

Additively Manufactured Aluminium AlSi10Mg Alloy

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Additive manufacture (AM) is a promising tool to produce sophisticated parts, for example for automotive and aircraft applications, as it excels in astonishing geometry freedom. For such applications, aluminium alloys are of a particular interest thanks to their excellent strength-to-weight ratio. In comparison with the conventional casting of aluminium-based materials, AM brings about some characteristic features; especially unique microstructure evolution. For the real use of additively manufactured parts it is thus important to compare material properties obtained by AM with the cast state. Therefore, this paper brings a comparison of AlSi10Mg alloy produced additively by selective laser melting (SLM) technology with conventionally cast alloy. It is focused on microstructure characterization and mechanical properties assessment. Results of this comparison show that SLM yields very fine microstructure, what reflects in significantly higher mechanical performance over cast material.

Keywords: Aluminium alloy, AlSi10Mg, Additive manufacture, SLM

Acknowledgement

The authors wish to thank the Czech Science Foundation (project no. P108/12/G043) for the financial support of this research and to the NETME Centre for the specimen manufacture.

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Paper number: M201780

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