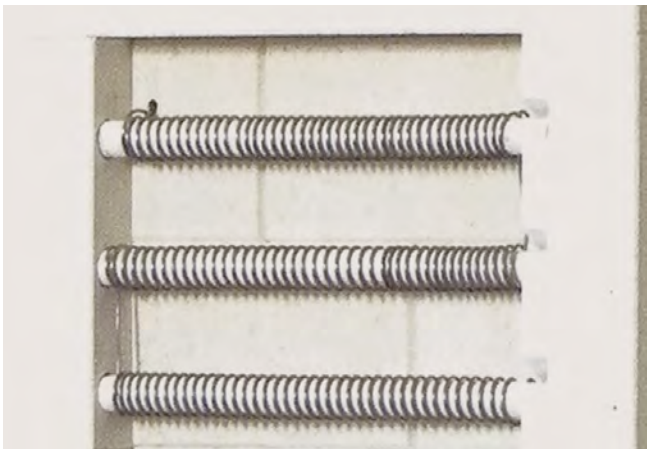
* plus VAT

Delivery time, 6 weeks according to availability. Financing and leasing options available.

Wire heated chamber furnace

The chamber furnaces of the QD series are designed for temperatures of up to 1320°C and made completely from stainless steel to ensure fault-free operation.
The heating conductors are on Silimantin bearing tubes and this high-quality and elaborate processing ensures a long lifetime.

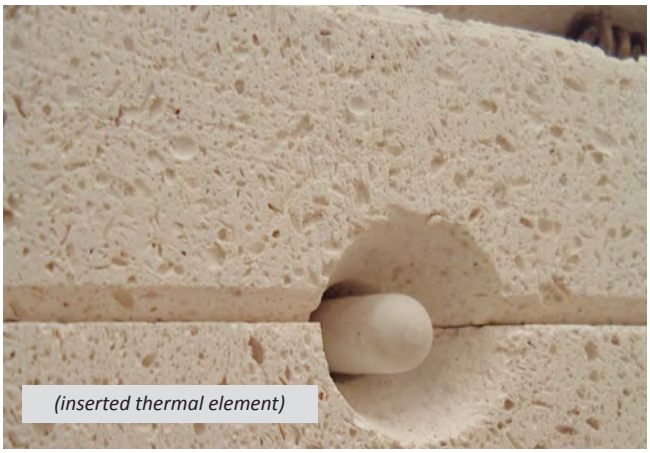
The heating can be implemented in two different ways. On the one hand, using ribbed stones ensuring that the heating conductors are protected, on the other hand, exposed on the bearing tube ensuring free radiation.



Of course, the three to five sided all-round heating with optimum temperature distribution ensures constant homogeneous firing results. This guarantees the best results for the most diverse of applications.

Basic data

- For use with temperatures of up to 1320°C
- Multiple layer lightweight refractory brick
- Wire heating on bearing tube, in ribs or free-radiating
- Completely made from stainless steel, no corrosion
- Height adjustable base frame
- SIC top plate
- Compact programme regulator with 5 adjustable programmes
- Available in a number of sizes between 80 and 1000 litres



(inserted thermal element)

DENTA-STAR M2 plus - *Blackline*

Atmospheric sintering furnace for oxide ceramics

Available as of: €17.390*

The Denta-Star M2 is a compact elevator furnace in which the base plate of the sintering chamber are motorised and move up and down. This concept enables the heating of all 6 sides and ensures almost unbeatable temperature homogeneity. The simple and clean loading and unloading process is carried out via a large opening underneath the sintering chamber.

* plus VAT

Delivery time, 6 weeks according to availability. Financing and leasing options available.

Compact elevator furnace

Thanks to the electronic power monitoring system, the Denta-Star M2 can be operated on most traditional power sockets.
It is operated via an intuitive, multiple language, coloured, graphical touch screen.

An Ethernet interface can be used to connect it either directly or via an existing network to a PC, enabling the supplied monitoring software “ThermoView” to be used to create or save programmed sintering processes as well as automatically log entire sintering procedures.

With its large sintering chamber and the ability to implement multiple layer loading, it is the ideal choice for subject areas of research and development.

Voltage:	230 V or 115V (50 - 60Hz)
Current:	≤ 16 A (at 230V) ≤ 32 A (115 V)
Power:	≤ 2500 W
Temperature:	≤ 1600 °C
Heating rate:	≤ 800 K/h
Useful volume:	70 x 100 x 70 mm (WxHxD)
Dimensions:	730 x 600 (400) x 810 mm (WxHxD)
Weight:	92 kg

Basic data

- 6 sided heating
- Power failure protection
- Up to 180 units per load (on up to three levels)
- Coloured touchscreen operating panel
- Multiple language menu
- 6 individual sintering programmes each with 20 segments
- Interfaces: Ethernet & USB
- “Thermo-View” PC software

Extras:
Fibre-free insulation
Active air injection
Inert gas connection
Programme-controlled process gas supply

ELEVATOR FURNACE SNT

Atmospheric sintering furnaces for demanding thermal processes

Available as of: € 15.590*

The elevator furnace is a further development of the chamber furnace. It is made up of a (generally) square chamber and a moveable furnace base. It's construction meets the ever-changing requirements of complex part geometries, rising production figures and the increase of sizes and weights. It also offers additional benefits with regard to process

* plus VAT

Delivery time, 6-8 weeks according to availability. Financing and leasing options available.

accuracy, wear and convenience in terms of operation and maintenance.

