



TECHNICAL DATA SHEET

Heat Treatment – The Technology

The BELTE AG Company - with its high level of capacity for development - is one of the specialists when it comes to the heat treatment of aluminium components.

Series Heat Treatment

Series heat treatment of aluminium blocks, bars, etc., forged parts and/or cold forming parts, die casting parts, ingot mould parts and sand casting parts (structural parts of vehicles, engine components, chassis parts, light-alloy wheels, floor sheets for petrol-stations, wheelchair frames, screws for mobile phones, turbines, etc.).

Furnace Types

Indirectly gas-fired recirculating furnaces with a temperature range of up to a maximum of 580°C/accuracy smaller than +/- 5°C. Consisting of overhead furnaces (SAF and AAF), rotary hearth furnaces (small and large) and bogie hearth kilns

Charge Loading/Charge Sizes

The charge loading is carried out according to the individual requirements profile of the customer in special charging frames suspended, upright or flat in product carriers.

Charge size: Overhead furnace: 3,800 mm x 2,400 mm x 1,700 mm
Bogie hearth kiln: 7,000 mm x 3,500 mm x 2,300 mm

Cooling/Quenching Media

Continuous charge cooling at a computer-controlled temperature gradient (for example: 30 K/h). The quenching media are: air (HISAQ®), water or polymer (with subsequent rinsing process)

Documentation

Recording of all relevant process data via analogue and/or digital registration devices.

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Capacities

Up to 160 t a day.

Quality Assurance

Material polishings, determination of mechanical material characteristics by way of tensile tests and state-of-the-art evaluation electronics, measuring of components by way of a 3 D coordinate measuring machine. Brinell hardness test, non-destructive testing such as for example crack testing and x-ray examination. We are certificated according to ISO/TS 16949.

Other Services/Specials

We prepare an emergency plan for you if your heat treatment plant temporarily breaks down. The flexibility of our furnaces and plants also enables us to heat treat small series. Moreover, we also assume logistical tasks for you - via our subsidiary DELTA logistik GmbH.



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The technical Infrastructure

Bogie Hearth Kiln

Charge size: 7,000 x 3,500 x 2,300 mm
Max. load, incl. frame: 20,000 kg
Max. load, without frame: –
Power input: 1,600 kW
Operating temperature: 150-580°C
Max. furnace temperature: 600°C
Temperature accuracy: +/- 5 K
Quenching media: –

Range of Overhead Furnaces (SAF)

Solution-annealing furnace: 5 furnaces
Charge size: 3,800 x 2,400 x 1,700 mm
Max. load, incl. frame: 5,000 kg
Max. load, without frame: approx. 2,500 kg
Power input: 900 kW
Operating temperature: 400-580°C
Max. furnace temperature: 600°C
Temperature accuracy: +/- 5 K
Quenching media: Polymer and water

Range of Overhead Furnaces (AAF)

Artificial aging furnace: 4 furnaces
Charge size: 3,800 x 2,400 x 1,700 mm
Max. load, incl. frame: 5,000 kg
Max. load, without frame: approx. 2,500 kg
Power input: 400 kW
Operating temperature: 140-350°C
Max. furnace temperature: 380°C
Temperature accuracy: +/- 5 K
Quenching media: –

Rotary Hearth Furnaces (Small/Large)

Charge size: 1,500 x 1,000 x 1,000 mm
Max. load, incl. frame: 500 kg
Max. load, without frame: approx. 300 kg
Power input: 295 kW (small) 510 kW (large)
Operating temperature: 150-580°C
Max. furnace temperature: 600°C
Temperature accuracy: +/- 5 K
Quenching media: air (HISAQ®), polymer, water



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Pointing the way ahead for industrial practice

Based upon its specific properties, aluminium is one of the most important materials. The advantages of aluminium compared to other materials can primarily be found in the low density of this material. Mechanical and physical material properties can be attained via the heat treatment process which expands the possibilities of the use of aluminium in further processing and is therefore suitable for opening up new market segments of aluminium as a substitute for steel.

For example in the heat treatment of engine components, such as crankcases and cylinder heads carried out at the Delbrück site. This goes hand in hand with the minimization of residual stress and enables an increase of the engine performance with a longer operational life. Additionally, the cubic capacity can be reduced and thereby the overall performance can be increased at lower consumption.

Aluminium structural parts and vehicle parts are also subjected to heat treatment in the same way as light-alloy-wheels - which are characterized by thinner wall thicknesses - in order to optimise the safety performance in case of a crash by way of better strength of material with a simultaneous reduction of weight and savings on fuel. The involved reduction of weight means a decrease of the unsprung mass and improves the driving comfort. The heat treatment of chassis parts leads to an increase in the strength characteristics with lower weight.

And there is even more we can do for you: www.belte-group.com

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Ideal solutions with a high level of quality

We base ourselves fundamentally upon the achieving the highest level of quality standards as well as being flexible with our customers. Our main aims are to fulfil the requirements of our customers in order to ensure that they are fully satisfied as well as achieving the best possible results. This applies from the development of ideal solutions when it comes to the heat treatment of aluminium components through to innovative wheel technologies to logistical concepts. All of our services are subject to a consistent quality management system in accordance with the ISO/TS 16949 regulation in order to ensure that the maximum possible quality can be guaranteed.

Success from one single source

An integrated supply of services is a basic principle of ours. This just means that we offer forward-thinking complete concepts to our customers – from the very first idea right through to the process which is ready from production. Together with our customers we develop innovative solutions and implement these solutions in a professional and economical way. Ever more areas of the value-added-chain are being absorbed thanks to the integration of upstream and downstream production stages. This results in effective cost-saving potential and customised complete solutions for you.

In addition to this, the professional processing of logistical tasks can be assumed by our subsidiary company DELTA Logistik GmbH.

The management and every single employee of the BELTE AG stand by this with their knowledge and skills.



BELTE AG

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