FUTURE REPAIR AND MAINTENANCE FOR AEROSPACE INDUSTRY

Deliverable 5.5

RepAIR process report with DMD prototype, NDT and destructive test results on repaired parts with designed process distortions and surface finish procedure list

Dieter Schwarze[1], Toni Adam Krol[1], Christopher Stengel[1],
Alfred Schapansky[2], Markus van Wesel[2]

[1]SLM Solutions GmbH, [2]AVANTYS engineering GmbH

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Project Coordinator

Prof. Dr.-Ing. Rainer Koch (University of Paderborn)

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Authors		*Dieter Schwarze (SLM)* *Toni Adam Krol (SLM)* *Christopher Stengel (SLM)* *Alfred Schapansky (AVANTYS)* *Markus van Wesel (AVANTYS)*		
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Executive summary

This report D5.5 will give an overview of the results, which were achieved by SLM and AVAN during the runtime of RepAIR project, related to task 5.3 “MRO processes with DMD prototype” as described in the Description of Work (DOW).

The aim in D5.4 was the realisation of the software solution for generating a three-dimensional area model and ascertaining the concrete need of repairs and integration of test rig in and final assembly of the DMD prototype. Based on the result from D5.4 the present work respectively the present deliverable D5.5 “RepAIR process report with DMD prototype, NDT and destructive test results on repaired parts with designed process distortions and surface finish procedure list” is more focussing on operation of the finalized DMD prototype for repair processes, manufacturing of test specimens and following metallographical analysis.

This metallographical analysis and all related subjects are described in chapter 4. Beside of this explanation the characterisation of the used aluminium alloy AlSi10Mg is carried out.

Chapter 5 is clarifying the experimental setup and experimental procedure which was used within the DMD experiments. All relevant process parameters are compiled in a tabular manner and hereafter explained in short notes on technical details. In addition to that procedure the realized experiments related to single welding lines and wall structures on different substrates are reported.

Chapter 6 summarizes the achieved results and process observations which could be gathered during the experimental work with the prototype setup. Special interest is given to the discussion of observed effects and their interdependencies with process parameters.

The present report ends up with a collection of information on surface finish procedures in chapter 7.