Since loading is implemented via the moving base, all sides of the furnace chamber can be heated without special effort. The resulting temperature homogeneity cannot be achieved in any other furnace type of a comparable size.

A furnace base that moves vertically enables simple and convenient loading and unloading from at least three sides. Compared to a hooded furnace this type experiences less wear since the heating elements and the chamber insulation are not constantly being moved.

Another advantage over a chamber furnace is that the U-shaped heating elements can be removed from below if necessary. This reduces the number and size of the openings and drilled holes (potential weak points) in the furnace insulation as well as reducing installation times.

Basic data

- 4 sided heating
- Rapid heat-up rate and quick cooling
- Universal loading options
- Solid stone floor
- Failsafe sintering process/
- Heating elements connected in parallel
- Power supply to heating elements via maintenance free rail system
- SIC or molybdenum disilicide heated chamber
- Compact programme regulator with 5 adjustable programmes

Extras:

Fibre-free insulation
Active air injection (heated or unheated)
SPC-controller
PC software, Ethernet and USB interface
Automatic exhaust air flap control
Coloured touchscreen with multiple language menu
Programme-controlled process gas supply

ELEVATOR FURNACE ENT

Atmospheric debinding furnace for technical ceramics
with high binding agent content

Available as of: € 19.950

h = 3.50 m
(ENT 100)

The debinding furnace is used mainly in ceramic injection moulding. The injection moulding technology means that almost any component geometry may be created.

The debinding furnace is always offered by Thermo-Star in the form of an elevator furnace since the vertically moved furnace based ensures simple and convenient loading and

Delivery time, 12 weeks according to availability. Financing and leasing options available.

unloading from at least three sides. Compared to a hooded furnace this type of furnace experiences less wear since the heating elements and the chamber insulation are not constantly being moved.

In the debinding process, the binding agent content is removed from the ceramic parts. The furnace has a chamber made of stainless steel which is welded to be gas-tight and insulated in multiple ways from the outside. On customer request, a chamber cladding with lightweight refractory brick insulation can be implemented for temperatures of up to 650°C. High performance fans ensure a high rate of air exchange in the chamber.

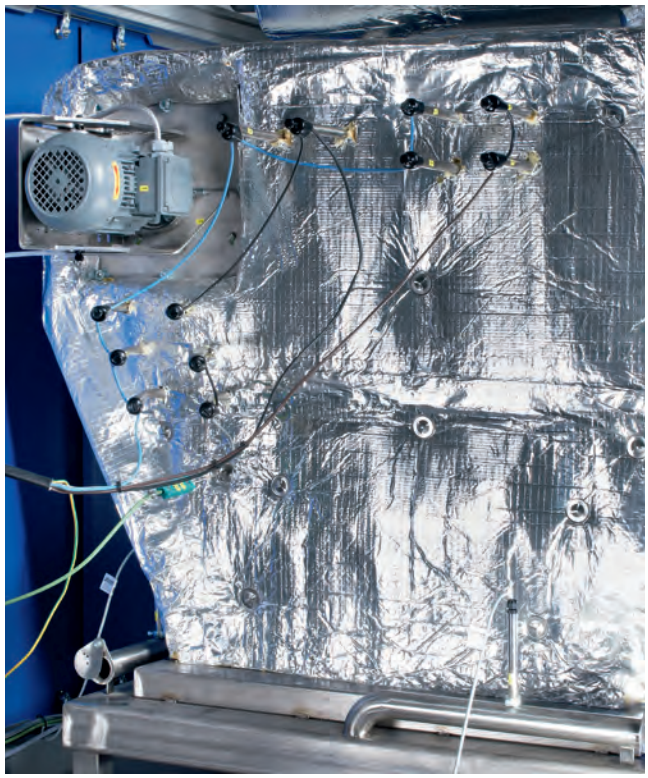
Every debinding furnace is fitted with a catalytic exhaust cleaning system in order to properly (according to norms and standards) remove the exhaust fumes generated during the debinding process.

The systems are available with a useful volume of 5 litres and upwards. All of the larger constructions may be implemented on request.

Basic data

- Indirect heating of the furnace chamber for temperatures up to 650°C
- Very quick heating and cooling rates
- Universal loading options/
- Solid stone floor
- Failsafe debinding process/ Heating elements connected in parallel
- Very good temperature distribution thanks to constant air circulation
- Heating of the furnace chamber via wire or tube heating elements
- Exhaust fume cleaning by way of catalytic or thermal after-burning
- High air exchange rates in the chamber
- For technical ceramics with high binding agent content

Extras:
Underpressure measurement
4 sided fresh air supply
SPC-controller
PC software, Ethernet and USB interface
Programme-controlled process gas supply



ELEVATOR FURNACE XNT

Atmospheric debinding/sintering furnace for technical ceramics with low binding agent content

Price available on request

h = 3.50 m
(XNT 100)

The debinding/sintering combination systems from Thermo-Star are basically sintering furnaces, but a technology is used in these systems which enables the sintering of technical ceramics with low binding agent content. Temperatures of up to 1800°C are possible. Every system in the XNT range is fitted with high-performance fans which ensure a high

Delivery time, 12 weeks according to availability. Financing and leasing options available.

air exchange rate in the chamber as well as a catalytic exhaust fume cleaning system. The systems are available with a useful volume of 5 litres and upwards. All of the larger constructions may be implemented on request.

