

Press release

Hanau, November 14, 2017

formnext 2017: Heraeus develops innovative infrared heating technology for additive manufacturing with metals

Infrared emitters make it possible to increase the quality of printed metal components by avoiding unwanted stress on materials

At formnext, the international trade fair in Frankfurt (November 14 to 17, Hall 3.1/C38), Heraeus will for the first time demonstrate the use of infrared heat in additive manufacturing of metals. In addition to expertise in materials and processes, many factors play an important role in making additive manufacturing of metal components a success story. One of these factors is infrared heat. Using the collective expertise of the Group's companies, Heraeus Noblelight is developing innovative, efficient infrared heating technologies such as construction space heaters, which solve one of the most urgent problems of additive manufacturing: unwanted stress on materials during the printing of metal components. Heraeus offers a package with a full range of services, from consultation to simulation of heat distribution to provision of a customized infrared solution.

In additive manufacturing—the layer-by-layer construction of metal components—preheating the powder bed is an important step. Infrared heat can be used for this purpose. The real benefit: Infrared emitters heat the metal powder in an especially homogeneous (i.e., uniform) manner, because the source of the infrared radiation can be precisely aligned with the construction space of the particular application, and precisely adjusted for the particular material with regard to performance, form, and wavelength. The result is an increase in the quality of the printed metal component.

Simulation is the key to an efficient heating solution

In addition to the type of powder material, the distribution of heat in the chamber is also a critical factor. Thanks to special simulation processes, Heraeus can determine the optimal heat distribution for a customer's particular manufacturing equipment. Both development time and expenses are reduced in this way. In addition, it is possible to identify the causes of fluctuations in quality and the possibilities for optimizing critical production steps as regards energy efficiency and process quality, and to detect potential energy savings.

Infrared heat design by Heraeus—the advantages

- Simulation allows for adjustment of the preheating process
- Entire construction area can be utilized
- Optimizes construction space temperature
- Option to target the emitter zones enables consistent machine conditions

More about Heraeus' additive manufacturing can be found at:

<https://www.heraeus-additive-manufacturing.com>

Heraeus, the technology group headquartered in Hanau, Germany, was founded in 1851 and today is a globally leading, family-owned company. With technical expertise, a focus on innovation, operational excellence and entrepreneurial leadership, we constantly strive to improve our business performance. We create high-quality solutions for our clients and strengthen their competitiveness in the long term by combining material expertise with technological know-how. Our ideas are focused on themes such as the environment, energy, health, mobility, and industrial applications. Our portfolio includes everything from components to coordinated material systems, and our products are used in a wide variety of industries, including the steel, electronics, chemical, automotive, and telecommunications industries. In fiscal year 2016, Heraeus earned revenues excluding precious metals of €2.0 billion and total revenues of €21.5 billion. With around 12,400 employees worldwide in more than 100 subsidiaries in 40 countries, Heraeus holds a leading position in its global markets.

In 2016, Heraeus was named one of the Top 10 Family Businesses in Germany by the Foundation for Family Businesses.

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