AEROPLAN - Composites repairs, monitoring and validation

Summary of description of project context and objectives

There is an increasing need for innovative repair solutions, both for metallic and for composite structures, to restore their structural integrity or to reinforce areas prone to damage. These repair solutions could reduce operating costs by providing easy and low cost repair procedures, extending significantly their economical life while also guaranteeing their airworthiness and the flight safety. Solutions for today's aircraft industry may be met by in-house developments involving specialised companies in the field of composite repair equipment manufacturing. However, definitive answers to the challenges of tomorrow, as they are continuously arising due to the more extensive use of composite materials in aircraft structures, will only be provided through continuous investment in R&D and technical excellence, in cooperation with competent research organisations.

During the last ten years, the European Commission (EC) has funded research projects providing composite-based aircraft repair solutions through the development of innovative elements that could assist in performing safer and more efficient repairs in a faster and more economical way. These innovations have been developed as the main or secondary target of a large number of upstream research projects. Their combination and adaptation into the aeronautical composite repair market is needed to maximise the impact of results facilitated by EC investment. A consortium of key partners participated in a significant number of research projects already finished has been assembled to deliver the prime objective of the AEROPLAN, which is to disseminate the technological innovations from the COMPRES, SENARIO, PLASER, INDUCER, IAPETUS, COMPAIR EXPECT, INDUCTOR, COMPARE and ADVANCED projects, quickly and effectively within Europe.

Description of work performed and main results

Research proposals funded by the EC include dissemination and exploitation plans which, for the projects already finished, have been successfully concluded. However, it is evident that due to the fragmentation of the research activities on the same topic (i.e. bonded composite repairs) in ten different projects, none of these projects were able to provide autonomously a global overview of advancements achieved in this field to the stakeholders of the aeronautical industry. The AEROPLAN project attempts to fill this gap by integrating all the produced technological advancements into a single support action, targeting all the key players of the aeronautical industry directly.

The consortium partners have attended various events and given presentations about the AEROPLAN. The needs for the specific target groups have been identified and project partners have visited prospective clients to establish the match between their needs and the technical developments made in relevant projects. It was aimed that both existing aircraft and future designs will take benefit of the innovations, increasing the efficiency of the EU resources already committed to the implementation of the FP7 targets.

Expected final results and potential impacts

As the time from the generation of an innovation until its inclusion into a Structural Repair Manual (SRM) -which could be considered the final application level of this technology- usually exceeds one decade.

The objective of AEROPLAN is to disseminate appropriately to all levels of the aeronautical industry the foreground knowledge generated within EC funded research projects, focusing on real life applications. This will enable the processing and evolution of the foreground knowledge throughout the different Technology Readiness Levels (TRLs), within time, instead of being constrained to scientific publications and conferences only. In this way the project will ensure that both existing aircraft and future designs will benefit from these innovations.

For further information, please visit the project website at www.aeroplanproject.eu.

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