Basic data

- Temperatures of up to 1800°C
- 4 sided heating
- Very quick heating and cooling rates
- Universal loading options/ Solid stone floor
- Failsafe sintering process/ Heating elements connected in parallel
- Power supply to heating elements via maintenance free rail system
- Exhaust fume cleaning by way of catalytic or thermal after-burning
- High air exchange rates in the chamber
- For technical ceramics with low binder content

Extras:

Fibre-free insulation
Active air injection (heated or unheated)
SPC-controller
PC software, Ethernet and USB interface
Automatic exhaust air flap control
Programme-controlled process gas supply

HYBRID

Combination sintering and debinding furnace with fully-automated transport system

Price available on request

Computer-controlled manufacturing procedures can be found in all areas of production and research.

The Hybrid 5 is our smallest CIM-system and was developed as a laboratory and production line unit in a compact format. The Hybrid system is made up of a sintering furnace, a debinding

Delivery time, 12 weeks according to availability. Financing and leasing options available.

furnace and a loading/unloading station which are all are connected via an automated transport system.

The time-intensive transfer of delicate parts by hand is thus eliminated. During the transport cycles the structure of the fired items is monitored and changes are indicated.
In combination with the separated loading and unloading stations at the head ends of the system, a continuous production can be enables since the parallel switching of the heating elements prevents a completed failure of one of the chambers.

The combination of sintering and debinding furnace is ideal for R&D, QA or for further processing after ceramic injection moulding.

The usable volume of the system (Figure: Hybrid 5 with 5 litres) is between 5 and 20 litres; adapted to your requirements.

The modular construction of the hybrid system enables simple and individual expansion by the addition of other systems.

Basic data

- Laboratory and production line in compact format
- Ideal for R&D, QA or for further processing
  after ceramic injection moulding
- Combination system made up of a sintering and debinding furnace
- Fully automated transport system
  With three furnace doors

Basic data

- Separate loading and unloading station
- Automatic monitoring of the firing item structure during transport cycles

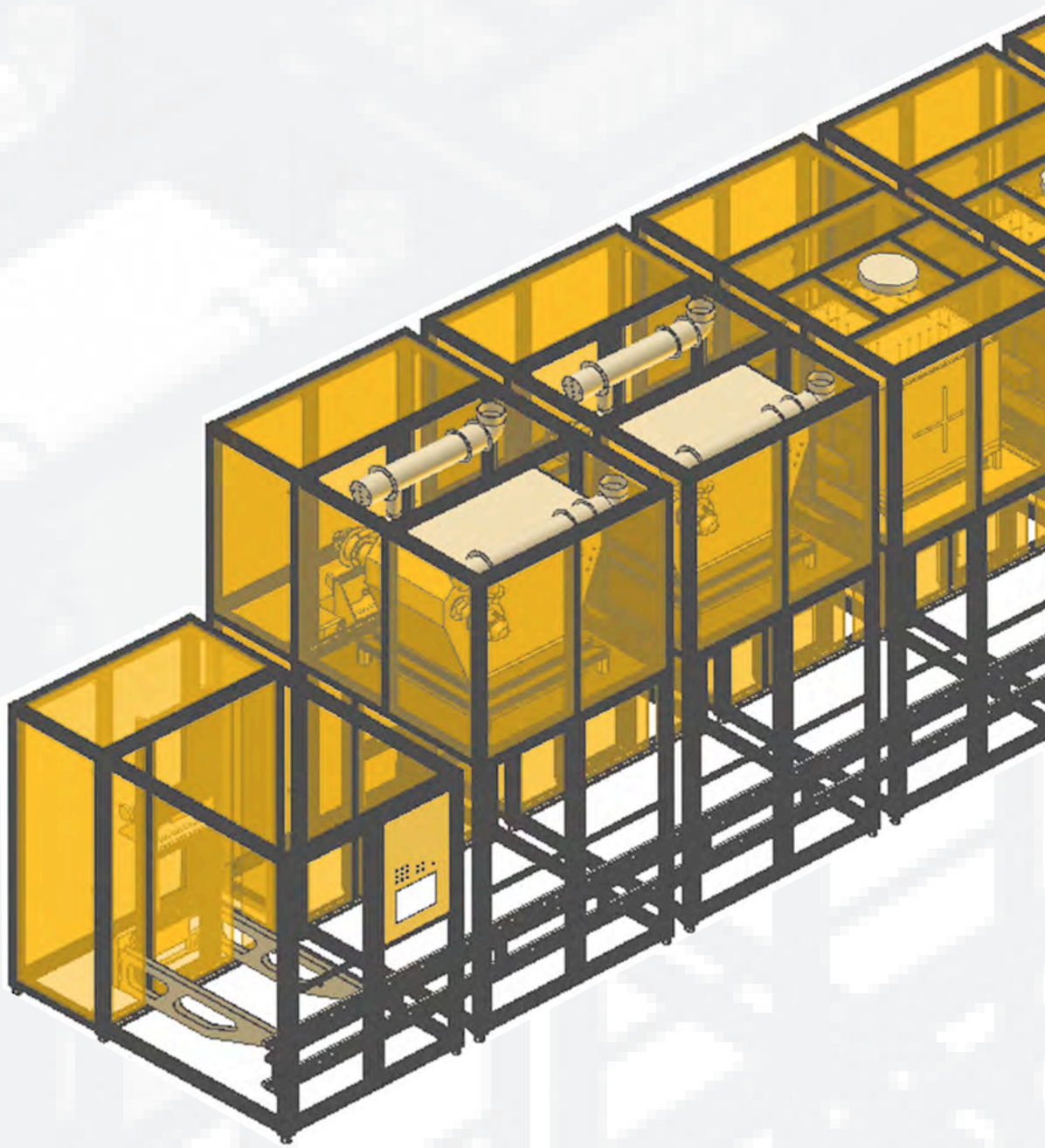
Extras:

