

## **Testing Capabilities and Limitations of EBM Technology to Guide Design with a Test Artifact Design including Unique Features**

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**Abstract :** Additive Manufacturing (AM) is the respectable improvement of this century in the field of manufacturing and regarded as a breakthrough that represents the third industrial revolution by the leading authorities such as Wohlers Associates Inc., The Economist, and MIT Technology Review. Thanks to the stacking and unifying methodology of AM, design of lighter but stiffer parts with really more complex shapes and geometrical features, which were not possible by traditional subtractive manufacturing methods, became achievable. Through analysis of the AM process must be performed and mechanical properties of manufactured test parts must be studied to provide input for design. Furthermore, process capabilities, constraints, limitations and challenges regarding AM must be examined so that the design must be compatible with the process to be able to take all the advantages of the AM. In this paper, capabilities and limitations of AM will be investigated through a test part including unique features and manufactured from Ti-6Al-4V by employing Electron Beam Melting (EBM) technology by comparing to the test parts introduced in literature.

**Keywords :** additive manufacturing, DfAM, EBM, test artifact, Ti-6Al-4V

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