

Thesis - “Optimizing Laser Metal Deposit process parameters” (30/15 credits – 2 students)

About us

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Project Background

Directed Energy Deposition (DED) is collection of additive manufacturing processes utilizing direct energy in form of additive process utilizing laser or arc as energy source. The supply of material is done by either powder (L-DED-p) or wire (L-DED-w).

L-DED with wire uses laser beam energy to melt wire to add material. There are many process parameters which affects the quality and the geometry of the deposited material. Examples of parameters are travel speed, laser beam power and wire feed speed.

One of the key figures, which should be optimized, is the deposition rate. The deposition rate is the amount of material which is deposited during a time period.

The aim of the thesis it to optimize the L-DED-W process based on the deposition rate and to still get an approved quality of the deposited material.

Assignment Description

The main object of this thesis is to investigate the effects of the process parameters on the geometry, the quality and the deposition rate.

The work is tentatively divided into five parts:

- Extensive literature review regarding the L-DED-W process, material(nickel alloy which should deposited) and relevant standards
- Plan and execute L-DED-W trials.
- Evaluate the results from the trials.
- Determine the key parameters and their influence on the geometry, on the quality and on the deposition rate.
- Compile the work in an report.
- Presentation of the work performed.

Qualifications

- Master’s educational level. The scope of the thesis can be adjusted.

Apply by

Send your resume and cover letter to Björn Lindeberg Nilsson, bjorn.lindebergnilsson@gknaerospace.com .

Last date for application: 2025-01-15

