

DIPARTIMENTO DI INGEGNERIA CIVILE E AMBIENTALE

Il segretario amministrativo

Oggetto:

affidamento diretto ex art. 1 comma 2 lett. a) DL 76/2020 – contratti funzionalmente dedicati all’attività di ricerca, trasferimento tecnologico e terza missione - fornitura fornace controllata in temperatura e con capacità di effettuare trattamenti termici in ambiente controllato - dipartimento di eccellenza

CIG Z84353BFB5

CUP

J91118000330006

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(Documento informatico firmato digitalmente ai sensi del D.Lgs 82/2005 s.m.i. e norme collegate)

Richiamato il DL n. 76 del 16/07/2020, convertito in Legge 11/09/2020 n. 120 recante “Misure urgenti per la semplificazione e l’innovazione digitale”, come modificato dal DL 77/2021, convertito in Legge 29/07/2021, n. 108;

Visto in particolare l’art. 1 del sopra richiamato DL semplificazioni a mente del quale “Al fine di incentivare gli investimenti pubblici nel settore delle infrastrutture e dei servizi pubblici, nonché al fine di far fronte alle ricadute economiche negative a seguito delle misure di contenimento e dell’emergenza sanitaria globale del COVID-19, in deroga agli articoli 36, comma 2, e 157, comma 2, del D.Lgs. 50/2016, recante Codice dei contratti pubblici, si applicano le procedure di affidamento di cui ai commi 2, 3 e 4, Codice dei contratti pubblici, si applicano le procedure di affidamento di cui ai commi 2, 3 e 4, qualora la determina a contrarre o altro atto di avvio del procedimento equivalente sia adottato entro il 30 giugno 2023”;

Rilevato che l’articolo 1, comma 2, lett. a) del dl 76/20, come modificato dal DL 77/2021, disciplina le procedure per l’affidamento diretto di lavori, servizi e forniture sotto soglia e prevede che la stazione appaltante possa affidare direttamente appalti di servizi e forniture di importo inferiore a 139.000 euro IVA esclusa;

Ricordato che il Dipartimento di Ingegneria Civile e Ambientale è risultato aggiudicatario del finanziamento MIUR destinato ai Dipartimenti di Eccellenza;

Ricordato in particolare che il punto OS-I#2 del progetto, rubricato “Potenziamento delle dotazioni strumentali dei laboratori esistenti e delle strutture didattiche”, prevede un investimento complessivo di € 350.000,00, per una serie di interventi sommariamente descritti;

Richiamata la nota del MIUR 1149 del 22/01/2021 avente a oggetto “Dipartimenti di Eccellenza 2018-2022, avvio monitoraggio delle attività 2020”;

Richiamata la delibera dello Steering Committee del 05/11/2021, con la quale sono state assunte determinazioni in merito all’utilizzo dei fondi residui del progetto di Eccellenza ed è stato deciso di apportare modifiche al quadro economico dello stesso, in conformità con gli obiettivi dello stesso;

Vista la relazione a firma del Prof. Luigi Torre con la quale, nell’ambito del potenziamento e completamento infrastrutturale del laboratorio di scienza e tecnologia dei materiali in Terni, si rende nota la necessità di acquistare una fornace controllata in temperatura e con capacità di effettuare trattamenti termici (carbonizzazioni) in ambiente controllato;

Richiamata la relazione di cui sopra, allegata alla presente, per quanto riguarda le specifiche tecniche dei prodotti da acquistare;

Dato atto che è stata effettuata una ricerca informale di mercato, all’esito della quale il responsabile scientifico ha selezionato la società Nabertherm GmbH, Bahnhofstraße 20, 28865 Lilienthal/Bremen, Germany, VAT DE813108298, la quale ha formulato preventivo allegato per € 8.660,00;

Ricordato che la società interpellata è leader a livello europeo nel campo della produzione di impianti e forni standard per processi termici personalizzati, completi di tecnica di convogliamento e sistemi di carico;

Considerato che il presente approvvigionamento ha un valore rientrante nel limite di cui al richiamato articolo 1, comma 2, lett. a);