Usable volume from 5 to 20 litres
Modular expansions available as required
Active air injection (heated or unheated)
SPC-controller with emergency power supply
PC software, Ethernet and USB interface
Failsafe process/parallel connected
heating elements
Coloured touchscreen with multiple language menu
Programme-controlled process gas supply

HYBRID-SYSTEM 250

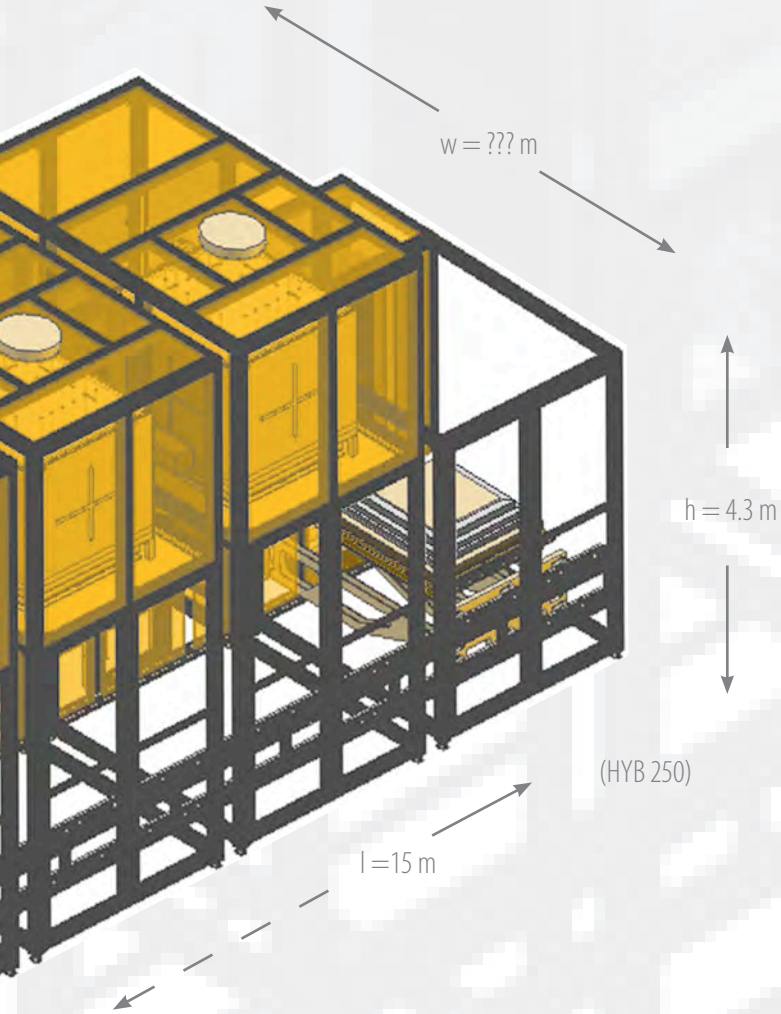
Individual combination - CIM-systems

Price available on request



Large hybrid systems are designed for production. These are coordinated with you and your process requirements before construction begins. The combination of furnace modules and transport units is adapted optimally in order to ensure as high a throughput as possible, whilst maintaining the high quality requirements for the end product. Whereas the design of a

Delivery times in accordance with offer and as agreed. Financing and leasing options available.



Basic data

- Production lines according to individual requirement
- Ideal for R&D, QA or for further processing after ceramic injection moulding
- Combination system
- Fully automated transport system
- Separate loading and unloading station
- Automatic monitoring of the firing item structure during transport cycles

Extras:

Usable volume from 20 to 2000 litres
Modular expansions available as required
Active air injection (heated or unheated)
SPC-controller with emergency power supply
PC software, Ethernet and USB interface
Failsafe process/parallel connected heating elements
Coloured touchscreen with multiple language menu
Programme-controlled process gas supply

specialist industrial line is based primarily on the required functionality, the appearance is also very important. For this reason, when it comes to the construction of a system, we place great value in ensuring that compact dimensions, user-friendliness, modern design and the maintenance of standardised specifications all come together.

