VACUUM HEAT TREATMENT: A QUALITY AND RELIABILITY GUARANTEE

In 3D printing, metal parts are made by successive layers of metal powders. The rapid cooling following the laser step causes variations in the parts’ microstructure, phase changes and expansion and receding phenomena. These constraints are inherent in rapid manufacturing. In order to improve the material’s cohesion and obtain good mechanical properties, it is necessary to first carry out a stress relieving heat treatment on the metal parts to remove residual constraints and disperse the tension accumulated during manufacturing.

To increase the strength and durability of these parts still porous and often with a complex geometry, a complementary heat treatment is necessary to ensure the phases of solution treatment and aging.

HEAT TREATMENT FOR MATERIALS PRODUCED BY 3D PRINTING

Heat treatments carried out in the ECM Technologies’ Turquoise vacuum furnaces are specifically tailored to alloys prone to oxidation: Nickel, Titanium, Cobalt-Chrome-Molybdenum as well as Tungsten, all require, to be treated under primary or secondary vacuum.

The TURQUOISE furnace offers:

- Low temperature treatment for the stress-relieving: necessary phase to relieve constraints and stress due to additive manufacturing,
- Treatment under controlled atmosphere for alloy’s microstructure in order to optimize the parts’ mechanical strength,
- Accelerated cooling: controlled cooling process reducing cycle time,
- Possibility to heat up to 1,600 °C for specific applications.
The ECM Technologies’ furnace meets advanced sectors as Medical, Automotive and Aeronautics production requirements:

- Vacuum Heat treatments are specifically tailored to alloys prone to oxidation.
- Our resistor’s patented design assures a perfect homogeneity.
- The molybdenum heating core and metal insulation, certify a clean treatment avoiding any risk of pollution.
- An optimum atmosphere guaranteed.
- An accelerated neutral gas cooling disposal allowing to increase productivity (optional).

Work Volume
250x250x500 mm (WxHxD)