Richiamata la circolare prot. 46539 del 23/06/2016 del Dirigente della Ripartizione Affari Generali, Legali e contratti dell’Università degli Studi di Perugia, a mente della quale, in assenza di una specifica nomina nel primo atto di ciascuna procedura, il RUP è individuato ex art. 31 NCA nella figura apicale del responsabile

dell'unità organizzativa, ovvero nel Segretario Amministrativo nel caso dei Dipartimenti e Centri;

Dato atto che per il presente affidamento non vi era l'obbligo del preventivo inserimento nel programma biennale degli acquisti di beni e servizi di cui all'art. 21, comma 6, del D.Lgs. 50/2016 in quanto di importo inferiore a € 40.000,00;

Viste le Linee guida n. 4, di attuazione del D.Lgs. 50/2016, recanti "Procedure per l'affidamento dei contratti pubblici di importo inferiore alle soglie di rilevanza comunitaria, indagini di mercato e formazione e gestione degli elenchi di operatori economici", aggiornate al D.Lgs. 56/2017;

Dato atto che ai sensi di quanto disposto dall'art. 4 del D.L. 126/2019, convertito con modificazioni dalla L. 159/2019, non si applicano alle università, per l'acquisto di beni e servizi funzionalmente destinati all'attività di ricerca, trasferimento tecnologico e terza missione:

a) le disposizioni di cui all'articolo 1, commi 449, 450 e 452, L. 296/2006, in materia di ricorso alle convenzioni-quadro e al mercato elettronico delle pubbliche amministrazioni e di utilizzo della rete telematica;

b) le disposizioni di cui all'articolo 1, commi da 512 a 516, L. 208/2015, in materia di ricorso agli strumenti di acquisto e negoziazione della Consip S.p.a. per gli acquisti di beni e servizi informatici e di connettività;

Dato atto che trattandosi di contratto di fornitura è esclusa la predisposizione del DUVRI e la conseguente stima dei costi della sicurezza;

Dato atto che è stato rispettato il principio di rotazione degli affidamenti, tenuto conto delle Linee Guida dell'Università degli Studi di Perugia in materia di rotazione degli inviti e degli affidamenti e verifiche negli affidamenti diretti di lavori, servizi e forniture;

Dato atto che, ai sensi dell'art. 4 DL n. 76 del 16/7/2020, convertito in Legge 11/09/2020 n. 120, non si è proceduto a richiedere le garanzie provvisorie di cui all'art. 93 del D.Lgs. 50/2016;

Ricordato che è possibile procedere alla stipula dei contratti o all'inoltro dell'ordine sulla base di un'apposita autodichiarazione resa dall'operatore economico ai sensi e per gli effetti del DPR 445/2000, anche sul modello del documento di gara unico europeo (DGUE), effettuando successivamente le verifiche sui requisiti di ordine generale di cui all'art. 80 del Codice a condizione che il contratto contenga apposita clausola in cui la stazione appaltante si riserva, in caso di successivo accertamento del difetto del possesso dei requisiti prescritti, di:

- risolvere il contratto;
- pagare un corrispettivo per il valore delle prestazioni già eseguite e nei limiti dell'utilità ricevuta;
- incamerare la cauzione definitiva, ove richiesta o, in alternativa, applicare una penale predeterminata del 10% del valore della parte certa del contratto;

Dato atto che:

- il pagamento della prestazione verrà effettuato previa verifica dell'esatto adempimento della prestazione esclusivamente con le modalità di cui all'art. 3 della L. 136/2010, e precisamente tramite bonifico su conto corrente bancario o postale dedicato alle commesse pubbliche
- ai fini di assicurare la tracciabilità dei movimenti finanziari relativi a rapporti contrattuali in ambito pubblico al presente affidamento è stato attribuito il codice CIG indicato in calce all'oggetto;

Richiamato l'art. 1, comma 3 del D.L. n. 76/2020, convertito in Legge 11/09/2020, n. 120, il quale dispone che gli affidamenti diretti di cui all'art. 1, comma 2, lett. a), possono essere realizzati tramite determina a contrarre, o atto equivalente, che contenga gli elementi descritti nell'articolo 32, comma 2, del D.Lgs. 50/2016;

Dato atto che il presente provvedimento sarà pubblicato sul profilo del committente, nella sezione "Amministrazione trasparente" ai sensi dell'articolo 29 del D. Lgs. 50/2016;

