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Fused Filament Fabrication (FFF) of 316L Green Parts for the MIM process

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ABSTRACT

Fused Filament Fabrication (FFF), also known under Stratasys' trademark name *Fused Deposition Modelling (FDM)* is a polymer-based additive manufacturing method and in wide use for the 3D-printing of polymer parts. When using a specially developed, highly filled metal/polymer feedstock (55 vol.%), FFF can also be applied as a shaping method for metallic green parts as an alternative to injection moulding in the MIM process. In this paper, the specific properties of sintered 316L (1.4404) steel parts, printed on a tailored Fused Filament Fabrication machine, then debinded and sintered as in the conventional MIM process, are discussed. An overview of the state-of-the-art of the equipment, respective processing parameters, currently achieved sinter shrinkage, densities and achievable surface quality are given.