

FlappyBot

Automated Fiber Placement without limiting guidance kinematics

Abstract:

Mobile autonomous robots moving on the mold, laying fibers and building up the laminate. Low grade prepregs and thermoplastics are possible without being harmed due to local pressure underneath the rollers. Number of robots and configuration of each unit scalable to application.

Application area:

Automotive and Aviation, especially when Blended-Wing-Body-Structures will become relevant. Followed by Construction Industry, Sailmaking and Transportation. Strength: huge panels or multiple smaller flat laminates.

Characteristic:

This technology allows Fiber Placement applications to get rid of guide rails and heavy foundations of Gantry Systems and a limited reachability of articulated robots. The approach is unconventional but works for many applications.

Benefits:

No more need for heavy foundations will cut the overall invest. A totally adaptive production management enables production on demand- concerning design, size and sequence of production. FlappyBots enable unmatched flexibility for Fiber Placement applications.

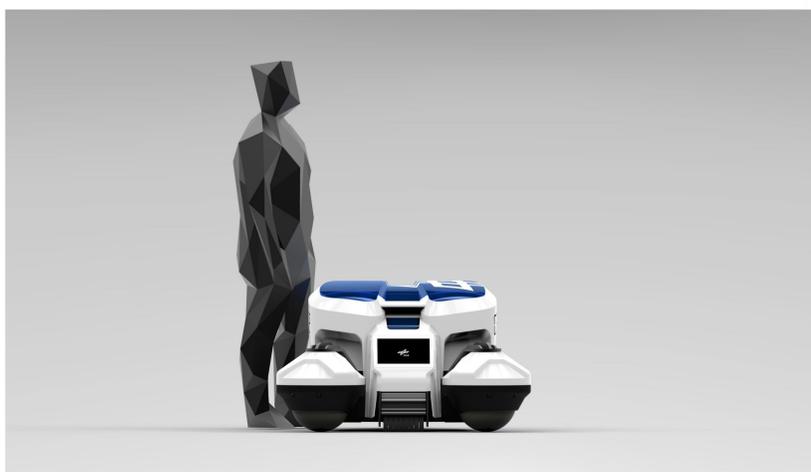
Contact

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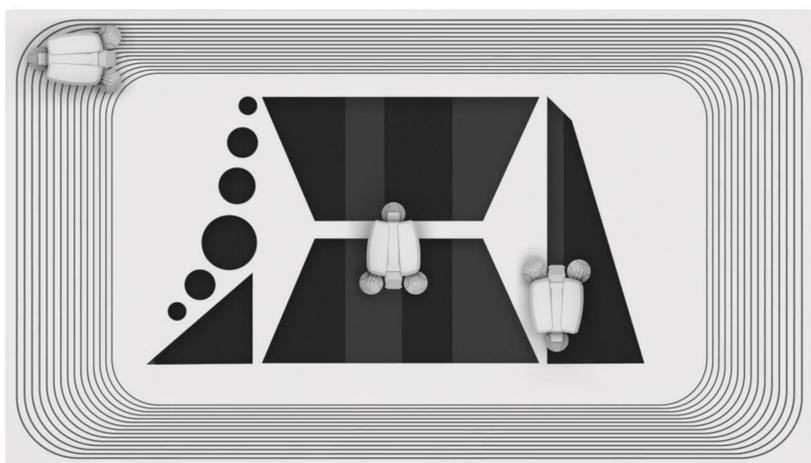
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No more need for monument sized machines:
Compact mobile units moving on the mold



Swarm-like efficiency:
Multiple robots cooperate building up laminates





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JEC Paris 2019:
presenting the first mockup



Learn all about this project in a
four-minute video

Benefits

Unlimited scalability

No more limiting kinematics (cables / guide rails) limiting the size of the component.

Versatility

Customizable to size and application: from sailmaking to small thermoplastic 2D-preforms

Production management

Becomes adaptive like 3D-printing: quick reaction to sequence of production, design or size.

Efficiency & redundancy

Swarm-like behaviour of multiple units speeds up production and makes process more robust.

Cut of investment

No heavy foundations needed anymore.
Operable in existing manufacturing environment.

Demand-driven operation

Transportability and low requirements to infrastructure enable a rental solution.

Making AFP profitable

Allowing more applications profitable access to AFP: out of the box approach awarded with DLR-Idea-Award

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