DETERMINA

- di affidare, ai sensi dell'art.1, comma 2, lett. a) del DL n. 76 del 16/7/2020, convertito in Legge 11/09/2020 n. 120, come modificato dal DL 77/2021, per le motivazioni indicate in premessa, alla società Nabertherm GmbH, Bahnhofstraße 20, 28865 Lilienthal/Bremen, Germany, VAT DE813108298 la fornitura di una fornace controllata in temperatura e con capacità di effettuare trattamenti termici in ambiente controllato, nell'ambito del progetto di potenziamento dei laboratori del Dipartimento di Eccellenza;
- di perfezionare il contratto, ai sensi dell'art. 32, comma 14 del D.Lgs. 50/2016, mediante scrittura privata o scambio di lettere commerciali, sottoscritti con firma digitale valida e tramite l'uso della posta elettronica certificata;
- di disporre che il costo totale per la fornitura in trattazione pari ad € 8.660,00 oltre IVA, graverà alla UA.PG.DICA voce COAN CA.01.10.02.03.01 Attrezzatura per la ricerca scientifica - pj ECCELLENZA_DICA del bilancio autorizzatorio dell'esercizio in corso;
- di pubblicare il presente provvedimento sul sito internet dell'Università degli Studi di Perugia, sezione Amministrazione Trasparente, assolvendo agli obblighi previsti dall'articolo 37, comma 1, lettera b) del D. Lgs. 33/2013 e dall'articolo 29, comma 1 del D. Lgs. 50/2016.

Perugia, 16/02/2022

Il segretario amministrativo

Terni, 12/11/2021

Oggetto: Richiesta di acquisto di una fornace controllata in temperatura e con capacità di effettuare trattamenti termici (carbonizzazioni) in ambiente controllato

Nell'ambito della ottimizzazione delle capacità del Dipartimento di Ingegneria Civile ed Ambientale (DICA), contestualmente all'inserimento da parte dell'Agenzia Nazionale di Valutazione del sistema Universitario e della Ricerca (ANVUR) del DICA tra i Dipartimenti di Eccellenza in Italia per il quinquennio 2018-2022, il sottoscritto, Prof. Luigi Torre

DICHIARA

che al fine di promuovere il potenziamento dell'eccellenza della ricerca nell'ambito dei materiali compositi avanzati è necessario l'acquisto di una muffola (o fornace) controllata in temperatura e con capacità di effettuare trattamenti termici (carbonizzazioni) in ambiente controllato (in quasi assenza di ossigeno). In particolare, tramite l'acquisizione di questo hardware il nostro gruppo di ricerca acquisirà la capacità di poter studiare materiali - come i compositi carbonio/fenolica - quando sottoposti alla carbonizzazione ovvero ci permetterà di approfondire le nostre capacità di capire la cinetica di degradazione di questi materiali quando soggetti al fenomeno dell'ablazione.

Il sistema che andremo ad acquistare permetterà di impostare un determinato profilo di temperatura come pure i tassi di riscaldamento in modo da portare a termine in modo ben determinato la carbonizzazione del materiale da studiare. Si allega l'offerta della fornace da acquistare comprensiva di tutti i dettagli tecnici del sistema complessivo.

Si richiederà un intervento successivo e separato per l'allacciamento della fornace al sistema di gas per il controllo dell'atmosfera.

Prof. Luigi Torre





Nabertherm GmbH · Bahnhofstr. 20 · 28865 Lilienthal/Bremen

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OFFER No. 309675 /51

11.11.2021

Your Cust.-No.: -----
 Your Inquiry:
 Dated: 10.11.2021

Description of Goods	Qty	Unit Price EUR	Total Price EUR
N 7/H with Controller P 470 with integrated process documentation	1,00 pc	8.540,00	8.540,00

Electrically heated table-top muffle furnace



Picture shows similar furnace with optional gas box

ISO 9001 Commerzbank, Bremen
 BLZ 290 800 10 Kto 1 064 800
 IBAN DE58 2908 0010 0106 4800 00
 BIC/SWIFT DRESDEFF290

