

Consortium

LOCCIONI



UNIVERSITÀ DEGLI STUDI
DI SALERNO

.DIEM

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degli Studi
della Campania
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Topic Manager



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PROJECT COORDINATOR

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Lean robotized
AssemBly and
cOntrol of
composite
aeRostructures

www.labor-project.eu

Drilling



Sealing



Fastening



Inspection



LABOR targets the automation of many assembly sub-operations of composite aerostructures by proposing a novel lean robotized approach, including human-robot coexistence

Achievements

The project has designed and produced a lean and self-adaptive robotic work cell that includes small/medium size robots with high capability of adaptation and easy integration and adaptive processing tools able to perform the following assembly operations:

- Drilling and countersinking of hybrid stack-ups
- Sealing
- Fastener installation
- Hole quality inspection
- Fastener installation inspection

Approach

The overall technological strategy consists in the adoption of small-scale cooperative robots (with the aim of saving costs and gaining flexibility) in conjunction with smart fixtures and external axes to increase their workspace. The work cell makes use of standard process tools, such as electrical drilling tools or automated fastening tools, suitably adapted and integrated into the robot end effectors equipped with quick tool-changers. Human-robot coexistence is enabled by a novel workspace monitoring system.

Impact

Productivity will benefit of increased freedom in the design of parts to which the automatic solution and assembly processes might easily adapt. Moreover, advanced manufacturing means and methods allow achieving high production rates with reduced recurring costs. Finally, intelligent automation, ergonomic work environment, optimal HMI and human-robot collaboration have been adopted according to the Factory of the Future approach.