TROLLEY HEARTH FURNACE

Atmospheric sintering furnaces for demanding thermal processes

Available as of: € 13.000*

Our trolley hearth furnaces correspond as far as heating technology, for the most part, to the chamber furnace. The main difference between it and the chamber furnace is the size and thus the capacity. In order to handle larger dimensions and greater loading weights, the hearth trolley furnace has a base that can be moved out of the chamber on a rail system.

* plus VAT

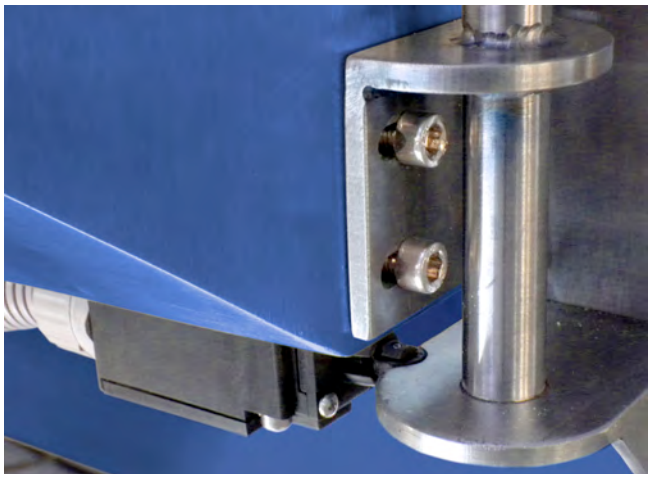
Delivery time, 6 weeks according to availability. Financing and leasing options available.

Ideal for bulky and heavy items

The free standing base can then be loaded from four or five sides and enables the transportation of bulky or heavy products using conveyor truck or crane systems.

As with other products, Thermo-Star employs only high-quality materials and components from renowned manufacturers in the construction of hearth trolley furnaces. Four different furnace sizes are offered by default, 500, 860, 1000 and 1500 litres. Further, any size and shape may be implemented on request. The usage temperatures go up to 1400°C. All hearth trolley furnaces are heated on five sides by default and can be made with a trolley on castors or on rails.

(heated furnace base)



(door safety switch)

A high-quality insulating refractory brick and multiple layer back insulation enable an absolutely even temperature distribution. All hearth trolley furnaces can be fitted with multiple-zone regulation in order to implement a failsafe process.

Basic data

- Furnace sizes from 500 to 1500 litres
- Usage temperatures of up to 1400°C
- Multiple layer lightweight refractory brick
- Wire heating on bearing tube, in ribs or free-radiating
- SIC top and base plates
- Compact programme regulator with 5 adjustable programmes

Extras:

Trolley on castors or rails

Two doors enable loading from both sides

Electrical lifting door(s)

Automatic exhaust air flap control

Automatic air supply fans with and without air pre-heating

Extraction hood above the furnace

All special wishes on request

TOP LOADER

Atmospheric sintering furnaces for demanding thermal processes

Available as of: € 1.400*

(modular expansion)

Like all furnace models produced by Thermo-Star, energy utilisation is very efficient due to the use of particularly high-quality insulation materials and specially calculated heating performances. This interplay enables a particularly good distribution of temperature in the combustion chamber.

* plus VAT

Delivery time, 6 weeks according to availability. Financing and leasing options available.

Round and oval up to 1320°C

The top loader furnace is particularly well suited for clay, porcelain and glass painting work and is designed for temperatures of up to 1320°C. The heating conductors are are in grooved bricks well protected .

This high-quality and elaborate processing ensures a long lifetime.

Of course, the all-round heating ensures optimum temperature distribution and constant homogeneous good firing results. This guarantees the best results for the most diverse of applications.

Basic data

- For use with temperatures of up to 1320°C
- Multiple layer lightweight refractory brick
- Wire heating on bearing tube, in ribs
- Compact programme regulator with 5 adjustable programmes
- Available in a number of sizes between 20 and 300 litres
- Furnace on castors
- Air supply base slider
- Construction forms round and oval

SPECIAL FURNACES

Special furnaces made on request in accordance with technical specifications

Flap furnace

Construction

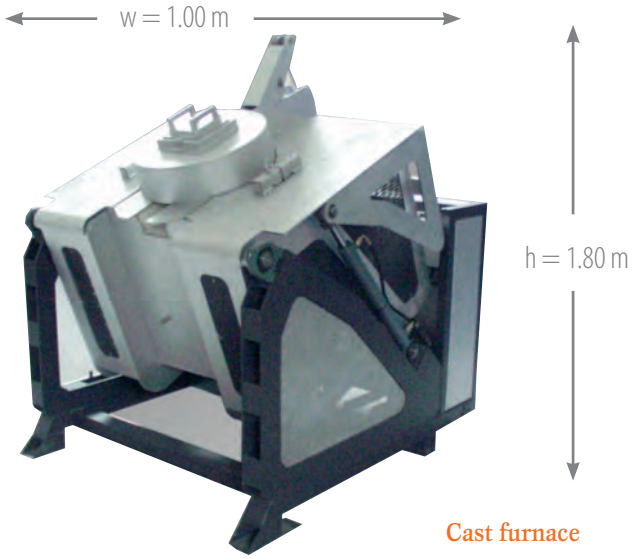
Whereas the design of a specialist industrial line is based primarily on the required functionality, the appearance is also very important. For this reason, when it comes to the construction of a system, we place great value in ensuring that compact dimensions, user-friendliness, modern design and the maintenance of standardised specifications all come together.

