



FUTURE REPAIR AND MAINTENANCE FOR AEROSPACE INDUSTRY

Deliverable 6.5

**Prototypes of redesigned components
with new functionalities optimized for the
aeronautic industry**

Documentation

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September 2015

Work Package 6

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7th Framework Programme

for Research and Technological Development

COOPERATION

AAT2013.4-4.: Maintenance, repair and disposal



Distribution level	Public			
Due date	30/09/2015 (postponed)			
Sent to coordinator	04/11/2015			
No. of document	D6.5			
Name	<i>Prototypes of redesigned components with new functionalities optimized for the aeronautic industry</i>			
Type	<i>Report</i>			
Status & Version	1.0			
No. of pages	29			
Work package	6			
Responsible	<i>DTI</i>			
Further contributors				
Authors	<i>Jeppe Skinnerup Byskov, DTI Thomas Reiher, UPB</i>			
Keywords	<i>Topology Optimization</i>			
History	Version	Date	Author	Comment
	V0.1	28/11/2014	UPB	Structure
	V0.2	24/09/2015	UPB + DTI	Content
	V0.3	28/09/2015	UPB	Content update
	V0.4	26/10/2015	DTI	Content update
	V0.5	04/11/2015	UPB	Content update
	V1.0	13/11/2015	UPB	Finalisation

The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n°605779.

Executive Summary

Optimization of parts is of particular interest for the aeronautics industry since even a small increase in part performance will lead to an enormous benefit when seen over the part lifetime.

This deliverable demonstrates topology optimization of an aeronautics part leading to a significant improvement in the functionality of the part. Furthermore, this technique is applicable to other parts so the general potential of this type of optimization is demonstrated.

Main result of the study:

The total mass of the considered part is reduced from 310 g to 200 g while, as seen in the results, increasing stiffness. The comparison can be found in the table below.

	Original design	New design	Improvement
Displacement	12.8 mm	8.9 mm	- 31%
Max. stress	4428 MPa	1640 MPa	- 63%
Total mass	310g	200g	- 35%

The result of the optimization is a massive lightweight design. The optimized structure withstands the same loads better, but needs less material.