

CREATING THE FUTURE





Zaero - Zero defect manufacturing of composite parts in the aerospace industry

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ABSTRACT

ZAero project is an European project. The aims of this project is the inline control of the defects that may occur during the manufacturing of a stiffened panel.

The aims of this project is the inline control of the defects than may happen along the manufacturing of a stiffened surface panel. The ZAero control system consists in sensors integrated in the lay-up machine and sensors used during the resin infusion and curing processes. These sensors will detect defects out of the acceptance threshold giving a response. This response may be a rework as in the case of defects produced during lamination stage or the variation of curing parameters in the infusion and resin curing stage due to the process monitoring.

Three demonstrators will be manufactured. The degree of complexity will be increased in each demonstrator. The control system through sensors will make a quality control and when a defect that is outside the range of acceptance a response will occur.

> The ZAero system provides an inline and automatic system for defect detection during the manufacturing of a stiffened surface panel by sensors.

Visualization of part flow simulation



The system detects deviations in real time, analyzing their impact in the final part in terms of mechanical performances, proposing rework operations to solve them if it were needed thanks to the Decision Support Tool.



manufacturing process to feed the Decision Support Tool in order to get the optimal

response avoiding bottle necks in case of deviations.

ZAERO CONTROL SYSTEM

	LAY-UP PROCESS		LScan → laser	INFUSION AND CURING PROCESSES	
Lay-up	Every layer is	Sensor	profile scanner to	Electrical Time Domain	Electrical resistance:
process	automatically inspected Sen		acquire 3D profiles	Reflectometry (E-TDR) senso	Temperature





support will be manufactured.



The duration of the project is 36 months (October 2016 to October 2019).

□ 1st Demonstration will be planned to month 12 (October 2017). **PROJECT PLAN** □ 2nd Demonstration will be planned to month 24 (October 2018). □ 3rd Demonstration will be planned to month 36 (October 2019).



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