A NEW PROCESS BRINGS COMPOSITE REPAIRS CLOSER TO AIRCRAFT OPERATIONS

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An innovative process for composite repairs on jetliners such as Airbus' A350 XWB has been developed by an Airbus working group from company locations in Spain, Germany, the UK and France – with the procedure validated on an A350-900 flight test aircraft.

While the repair process' bonded technique is not new, the tools and level of automation are.

The working group developed a portable robotic repair jet that uses water mixed with an abrasive to remove up to 500 sq. cm. of damaged material for replacement with new carbon fibre. The replacement composite material is cured on site – at an airport or maintenance centre, for example – eliminating the need for the large autoclave traditionally employed in the manufacture of composites.

"The repair jet is a new, Airbus-qualified tool," explained Sebastien Hanser, the major repairs technical project manager. "The machine's advantages include its ability to repeat tasks and contain carbon dust. It is suited to difficult locations on the aircraft, such as where an operator would be working upside down, and it has a development potential."

Also new is an inflatable clean room, which brings the environmental specifications used in manufacturing plants close to the aircraft. "Temperature, dust levels and humidity can be

managed, allowing us to perform the work that requires clean and dry conditions," Sebastien added.

During the A350 XWB's certification, the team used the full-scale test specimen and fatigue tests to qualify their processes and reach Technology Readiness Level 6 (TRL 6). At the end of last year, the team performed a repair on MSN003 in Toulouse to test out the techniques in real conditions.

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