Deutsche Bank, Bremen
 BLZ 290 700 50 Kto 2 506 509
 IBAN DE44 2907 0050 0250 6509 00
 BIC/SWIFT DEUTDE33XXX

Kreissparkasse Rotenburg-Osterholz
 BLZ 241 512 35 Kto 106 112
 IBAN DE18 2415 1235 0000 1061 12
 BIC/SWIFT BRLADE21ROB

Nabertherm GmbH, Sitz Lilienthal
 Amtsgericht Walsrode, HRB 121582
 Geschäftsführer: Timm Grotheer
 Aufsichtsratsvorsitzender: Martin Naber



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12. Terms and Conditions

1. Scope of supply

- Electrically heated chamber furnace as table-top model N 7/H with
 - Controller P 470
 - NTLog / NTGraph Basic integrated process documentation by means of data recording on customer's USB flash drive
 - 2x Charging plate N7/H
 - 1x Annealing foil
 - 2x Protective gas box N 7/H
 - 1x Port with ceramic tube $\varnothing = 18$ mm
 - SiC-protection tiles for side heating elements
 - Charge control and integrated documentation for gas boxes
 - VCD Software with Ethernet-Port

2. Process

2.1. Process according to customer's specifications

Material	to be specified by the customer
Process	to be specified by the customer
Max. product dimensions	to be specified by the customer
Max. charge weight	to be specified by the customer
Cycle details	to be specified by the customer
Process guarantee	customer takes over process responsibility

2.2. Process defined by Nabertherm

- The furnace can be opened and loaded unloaded both in cold and hot condition



3. Defined application

- For thermal processes where the loading and unloading will be carried out up to T_{max}
- Furnace for continuous operation
- Furnace has to be placed on a non-combustible ground
- No generation of explosive gas atmospheres as a result of exhaust gases, vapours, or other combustible substances from the charge or test material.
 - This furnace does not provide for a safety system for processes generating explosive gas mixtures, e.g. debinding processes. If used for this kind of processes the concentration of organic gases in the furnace must never exceed 3% of the lower explosion level (LEL). This precondition is not only valid for normal operation but in particular for exceptional circumstances, e.g. process failures (caused by a module breakdown, etc.).
- To be used for processes with no use generation of hazardous substances which require additional protective measures
- No thermal processes with uncontrolled chemical or thermodynamic reactions
- Not useful for food heating

4. Applied norms and specifications

4.1. General Norms and Directives

- EN 60335-1
- EN 61000-6-1, EN 61000-6-3
- RoHS directive 2011/65/EU

4.2. Customer's specifications

- Not considered

4.3. Specific norms

- The costs of compliance with local codes and regulations are not included in the quote and will be charged separately. The customer will inform and advise the supplier about any additional local codes to make sure that the quote can be amended accordingly.

5. Technical specifications

Outer dimensions ¹	approx. 770 x 650 x 570 mm (W x D x H)
Furnace chamber	approx. 250 x 250 x 140 mm (w x d x h)
Work space ²	approx. 150 x 150 x 100 mm (w x d x h)
Furnace chamber volume	approx. 9 liters
Weight	approx. 60 kg
T_{max}	1280 °C
Temperature operating range	900 °C - 1280 °C
Temperature uniformity within temperature operating range	± 10 K according to DIN 17052-1 in the empty work space
Supply voltage	230 V 1/N/PE 50 Hz, fuse protection without earth-leakage



	breaker, IT-net connection possible against surcharge
Power rating	approx. 3,0 kW
Max allowed charge weight	10 kg uniformly distributed load

¹ Dimensions without external additions e.g. chimney

² Defined space inside furnace where the temperature uniformity is valid

External dimensions vary depending on additional equipment. Exact dimensions on request.

6. Customized furnace design

6.1. Basic Design / Housing

- Rugged industrial design with housing made of stainless steel sheets
- Designed as table-top model
- Controller on the right side of the furnace

6.2. Door

- Manually operated swing door, with gas-pressure damper
- Downward swinging

6.3. Insulation

- Multi-layer, robust insulation with lightweight refractory bricks and high-quality back-up insulation
- Integrated exhaust on the left side of the furnace
- Exclusive use of insulation materials without categorization according to EC Regulation No 1272/2008 (CLP). This explicitly means that alumino silicate wool, also known as "refractory ceramic fiber" (RCF), which is classified and possibly carcinogenic, is not used.

