Optimization of the Pressure Porous Sample and Its Manufacturability by Selective Laser Melting

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New concept for pressure testing samples has been designed based on previous experiments which investigated the maximum load capacity of a Schoen Gyroid. This pre-experiment pointed to the possible lack of measurements and newly designed pressure samples intended to improve measurement accuracy. This paper focuses on the manufacturability of the designed samples made by selective laser melting, which is able to produce complex metal parts using support structures. However, removing the support structures from a porous core is impractical. In this context, the ability to substitute supporting structures by a Schoen lattice structure is also marginally dealt with. The paper concludes with the benefits of the optimized pressure samples over the old concept. An increased maximum load capacity was achieved by the addition of contact plates, which constrain the strut ends.

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

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