

PROJECT

NEWTEAM

Next generation low pressure Turbine Airfoils by aM

Funding: European (Horizon 2020)

Duration: Nov 2018 - Jan 2022

Status: Ongoing

Total project cost: €800,000

EU contribution: €800,000



Call for proposal: H2020-CS2-CFP07-2017-02

[CORDIS RCN : 218806](#)

Objectives:

The aim of NEWTEAM project is to develop and assess alloys by Powder Bed Additive Manufacturing (PB-AM) processes to be applied on next generation of low-pressure turbine (LPT) blades production.

- NEWTEAM will develop a modification in terms of chemical composition for the Ti-48Al-2Cr-2Nb alloy tailored on the needs of Electron Beam Melting (EBM) process and contemporary NEWTEAM will develop an optimization of the post processing heat treatments of this alloy both in terms of Hot Isostatic Pressing (HIP) and Heat Treatment (HT) customized to exploit the feature microstructure and phase composition of as-EBM material in order to increase the mechanical performances.
- NEWTEAM will increase the Topic Manager portfolio in terms of Nickel-base superalloys processed by Laser Beam Melting (LBM) for high temperature applications to be employed for LPT blades, performing an extensive optimization of the LBM process parameters for 2 Ni-base alloys. Contemporary NEWTEAM will develop an optimization of the post processing heat treatments of these alloys both in terms of HIP, HT and part surface finishing.
- NEWTEAM will test and validate the 3 materials developed during the project (1 Ti-48-2-2 based + 2 Ni-base alloys) with an extensive mechanical characterization with at least a NADCAP certification.
- NEWTEAM will fabricate representative LPT blades via PB-AM together with non-conventional hollow ones. The final goal is to achieve at least a TRL 3.
- NEWTEAM will develop an enhanced process simulation tool for EBM process, tailored on Titanium Aluminides alloys capable to give information about the properties of the material in terms of final chemistry and microstructure.
- NEWTEAM will develop a surface finishing post processing for complex shapes (like hollow blades) produced by LBM in Ni-base alloys in order to avoid the needs of machining of the parts since machining means to limit the freedom of shape complexity, that is in principle enabled by AM design.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Other programmes: JTI-CS2-2017-CfP07-LPA-01-37 Next Generation Low Pressure Turbine airfoils by ALM

Lead Organisation:

Consorzio Interuniversitario Nazionale Per La Scienza E Tecnologia Dei Materiali

Address:
Via Giusti 9

50121 FIRENZE
Italy

Organisation Website:

<http://www.instm.it>

EU Contribution: €660,000

Partner Organisations:

Montanuniversitaet Leoben

Address:

FRANZ JOSEF STRASSE 18
8700 LEOBEN
Austria

Organisation Website:

<http://www.unileoben.ac.at>

EU Contribution: €140,000

Technologies:

Additive manufacturing
Electron Beam Melting (EBM)

Development phase: Research/Invention

Additive manufacturing
Near Net Shape Hot Isostatic Pressing
(NNSHIPping)

Development phase: Research/Invention

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other