



Contribution ID: 12

Type: not specified

Research of surface post-treatment of additively manufactured pure copper parts using a laser beam

Additive manufacturing has allowed for production of high precision parts with sophisticated geometry and latest advances in technology has enabled production of parts also from pure copper that adds crucial electrical and electromagnetic properties to the produced parts. But main drawback of additive manufacturing is rough surface of produced parts. Effects on surface roughness by surface treatment of additively manufactured pure copper parts with laser beam is the main focus point of this research. This is research is part of larger effort to explore, how additive manufacturing can improve the way of manufacturing components with complex geometry for linear particle accelerators, although it is applicable to any industry where additively manufactured pure copper parts can be used. Reducing initial surface roughness is key issue and laser polishing is a promising way to improve surface characteristics. Research and planning was conducted to obtain initial laser parameters. Then a series of experiments were ran where additively manufacture pure copper samples were treated with laser beam and laser parameters were adjusted between the runs to try for the best possible surface roughness. As a result a set of laser parameters were obtained that allowed for 92,9% decrease of surface roughness from Ra 19,74 μm to Ra 1,40 μm . That means that treatment with laser beam can be successfully used to reduce surface roughness of additively built pure copper parts. Further experiments are needed to investigate this process in more details.

Type of contribution

Poster

Author: LACIS, Viesturs (Riga Technical University (LV))

Presenter: LACIS, Viesturs (Riga Technical University (LV))