6.4. Heating system

- Three-sided heating which are in bottom and side walls
- Free-radiating heating elements mounted on support tubes
- Bottom heating covered by SiC plate for protection
- Single-zone control

6.5. Gas management system

No gas management system included (see additional equipment)

6.6. Protective gas box/ Annealing box

- No Protective gas box/ Annealing box included, (see additional equipment)
- Ovens with gassing boxes are characterized by a very good price / performance ratio. In gas boxes, good heat treatment results under protective gas can be achieved, which are sufficient for many requirements. If the charge requires a completely oxygen-free atmosphere, retort furnaces can be offered. In this case we will be pleased to send you an alternative offer
- Note:

Wear parts made of metal inside the furnace such as muffles, insert boxes, roller conveyors, charging plates or sheet metal linings are subject to increased wear depending on the respective use. In addition to the process and the type of application, the service life also depends on the frequency of use. There may be distortion of these components. A slight deformation is normal and requires no further measures. However, if larger distortions occur, rework or replacement of the component is recommended. A regular check of the functionality by the customer is recommended.

7. Controls, switchgear and process documentation

7.1. Controller P470

- Easy and individual programming
- Bright, high-contrast, black-white LC display
- Status messages in clear text display (2 text lines and a ticker)
- Data input by jog dial and 4 buttons
(start/stop/pause, menu, back, info)
- 50 programs storable with 40 adjustable segments each
- User management with three different access levels for an increased process safety
 - Operator = Basic functions to start/stop the furnace
 - Supervisor = additional rights for program entry and modifications
 - Admin = additional rights to change parameters etc.
- Controller lock function with password as protection against mis-operation
- Skip function to jump to the next segment in a running program
- Input of ramps, optionally
 - by gradient and temperature (e.g. 100 K/h until 600 °C)
 - or by time and temperature (e.g. in 6 hours to 600 °C)
- Input of set points in increments of 1 °C resp. 1 min
- Copy function of programs for simple modifications
- Delete function of programs
- Program start at current furnace temperature possible
- Up to six segmental switchable functions, e. g. relays for flaps, gas systems, cooling etc., depending on furnace equipment
- Extra functions with clear text description, e. g. flap, gas-supply, etc.
- Extra functions can be also used after program end (e.g. to continue a fan running)
- Timer with start time adjustable via real time clock
- Detailed information menu with
 - Operating hours counter
 - kWh counter
 - Error message history
 - Output of control values



Controller P470



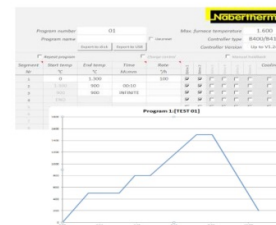
Simple data input by jog dial with push function



- Input of control PID parameters in freely selectable temperature steps
Measurement range calibration with up to 10 selectable supporting points
- Measurement accuracy ± 1 °C
- Self-optimizing function for single zone-controlled furnaces
- Temperature alarm functions: min, max, band alarm
- Settable modes in case of power outage
 - Program continues when power returns, independent from other conditions
 - Program continues when power returns, if outage time < 2 min. Otherwise, program is aborted.
 - Program continues when power returns, if temperature did not fall more than 50 K. Otherwise, program is aborted.
 - Program is aborted when power returns, independent from other conditions
- Language selection of:
DE/EN/FR/IT/SP/RU/NL/DK/NO/PL/PT/SE/CZ/HU/TR/RO
- °C/°F selection
- NTLog USB interface for recording of process data, visualization possible with NTGraph
- Internal over temperature protection with automatic switch off if set-temperature is exceeded with more than 30 °C for more 3 min.
- Integrated gradient monitoring with adjustable switch-off parameters (temperatures and deviations): if the set deviation is exceeded during heat-up the furnace heating is switched off.
- Import and export function via USB port for simplified service checks or program import (see description NT-Edit)
- Online tutorials available: www.nabertherm.com/tutorials/controller
- Optionally available (other controller types may be required)
- Data interface via Ethernet
- Acoustic signal

