

Evaluation of Environmental, Technical, and Economic Indicators of a Fused Deposition Modeling Process

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Abstract : Additive manufacturing processes have changed significantly in a wide range of industries and their application progressed from rapid prototyping to production of end-use products. However, their environmental impact is still a rather open question. In order to support the growth of this technology in the industrial sector, environmental aspects should be considered and predictive models may help monitor and reduce the environmental footprint of the processes. This work presents predictive models based on a previously developed methodology for the environmental impact evaluation combined with a technical and economical assessment. Here we applied the methodology to the Fused Deposition Modeling process. First, we present the predictive models relative to different types of machines. Then, we present a decision-making tool designed to identify the optimum manufacturing strategy regarding technical, economic, and environmental criteria.

Keywords : additive manufacturing, decision-makings, environmental impact, predictive models

Conference Title : ICPAMT 2020 : International Conference on 3D Printing and Additive Manufacturing Technology

Conference Location : Auckland, New Zealand

Conference Dates : December 01-02, 2020