Issues of Lattice Structures Production via Metal Additive Manufacturing

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Metal additive manufacturing (MAM) is used in the production of parts, where a product is built layer by layer. MAM includes Direct Laser Metal Sintering (DMLS), which allows the production of complex metal parts directly from 3D software models without using sometimes expensive tools such as moulds, dies and cutting tools. New possibilities in the production of complicated components are made available using this advanced manufacturing technology. Nevertheless, this technology has limits, resulting from the method of melting in the powder bed. Therefore, this paper investigates the ability to produce fine cellular lattice structures. Some structures with self-supporting cell units were selected for experimentation and were produced with identical cell size and volume fraction. Based on this, a suitable topology was established for the production of fine structures with small volume fractions.

Keywords: Lattice Structures, Rigid Constructions, Additive Manufacturing, Selective Laser Melting

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