Additive Manufacturing

Retort furnace NR 150/11 for annealing of metal parts of 3D-printing

Chamber oven KTR 2000 for curing after 3D-printing

Additive manufacturing allows for the direct conversion of design construction files fully functional objects. With 3D-printing objects from metals, plastics, ceramics, glass, sand or other materials are built-up in layers until they have reached their final shape.

Depending on the material, the layers are interconnected by means of a binder system or by laser technology.

Many methods of additive manufacturing require subsequent heat treatment of the manufactured components. The requirements for the furnaces for heat treatment depend on the component material, the working temperature, the atmosphere in the furnace and, of course, the additive production process.

Nabertherm offers solutions from curing for conservation of the green strength up to sintering in vacuum furnaces in which the objects of metal are annealed or sintered.

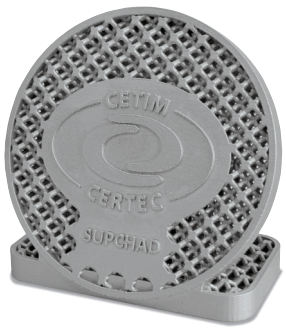
Also, concomitant or upstream processes of additive manufacturing require the use of a furnace in order to achieve the desired product properties, such as heat treatment or drying the powder.

In additive manufacturing, a distinction is made between printing with and without binder. Depending on the manufacturing process, different furnace types are used for the subsequent heat treatment.

Apart from the factors described above, the previous processes from the heat treatment also have an influence on the overall result. One important criteria for a good surface quality is that the components are cleaned properly before the heat treatment.

This also applies to processes that are carried out in vacuum or in furnaces where a low residual oxygen concentration is important. For these furnaces, it is important that they are cleaned and maintained regularly. Even the smallest leak or contamination can produce an unsatisfactory result.

Oven TR 240 for drying of powders



Printed aluminum part, heat treated in model N 250/85 HA (Manufacturer CETIM CERTEC on SUPCHAD platform)

HT 160/17 DB200 for debinding and sintering of ceramics after 3D-printing