7.2. Freeware NTEdit for program editing on a PC

- Clearly structured editing of programs on a PC
- Transfer to the controller via customer's USB stick
- Import function of programs via customer's USB stick
- Graphical overview of the set program on a PC
- Language selection of: DE/EN/FR/IT/SP/RU/ZN/PT
- Download is provided at <http://www.nabertherm.com/download/>
- Use of MS Excel required
- For PCs with Microsoft Office 2007/2010/2013 and Office 365 for Windows (32/64Bit)



7.3. Switchgear

- Connection with plug connector
- Thermocouples type S

- Thyristor control (SSR logic operation)
- Safety contactor
- Environmental conditions for electrical equipment:
 - temperature +5°C up to +40°C
 - humidity < 80%, not precipitating

7.4. NTLog/NTGraph for Nabertherm controllers

Process documentation by means of data recording on customer's USB flash drive

- Data stored in CSV format, evaluation via spreadsheet program (e. g. MS Excel for Windows) possible
- Recorded data: time difference, segment number, temperature set points, actual temperatures, power outputs, control functions
- Checksums to protect against accidental data manipulation. For enhanced requirements with respect to unforgeable documentation according to ISO 9000 et seqq. as well as for long time documentation Nabertherm offers other professional solutions.
- Easily accessible USB port
- Storage volume, depending on controller type:
 - P300 / 310/330 B130 / 150/180 C280, all from version 3.0:
Up to 16,000 sets of data in up to 8 files
 - B400 / 410, C440 / 450, P470 / 480:
Up to 80,000 sets of data in up to 16 files



USB-Port

When saving further sets of data, the eldest file is overwritten.

- Simultaneous use of NTLog and Controltherm MV is not possible. With the 400 series controllers, the use of VCD software and NTLog is possible.



Overview NT-Graph

Visualization of Process Data with NTGraph (freeware)

- Software tool NTGraph to visualize the data in MS Excel for Windows (versions 2003/2010/2013/ Office 365) available free of charge
- Data displayed as a diagram, in a table or a simple report
- 8 different pre-set designs for the curve design available (color, scaling or naming), individually adaptable
- Prepared in 8 languages (DE/EN/FR/IT/SP/IT/CH/RU), adaptation of texts in other languages possible. Excel reports of the Russian and Chinese version in English, description of the data sets in English or German
- This charge-free tool is excluded from warranty; there is no entitlement to support. In case NTGraph is not compatible to your PC system another spreadsheet program can be used for data evaluation.



Process cycle diagram

8. Included additional equipment

- 2x Charging plate N7/H
 - Article no. 628000138
 - Outer dimensions approx. 240 x 290 x 25 mm (W x D x H)
 - To protect furnace bottom during charging and recommended for using gas- or annealing-boxes



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- Three raised edges
 - Material 1.4841
 - Tmax: **1100°C**

 - 1x Annealing foil
 - For protection of steel against oxidation and de-carburization
 - Stainless steel heat treating foil for single use
 - 610 mm x 7,5 m (width x length)
 - Tmax: **1100°C**

 - 2x Protective gas box N 7/H
 - Article no. 631000963
 - Outer dimensions¹ approx. 216 x 226 x 116 mm (W x D x H)
 - Inner dimensions approx. 180 x 190 x 90 mm (w x d x h)
 - For heat treatment of larger workpieces with non-combustible protective gases like argon, nitrogen and forming gas (observe national regulations)
 - Tmax: **1100°C**
 - Protective gas box with lid, protective gas inlet and outlet through furnace collar, incl. gas connection with quick-release coupling and 9 mm (id) hose connection
 - Charge thermocouple type K
 - Lid sealed with fibre material
 - Made of steel 1.4841 (alloy 314)
 - Together with the gas box an optional charging plate is recommended
 - Heat treatment accessories with parts protruding from the furnace must be connected electrically to the furnace housing with a ground cable by a qualified electrician. It is not possible to operate these furnaces with an earth leakage breaker
 - Highly reactive materials, such as most titanium alloys, could react even with low concentrations of residual oxygen in the process chamber. For such materials retort furnaces are recommended and could be offered alternatively.
- ¹ Without piping
- 1x Port with ceramic tube $\varnothing = 18$ mm
(cannot be used if SiC-protection tiles for side heating elements are installed in the furnace)
 - inner diameter $\varnothing = 18$ mm versatile useable
 - Incl. screw cap
 - A earth connection for inserted parts is required
 - Standard position: left side

