**CONTINUOUS FURNACES**

**DESCRIPTION OF CHARGE AND HEAT TREATMENT PROCESS**

Charge characteristics, or simple description[[1]](#endnote-1)

Material**[[2]](#endnote-2)**

**Insertion of charge into furnace** \*choose one

**☐** Volume[[3]](#endnote-3) Write a description of the charge and its dosing

**☐** By piece[[4]](#endnote-4)

Method of loading charge \*choose one

 **☐** Individually[[5]](#endnote-5) **☐** preferred number in rows by width

 **☐** Into charging equipment (charging frames, sagars, box)[[6]](#endnote-6)

 *Write a description of the manner of loading the charge into charging equipment*

 (*Attach / upload a photo, drawing or sketch of the charging equipment used)*

|  |  |  |  |
| --- | --- | --- | --- |
| Loading charging equipment dimensions | Width (mm) | Height (mm) | Depth(mm) |
|   |   |   |

**Characteristic dimension of each piece[[7]](#endnote-7)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Width (mm) | Height (mm) | Depth(mm) | Diameter(mm) | Length(mm) | Thickness (mm) | Weight(kg) |
| min |   |   |   |  |  |   |   |
| max |   |   |   |  |  |   |   |

*(Attach / upload a photo, drawing or sketch of the charge)*

**Equipment capacity[[8]](#endnote-8)**

Maximum capacity

Minimum capacity

**Heat treatment process details [[9]](#endnote-9)** \*choose one

Common name of process[[10]](#endnote-10)

[ ]  Entered temperature profile of the charge:

Write down the temperature profile of the charge, maximum required temperature and operating temperature: (Describe using your own words or attach a graph or table)

Temperature uniformity requirements +/- °C

Requirement to meet AMS 2750 standards: [ ]  No [ ]  Yes Furnace category

 Instrumentation type

[ ]  Individual requirements for each zone of the furnace:

 Number of zones \*fill in a line for each required zone

Maintained temperature in the zone °C Length of zone meter
Maintained temperature in the zone °C Length of zone meter

Maintained temperature in the zone °C Length of zone meter

Maintained temperature in the zone °C Length of zone meter

Maintained temperature in the zone °C Length of zone minute

Maintained temperature in the zone °C Length of zone minute

Maintained temperature in the zone °C Length of zone minute

Maintained temperature in the zone °C Length of zone other Maintained temperature in the zone °C Length of zone other Maintained temperature in the zone °C Length of zone other Maintained temperature in the zone °C Length of zone other

Maintained temperature in the zone °C Length of zone other

**Additional information about the material to be heat-treated**

Water content in the charge: [ ]  No[ ]  Yes Amount  kg

Gas to be released from the charge: [ ]  No[ ]  Yes What type

Flammable or explosive content in the charge: [ ]  No[ ]  Yes

Occurrence of thermo-reaction: [ ]  No[ ]  Yes

Does this type of heat treatment require the extraction of exhaust fumes: [ ]  Yes [ ]  No

Further details:[[11]](#endnote-11)

Will the equipment be connected

to air treatment equipment: [ ]  No [ ]  Yes m3/hour

**CONSTRUCTION DETAILS**

**Cooling:**[[12]](#endnote-12)[ ]  No [ ]  Yes Simple description of cooling requirements[[13]](#endnote-13)

**Conveyor type** \*one answer only

[ ] Belt

[ ] Roller

[ ] Chain

[ ] Conveyor

[ ]  Paternoster, circulating conveyor

[ ] I cannot specify

[ ]  Other

Additional information:

**Conveyor shape** \*one answer only

[ ] Simple direct[[14]](#endnote-14) Description of conveyor

[ ]  Folded or shaped conveyor[[15]](#endnote-15) Description of conveyor

 *(Attach a picture or drawing)*

[ ] Additional information:[[16]](#endnote-16)

Furnace front construction requirements:[[17]](#endnote-17) [ ]  Yes [ ]  No

Loading side (input): Door: [ ]  No [ ]  Yes Powered: hydraulically
 Curtain: [ ]  Yes [ ]  No
 Flexible mechanical shutter: [ ]  Yes [ ]  No
 Other type:

Unloading side (output): Door: [ ]  No [ ]  Yes Powered: pneumatically
 Curtain: [ ]  Yes [ ]  No
 Flexible mechanical shutter: [ ]  Yes [ ]  No
 Other type:

**Handling**

Manner of loading the charge: [ ] Manipulator [ ] By hand

 Manipulator a part of the furnace: [ ]  No[ ]  Yes Describe in words

Manner of unloading the charge: [ ] Manipulator [ ] By hand

 Manipulator a part of the furnace: [ ]  No[ ]  Yes Describe in words

Other manipulation types[[18]](#endnote-18): \*answer only if “folded or shaped conveyor” type was selected

