



FUTURE REPAIR AND MAINTENANCE FOR AEROSPACE INDUSTRY

Deliverable 5.1

Realisation of clamping device for an identified part from LHT with set in stone positioning and orientation of the part multitude and cut-off parts on clamping system ready

Documentation

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Executive Summary

As a core element of the RepAIR approach, the Selective Laser Melting technology is applied for high batch repair of aircraft parts. As a first sub-objective, a clamping device is designed and implemented as a demonstrator. D5.1 documents this demonstrator. According to the DOW, the first version of the clamping device should allow to fixture a multitude of identical parts in defined absolute set in stone positions and identical orientation. This includes two major prerequisites:

- Integration of the identical parts on the clamping device in a CNC like machine for cut-off to a desired flat identical height.
- Orientation, multiplication, positioning and slicing of the single three-dimensional data set of the identical cut-off parts with respect to the exact knowledge of their individual positions, identical orientation and height on the clamping device

The device described in this document was presented as a proof-of-concept at Euromold 2014. The clamping device consists of generic components prepared to allow future application for various types of parts; its first version represented by D5.1 was designed specifically for one sample part selected throughout the work in RepAIR WP2 (provided content of the Lufthansa Technik GmbH). The required data set is available at SLMG (construction and model data) and was used for the development of a suitable clamping device.

The deliverable describes the process flow for repairing aerospace parts and the first demonstrator implemented as a device including

- Fixation in clamping device
- “Conventional” refurbishment
- “Additive” refurbishment using several innovative technologies for monitoring and actual manufacturing
- Measurements and quality control

The applicability for further parts needs to be investigated in future activities of the project. Additionally, upcoming tasks in WP5 envisage the integration of the device into the actual repair processes (in terms of pre-processing, manufacturing, post-processing and finishing).