Other design aspects that we take into consideration include energy efficiency and environmentally friendliness.

Quick firing furnaces

Production

The installation, thus the process of setting up and assembling on site, is part of our comprehensive range of services. As constructor and manufacturer we are second to none in these tasks. During the construction and manufacturing phase, you will have received detailed information about the type and quantity of materials as well as the positioning and dimensioning of connections for your new system. The installation time will depend on the scope and the location. After a functional test and thorough introduction, you officially accept the system in order to ensure that the system more than meets your requirements in all ways.



Cast furnace

Maintenance

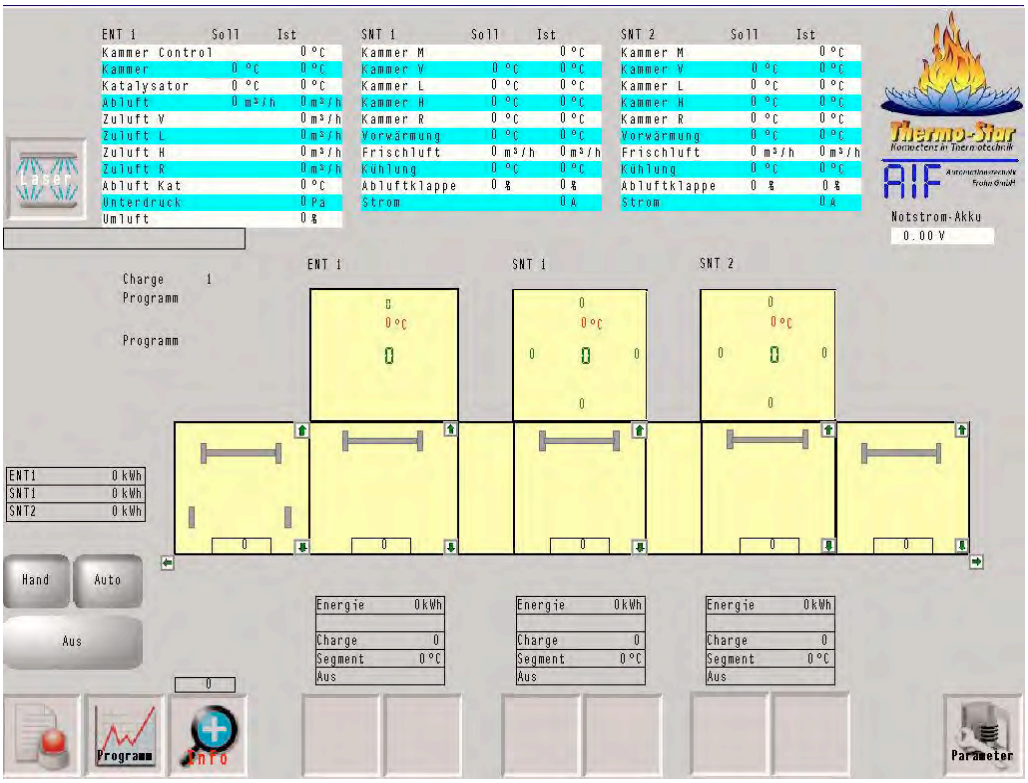
Servicing - Investing in your future

Regular and competent servicing of your system(s) is one of the best investments you can make in your productivity and ability to deliver. As with repairs, as a customer you profit from the maintenance and service ensured by our many year of experience in thermal processing technology. In accordance with existing maintenance plans, materials are refilled or replaced, moving parts are cleaned or greases, drive units adjusted, mechanical and electrical connections checked to ensure they are tight and all components are subject to a visual examination. Then the unit is calibrated and you receive an extensive maintenance report.

We are open to your needs and offer various models, ranging from individual orders to servicing and maintenance contracts.

VISUALISATION

When it comes to the visualisation and operation of systems, Thermo-Star has been trusting its own experiences and competences for many years. The programming as well as the entire process control is implemented with the help of an entry system developed by us which offers a high level of operating convenience via an HMI.



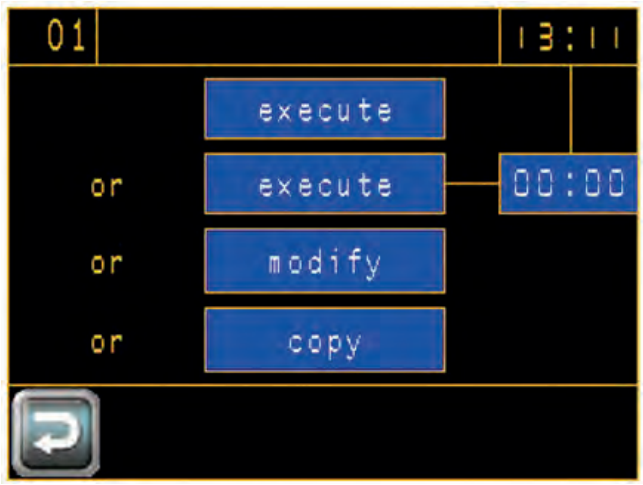
The key properties of the system are durability, robustness, reliability and almost unlimited adaptive capabilities. But for the user, the most important thing is the clearly structured, multiple-language operating interface.