**Special requirements for temperature measurement and recording**

Temperature recorder: [ ]  No[ ]  Yes [ ]  Digital

 [ ]  On paper

Communication interface[[19]](#endnote-19): [ ]  No [ ]  Yes [ ] RS232, EIA-485
[ ] LAN

Digital set for monitoring and recording the temperature cycle[[20]](#endnote-20): [ ]  No[ ]  Yes

Contact-free temperature
scanning of treated charge: [ ]  No[ ]  Yes Specify zone or individual piece

Other recording:

 **Special requirements for the regulation of the environment inside the furnace**

Humidity measurement: [ ]  Yes [ ]  No Further specification of zone

Regulation of concentration
of explosive gas: [ ]  Yes[ ]  No Further specification of zone and description of gas

**Heating** \*choose one

 Max. installed power kW

[ ]  ElectricPower supply[[21]](#endnote-21)

Connection of the equipment to energy peak monitor: [ ]  No [ ]  Yes

[ ]  Natural gas[ ]  Gas [ ]  Propane
[ ] LPG
 [ ] ELTO[[22]](#endnote-22)
 [ ]  Other
 [ ] Direct heating
[ ] Indirect heating

 Recuperation: [ ]  No [ ]  Yes

**Installation requirements**

The smallest dimension through which the equipment will need to pass at the place of installation (doors, lifts, cable networks, etc.):

Width (mm)

Height (mm)

Installation space (required outer dimensions):

Width (mm)

Height (mm)

Depth (mm)

**Surface temperature requirements according to norms** \*more than one answer possible

[ ]  No[ ]  Yes

 [ ] ČSN 33 2000-4-42

[ ] IEC 364-4-42

[ ] DIN VDE 0100-420

**Documentation requirements**

Documentation requirements:

Documentation language requirements:

Additional documentation requirements:

**Contact details:**

Name:

Surname:

Company:

E-mail:

Telephone:

Additional notes:

**GLOSSARY OF TERMS**

1. Example: Crankshaft. [↑](#endnote-ref-1)
2. Example: Steel 14 220 or plastic, rubber, etc. [↑](#endnote-ref-2)
3. The charge is poured material or its dosage is continuous and unordered. [↑](#endnote-ref-3)
4. Define the number of pieces which are placed individually or in batches. [↑](#endnote-ref-4)
5. Individual pieces placed directly on the conveyor or bogie. [↑](#endnote-ref-5)
6. Charge placed in any manner. Please further specify amounts and manner of distribution. [↑](#endnote-ref-6)
7. The typical piece size serves to determine the parameters necessary for the heating performance level and any required air circulation. [↑](#endnote-ref-7)
8. Equipment performance specification; i.e., number of units processed per unit of time. [↑](#endnote-ref-8)
9. Serves to define the required temperature curves and as a description of the heat treatment process. [↑](#endnote-ref-9)
10. Example: Soft annealing. [↑](#endnote-ref-10)
11. Describe at what temperature range or time frame the exhaust fumes are generated. [↑](#endnote-ref-11)
12. If the cooling profile is defined as a part of the heating profile of the furnace or in a separate zone it is not necessary to fill in this section. [↑](#endnote-ref-12)
13. Example: Cooled to the temperature of max. 50 °C in 20 min. [↑](#endnote-ref-13)
14. Linear in shape with one conveyor. [↑](#endnote-ref-14)
15. Fill in description or enclose picture. [↑](#endnote-ref-15)
16. List any equipment dimension constraints here. [↑](#endnote-ref-16)
17. If the charge type and the furnace operation allow it, it is possible to equip the furnace with doors or other type of curtain to minimize the escape of heat from the furnace. [↑](#endnote-ref-17)
18. Use as much detail as possible to describe the system of charge manipulation between each individual conveyor. [↑](#endnote-ref-18)
19. Interface RS232, EIA-485 or LAN. Includes a connector situated on an accessible place on the furnace. [↑](#endnote-ref-19)
20. HtMonit EV set – includes the interface, cable between the furnace and the PC and software. Connector interface (RS232, EIA-485 or LAN) is situated on an accessible place on the furnace. Software equipment – HtMonit EV program is designed for monitoring and archiving measured values ​​up to 4 devices fitted with controller or measurer Ht series (Ht200/Ht205, Ht Industry, Ht40AL, Ht40A, Ht40P, Ht40B, Ht40T, Ht60B, Ht60M a Ht100). [↑](#endnote-ref-20)
21. If different from 3/N/PE 400/230 V AC 50 Hz. [↑](#endnote-ref-21)
22. Light heating oil – oil with viscosity of max 6 mm2/s at 20 °C (e.g., motor diesel) – to ensure compatibility it is necessary to specify parameters. High viscosity heating oil can be used with alterations made to burner (addition of fuel preheating necessary). [↑](#endnote-ref-22)