 - SiC-protection tiles for side heating elements
(Port with ceramic tube $\varnothing = 18$ mm cannot be used if SiC-protection tiles for side heating elements are installed in the furnace)
 - To protect the heating elements



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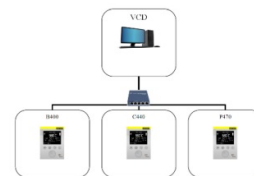
- SiC- plates are installed at both sides
- The oven width is reduced by 25mm
- Cannot be combined with a side port

- Charge control and integrated documentation for gas boxes
 - Controller P470 instead of standard controller
 - Charge-/ chamber-control selectable at controller
 - Charge-control via thermocouple of gas box (Additional equipment)
 - Cascade-control (Controlled in relation to furnace temperature)
 - Documentation via NT Log or optional VCD Software (Additional equipment)
 - Connection cable for type K with plug
 - Terminal for connection cable
 - For charge control without gas box a charge thermocouple and a port is required

- VCD Software with Ethernet-Port

Software for visualization, controls and documentation of up to 16 furnaces, equipped with following controllers:

 - B400/B410, C440/C450, P470/P480;
 - with additional hardware (price on request) also B130, B150, B180, C280, C290, C295, P300, P310, and P330, version 3.0 or better
 - Eurotherm 3504 / 3508, from version 2.18 with additional hardware (Ethernet interface and license module) with the following range of functions:
 - 6 (3504) or 3 (3508) switchable functions
 - Up to 2 control loops (e.g. 1 zone + batch, 1 zone + controlled cooling or 2 zones)
 - Max. dwell time per segment: 100h per program segment
 - As program controller or continuous operation with one setpoint.
 - Program input only by the VCD software

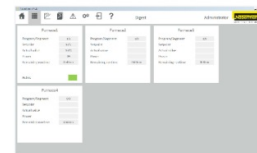


Example structure with 3 furnaces

The furnace will be connected to a standard PC, provided by the customer. Access from several PCs to one furnace is not possible. The price is valid for one furnace. For each additional furnace an Ethernet module (hardware) is necessary.

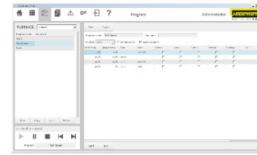
Performance

- Parallel operation/monitoring and documentation of up to 16 furnaces including additional heating zones (if available)
- Archiving, graphical and numerical presentation of process data
- Programming of heat treatment cycle incl. all functions directly on the computer
- Remote start of a furnace run via the VCD software
- Export of archived data as a report (PDF) or text file (CSV)
- Free text input of batch data with search function

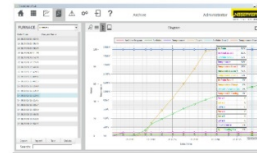


Graphics furnace overview (version with 4 furnaces)

- Program management by means of program lists (selection of programs, program creation, copying, deleting)
- Program input in a table form, plain text labeling of the program name with additional comments for users
- Display of status information: Program, segment, actual/setpoint value, heat output, operating time, remaining operating time
- Furnace-specific archive function: completed records can be retrieved from the archive and, if necessary, exported (CSV/XML format) or can be printed as a report.
- Multi-level user administration [Operator] / [Supervisor] / [Admin] with different access rights to the software
- Locking function
- Menu messages with search filter for specific events
- Menu settings with the following functions
 - Adjustment of the furnace name (customer-specific names) and sequence
 - Adjustment of the process data description with customer-specific names
 - Adjusting the user management
- Language selection: DE / EN / FR / IT / ES / RU / NL / PL / CN / TR / RO / N / DK / PT / SE / CZ / HU, other languages on request
- Temperature unit selectable in °F or °C



Tabular process overview



Graphical display of heat treatment curve

Minimum PC and network requirements

- Operating system: Microsoft Windows 10 (32/64 bit)
- Processor: Pentium 800 MHz PC
- RAM: at least 2 GB
- Hard disk: min. 20 GB free memory
- Monitor resolution 1280x720 (16:9) pixels or better. Recommended resolution 1920x1080 pixels
- USB interface, only required when connecting a B1xx, C2xx or P3xx controller
- Ethernet interface (RJ45)
- Network cable length max. 100 meters, CAT 5, shielded cable; for longer distances, the use of repeaters is recommended.
- Data transmission between PC and controller should be done by a direct, independent network. For external access to files on the PC, an additional Ethernet card is required for stability reasons.

