

## **Tin Brdnik**

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Topic

### **Enhancing Process Control Using Laser Beam Shaping: Insights from Numerical Modeling**

Directed energy deposition (DED) is an additive manufacturing process and an effective method to repair parts in aerospace and other industries. In this study, DED equipped with a heating component and an inert gas shield system, which mitigates the effect of cracks or oxidation, was applied to TiAl adopted in turbine blades for commercial engines. A unique  $\gamma$ -based microstructure was obtained by the present DED. The tensile and creep properties were also investigated.

### **About the Speaker**

2017 - 2018: Metallurgy laboratory, welding workshop, structural and thermal analysis in MATLAB; Internship at UNIOR d.d. in Zrece

2019 - 2020: Managed production fleet of 15 industrial 3D printers; Bachelor's thesis: Metal filament printing (BASF); Fleet operations Manager at BigRep GmbH in Berlin

2020 - 2022: Managing laboratory for 3D printing: DMLM, SLA, DLP, FDM; Production of metallic lattice structures, FEM simulation; Scientific Assistant at RWTH University in Aachen

2022 - 2023: CFD Laser welding simulation, machine learning for process optimization; Master thesis project at Mercedes Benz AG in Stuttgart

2023 - today: Software development, automation, optimization, customer support, sales, marketing; Application engineer at Flow Science Deutschland