

# Печи с верхней загрузкой или печи с нижней загрузкой с проволочным нагревом до 1400 °С Н

## Технические характеристики

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# Top Hat Furnaces or Bottom Loading Furnaces with Wire Heating up to 1400 °C

Compared to chamber furnaces, the top hat and bottom loading furnaces are offering the advantage of convenient loading and unloading of complex charge setups on a compact footprint. The widely opening electrically or hydraulically driven hood allows for good access to the usable space. Depending on the process conditions, a top hat or bottom loading design is recommended. The system can be upgraded to include one or more tables that are manually or electrically driven. Adding further additional equipment, such as multi-zone controls to optimize temperature uniformity or controlled cooling systems to shorten process times, the furnaces can be individually adapted to the process requirements.



Bottom loading furnace H 1000/LB



Bottom loading furnace H 1600/S for heat treatment of quartz glass. The furnace is designed to be opened at 1000 °C. The table can be pulled out to process components.

## Standard Equipment

- Tmax 1280 °C
- Dual shell housing with rear ventilation, provides for low shell temperatures
- Top hat furnaces (model LT): Electric or hydraulic hood drive with fixed table
- Bottom loading furnaces (model LB): driven table and fixed top hat
- Five-sided heating from all four sides and from the table provides for a temperature uniformity up to  $\pm 5$  °C according to DIN 17052-1 see page 94
- Heating elements mounted on support tubes provide for free radiation and long service life of the heating wire
- Bottom heating protected by SiC tiles which provide for a level stacking surface
- Multi-layer insulation consisting of lightweight refractory bricks backed by special insulation
- Long-life ceiling design with fiber insulation
- Automatic exhaust air flap on the furnace roof
- Over-temperature limiter with adjustable cutout temperature as temperature limiter to protect the furnace and load
- Controller with touch operation C540 (10 programs with each 20 segments), controls description see page 82
- NTLog Basic for Nabertherm controller: recording of process data with USB-flash drive see page 87
- Freeware NTEdit for convenient program input via Excel™ for Windows™ on the PC see page 87
- Freeware NTGraph for evaluation and documentation of firings using Excel™ for Windows™ on the PC see page 87
- MyNabertherm App for online monitoring of the firing on mobile devices for free download see page 84

## Additional Equipment

- Tmax to 1400 °C
- Cooling system with fresh air fan for rapid cooling
- Sides with fiber insulation to reduce cycle times
- Fabric cover on the fiber roof (and sides) to reduce fiber dust
- Protective gas connection for purging the furnace with non-flammable process gases
- Automatic gas supply systems
- Multi-zone control adapted to the particular furnace provides model for optimal temperature uniformity
- Commissioning of the furnace with test firing and temperature uniformity measurement (also with load) for the purpose of process optimization
- Additional tables, table changing system, also motorized
- Exhaust air and exhaust gas piping



Top hat furnace H 500 LT with table exchange system and manually movable tables



Bottom loading furnace HF 1220/LBS with fiber insulation, safety barrier to safeguard the danger zone and manually movable table for ease of loading and unloading

| Model         | Tmax<br>°C | Inner dimensions in mm |      |      | Volume<br>in l | Outer dimensions <sup>1</sup> in mm |      |      | Heating power in<br>kW <sup>2</sup> | Electrical<br>connection* | Weight<br>in kg |
|---------------|------------|------------------------|------|------|----------------|-------------------------------------|------|------|-------------------------------------|---------------------------|-----------------|
|               |            | w                      | d    | h    |                | W                                   | D    | H    |                                     |                           |                 |
| H 125/LB, LT  | 1280       | 800                    | 400  | 400  | 125            | 1550                                | 1500 | 2200 | 12                                  | 3-phase                   | 1250            |
| H 250/LB, LT  | 1280       | 1000                   | 500  | 500  | 250            | 1530                                | 1700 | 2300 | 18                                  | 3-phase                   | 1400            |
| H 500/LB, LT  | 1280       | 1200                   | 600  | 600  | 500            | 2020                                | 1800 | 2500 | 36                                  | 3-phase                   | 1800            |
| H 1000/LB, LT | 1280       | 1600                   | 800  | 800  | 1000           | 2200                                | 2000 | 2900 | 48                                  | 3-phase                   | 2800            |
| H 1350/LB, LT | 1280       | 2800                   | 620  | 780  | 1360           | 3750                                | 2000 | 3000 | 75                                  | 3-phase                   | 3500            |
| H 3000/LB, LT | 1280       | 3000                   | 1000 | 1000 | 3000           | 4100                                | 2500 | 3500 | 140                                 | 3-phase                   | 6200            |

<sup>1</sup>External dimensions vary when furnace is equipped with additional equipment. Dimensions on request.

<sup>2</sup>Depending on furnace design connected load might be higher

\*Please see page 86 for more information about supply voltage



Fiber insulation to reduce heating and cooling times



Two-hands operation with swivel arm



Fabric cover on the fiber roof (and sides) to reduce fiber dust



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