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A decision support method for knowledge-based Additive Manufacturing process selection

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Abstract

Additive Manufacturing (AM) technologies and materials are more mature than ever; however, industrial AM use is still low. Lack of knowledge among potential users is a key barrier to AM uptake. There is therefore a significant need for methods and tools that will enable potential users to effectively identify the most appropriate materials and subsequently select the AM process that best fits their techno-economic requirements. This work presents a method for assisting potential users in the evaluation and process selection for AM. The method comprises four distinct Steps. Step 1 regards material selection, Step 2 examines AM process suitability, and Step 3 searches for suitable machines. The combined output of Step 1, Step 2, and Step 3 consists of several alternative paths, which are subsequently evaluated and classified in Step 4, based on multiple user-defined criteria.

Keywords: Additive Manufacturing; Process selection; Process evaluation; Process knowledge; Decision support; Process planning