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Part quality, sustainability, and performance: A comparison between graphite and metallic lined MIM

The “Federal Climate Protection Act” has increased carbon dioxide reduction targets. However, for most energy intensive manufacturing processes, reliable and comparable data is not yet available. In Metal Injection Moulding (MIM) two different types of batch furnaces are available: either furnaces with a heating cassette made from graphite or from metallic materials such as tungsten or molybdenum. Metallic furnaces offer the best possible purity of the atmosphere, such as argon, nitrogen, hydrogen or (high) vacuum. The running costs and the energy consumption are comparably high. Graphite furnaces offer a reduced energy consumption. However, those furnaces inevitably result in carbon particulates being present in the furnace atmosphere during heat treatment. This results in a coloration of the surface of metallic parts, but also in modified carbon content of MIM parts.
This study reports on the parts quality and on the product carbon footprint (PCF) for both kinds of furnace.

Professional Status of the Speaker

Senior Scientist

Interest in submitting a paper in a special issue of

No interest

Invitation letter for visa

No

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