On the overview page, all systems connected to the HMI are shown. By selecting a system the user is able to conveniently access the running process and view all relevant process data at a glance.

All of the customer-specific process parameters such as intended and actual temperatures, air pre-heating (made up of air flow rate and temperature) process gas supply, exhaust air temperature and much more can be displayed or hidden as required.

Programme administration is easily opened via the overview page. This page makes all functions available that are directly associated with the programmes (including called sintering programmes, combustion programmes, recipes, temperature-time profile etc.).

The internal programme memory of the furnace offers space for 6-12 individual programmes (according to version). An ordinary USB data carrier can be used to expand the storage by 30 programmes and can also be used for importing/exporting between furnaces of the same type. The letter "U" in front of a programme number indicates that it is a programme located on the USB data carrier. In the fields after the programme number, the name of the programme is shown.

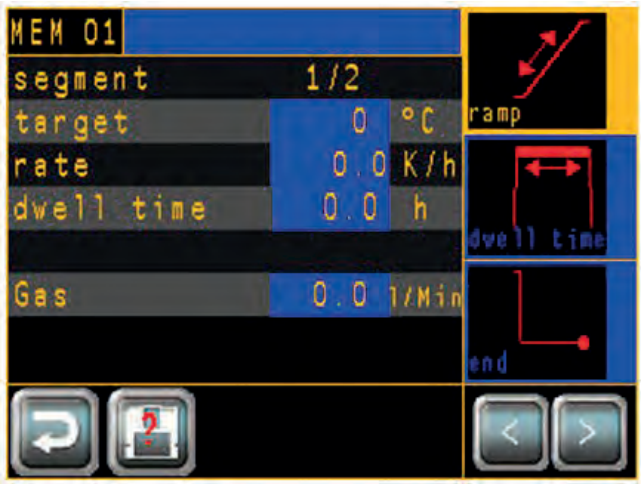


The screen for programme actions opens immediately after a programme is selected in programme administration. Alongside the selected programme (programme number and name) it also shows the current system time of the furnace and the timer start time.

The possible actions are, from top to bottom:

- Direct start (execute)
- Timer start (execute with time specification within 24 hours)
- Modify
- Copy

After selecting a programme in the list, the programme editor opens automatically. This screen is used to create new programmes, or



to modify existing ones and save them. Each programme consists of up to 20 segments. Each of these segments enables the desired temperature and other process parameters to be influenced.

The possible segment functions are:

- **Ramp**

A ramp is used to change the temperature(positive and negative). It is defined via the intended value (describes the temperature to be achieved at the end of this segment) and the increase rate (describes the speed or rate of temperature change which is used to achieve the intended value).

- **Holding time**

A holding time is designed to maintain the temperature achieved in the previous segment for a determined period of time. It is only defined by a time specification (duration).

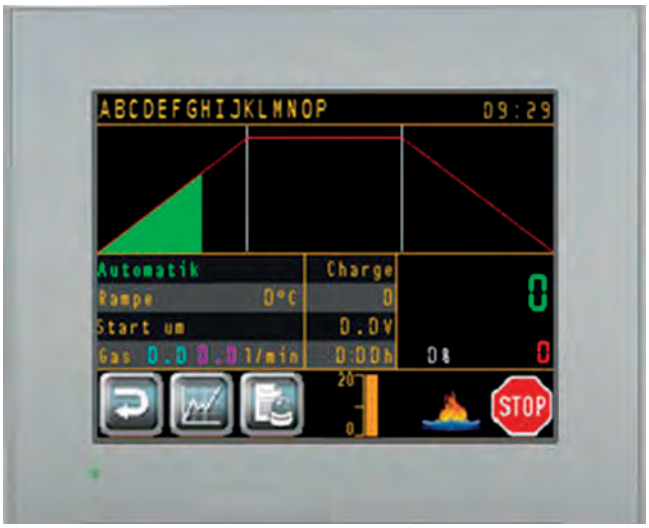
DOCUMENTATION

and data recording

• End

The end signalises to the controller that the programme ends with the previous segment. The end does not require further definition. The intended value is pre-set with the value "0" in order to enable as fast a cooling as possible.

HMI can be used to operate and monitor up to eight different systems from a single location. The user-interface can be adapted individually to the specifications of the customer.



As an absolute innovation, Thermo-Star offers customers the opportunity to control their systems via tablet or smartphone. This extremely innovative idea has the advantage that the system can be simply and quickly monitored, no matter where you are.

ThermoView

The company Thermo-Star offers a free PC software for the recording of data, documentation and monitoring of firing. This software can be linked via Ethernet to establish a quick and modern system connection. The software is a key basis for companies that wish to produce and certify products in accordance with DIN EN ISO 9000ff.

