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# ABSTRACT

## From Optimisation to Manufacturing: Generative Design and Metal Fused Filament Fabrication (MF3)

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This paper presents the optimisation of a conventional holder for additive manufacturing using generative design, focusing on Metal Fused Filament Fabrication (MF3), also known as Metal Extrusion Filament Deposition Modelling (FDM). The study aims to minimise material usage and weight, while exploiting the cost efficiency of MF3 for metal 3D printing. The optimisation follows a structured workflow: topology optimisation in Autodesk Fusion's Generative Design module, structural-mechanical simulation to eliminate weak spots, and a feasibility study to assess printability, debinding and sintering of the optimised part. The aim is to produce a fully functional metal part optimised for additive manufacturing.