Scope of delivery

- Software on CD-ROM
- Acrobat Reader Software to read the operating instructions
- Software .Net Framework 4.5
- Instructions in German / English as PDF on CD
- Communication-module (Ethernet) for connection to the controller module in the switchgear including web server for displaying the furnace status in a web browser in the same network



- Network cables (5m) for connecting a furnace to the PC
- Network socket for connecting the network cable through the switchgear wall
- With simultaneous orders with a furnace, the hardware components are installed directly.

Optionally available

- Extension package 1 for recording an additional measuring point (also as independent display with own display unit C6D)
- Extension package 2 for recording three additional independent measuring points each. Up to three extension packages "Type 2" can be connected (3 / 6 / 9 measuring points)
- Extension package 3 for determination of weight loss with connection of scales
- Data input by barcode scanner

9. Supplied documents

- Operating instructions
- Declaration of Conformity in accordance to EC Directive for machines 2006/42/EC, Annex II A
- Operating instructions in Italian language

10. Acceptances, Installation and Commissioning

- No installation and commissioning included (see additional equipment).

11. Non-compliances with customer's specifications, terms & conditions

- No customer's specifications, terms & conditions considered

	EUR 8.540,00
+ Freight charges	EUR 240,00
Total (excl. VAT)	EUR 8.660,00



12. Terms and Conditions

Delivery Time	Approx. 7-8 weeks to TERNI, the exact date of shipment has to be reconciled. No liability for consequential damages resulting from late delivery; no entitlement to liquidated damages.
Delivery Terms / Risk Transfer	DAP (Incoterms 2020), TERNI
Validity	No contract before confirmed by Nabertherm. Any agreements or statements beyond this offer are invalid. Technical changes such as product improvements or components exchange reserved.
Guarantee	<p>Nabertherm provides for a guarantee on the furnace function with respect to standard industrial use as well as on spare parts for 12 months starting from the day of delivery. Wear & tear parts or damages due to improper use or maintenance not in compliance with the operating instructions as well as damages due to interaction between furnace components and charge are excluded from the guarantee. The warranty period for repair and service jobs is 6 months. For furnaces subject to AMS or similar norms see for additional liability rules above.</p> <p>Nabertherm keeps a wide variety of spare and replacement parts in stock. Regardless of this, a spare parts list with a recommendation for stocking by the customer, without guarantee for completeness, can be provided on request. To minimize downtimes, non-stock spare parts should be purchased and stored by the customer.</p>
Consequential Losses/ Limited Liability	<p>There shall be no liability for either party towards the other party for loss of production, loss of profit, loss of use, loss of contracts or for any other consequential or indirect loss whatsoever.</p> <p>The said exclusion of liability shall not apply in cases of strict liability under the Product Liability Act, for defects of the Product causing death or personal injury, or damage to items of property used privately. Neither does the said exclusion apply in the case of damage attributable to fraudulent concealment or under a specific guarantee granted.</p>
Payment	<p>Advance payment by T/T with order</p> <p>Please transfer to: COMMERZBANK AG, Schlüsselkorb 5/11, 28195 Bremen IBAN: DE58290800100106480000 - BIC/SWIFT: DRESDEFF290</p>
Title of goods	Title will not pass before receipt of full payment.
Place of jurisdiction	Place of jurisdiction for both parties is Bremen.

Otherwise, we supply according to the General Conditions "ORGALIME S 2012" of March 2012 – downloadable from our webpage www.nabertherm.com/terms with password: "terms". Contracts are governed by German law under exclusion of the "Convention on Contracts for the International Sale of Goods (CISG)".

With kind regards,

Nabertherm GmbH

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■ Made
 ■ in
 ■ Germany