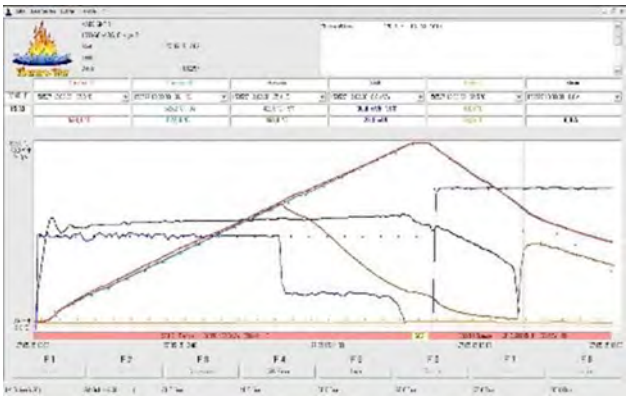
The "ThermoView" PC software also an own development, offers comprehensive programme administration and independently logs, on request, all relevant process data. It can be used to create programmes from the comfort of the

office and to change or modify them. The number of programmes that can be saved is practically unlimited.

This data is available to the customer in table and graphical format on the PC for evaluation. Another great advantage of data recording is that only the active programmes need be kept on the system, the others can be saved securely on a protected server. This means that programmes

are protected from unauthorised access or the copying of sensitive data.

In online mode, the operator is able to monitor the actual state of the system in real time.



All process data can be written as a CSV. File and thus archived securely and in a user-friendly way in databases.

Our QMS

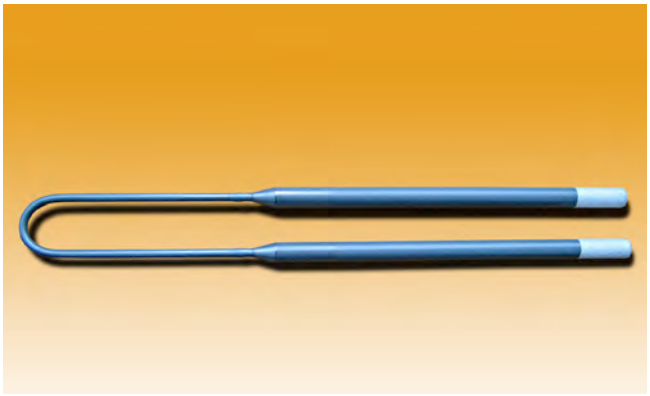
A QMS (Quality Management System) covers all organisational measures including the monitoring of such that are required in order to achieve, ensure and improve upon a specific quality.

As well-considered and functional QMS (pursued and certified either internally or on the basis of an existing standard such as TQM, EFQM or DIN EN ISO 9000 ff) is a key component of a producing company.

In order to ensure we meet our own expectations, we trust in the long-lasting business relationships to our suppliers, to their competences and to shared experiences for all purchased raw materials, semi-finished products and finished parts. Nevertheless, all goods received are subject to a simple test and subsequently checked more intensively either by way of samples or when there is cause for suspicion. We are able to manage without a comprehensive or complete control of received goods at the time.

The passion with which we produce our systems, our uncompromising demands with regard to quality and the fact that many components can only sensibly be checked under temperature means that all systems are subject to a 100% check either immediately before delivery or after final installation on site.

ACCESSORIES



Heating elements ensure the heating of the chamber. These are available in a wide variety of materials and sizes. On request, all current heating elements can be acquired at short notice.

Sintering aids are used to ensure that the items to be sintered are placed in the furnace so that the capacity of the furnace is employed in the best way possible. In doing so, the temperature distribution within the chamber should be influenced as little as possible. At the same time, sintering aids should remain stable at all temperatures and prevent deformation of the items being sintered.

In order to do justice to all requirements there is a sheer endless variety of materials (e.g. zirconium oxide, aluminium oxide, silicon carbide etc.) and forms (rods, plates, discs, triangles, beads, powder etc.) paints and other properties.

Services are, particularly when it comes to system construction, unfortunately undervalued in this day and age.

But competence services form the link between the requirements of the customer and the provider of a solution.

Our services cover all stages of the life of a system and include

the determination of requirements, design of the concept, the construction, transportation and set-up as well as the dismantling of individual furnaces or lines.

Even during the operating lifetime of a system you are able to profit from our many years of experience in fireproof linings, repairs, maintenance, calibrations, modernisation or the provision of replacement parts.

And we do not limit our services to our own products.

About us

The competence in thermal technology

represents:

HIGHEST QUALITY DEMANDS

RELIABILITY AND

CUSTOMER ORIENTED INNOVATIONS.

Thermo-Star is being run by the second generation and the company's customers continue to be impressed by the quality and reliability of the products created according to customer requirements. The foundation of the company philosophy was laid by founder Hans Kelichhaus more than 25 years ago.

Since 2011, his daughter Sonja Kelichhaus has been leading the company from the top and became managing director since 2013 after gradutating her studies in law.

A qualified team of employees looks after construction, quality management, assembly production and internal logistics, ensuring the smooth operation of product creation in accordance with customer needs.

The small sintering furnaces, originally intended for industrial testing purposes, have been refined in terms of both construction and appearance

over recent years. As a consequnce of creating smaller chambers it was possible to achieve faster heating and cooling rates, just as required by dental laboratories for use with CAD/CAM systems for the manufacture of dental supplies in ceramic or NEM alloys.

Thanks to close cooperation with partner companies and universities, we are increasingly acting as competent contacts for many issues with regard to heat treatments, above and beyond pure furnace technology.

Thermo-Star

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