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Materials & Manufacturing Technologies

Expanding the outer reaches of material performance

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A game-changer

Belotti Automatic Riveting Cell (ARC): A game-changing robotic cell for small parts automatic application on composite frames and components. A first-on-the-market integrated system, designed in partnership with Cosberg to automatically manage multiple types of Rivets and Time-Serts within a single device.

Belotti ARC is the new revolutionary robotic cell featuring an under-patent riveting head designed for the rapid, automated application of the entire range of Time-Sert inserts and Rivets of different diameters on composite frames and components across multiple industries - including automotive and aerospace - a task traditionally performed manually by the operators.

Many parts made of composite materials, including frames, monocoques, doors, roofs, and structural elements for the automotive sector, and wings and various aircraft components, are characterised by thin surfaces that do not allow for sufficiently strong sections to insert the fasteners necessary to ensure the assembly of the various elements together.

A strategic partnership with Cosberg

Belotti ARC is the result of a strategic partnership with Cosberg, leveraging over 40 years of expertise in developing tailor-made solutions to automate the assembly and production processes, from mechatronic modules to fully automated machines. The system features a patent-pending riveting head that allows the automatic application of the entire range of Time-Sert inserts and Rivets without requiring a head change, ensuring maximum efficiency and adaptability.

This partnership stems from a shared commitment to addressing the growing complexities of industrial production, particularly in sectors that demand cutting-edge technology and precision, such as aerospace and automotive.

Designed and refined over a two-year development period, Belotti ARC incorporates extensive research and innovative engineering to deliver a solution that combines efficiency, precision, and automation.

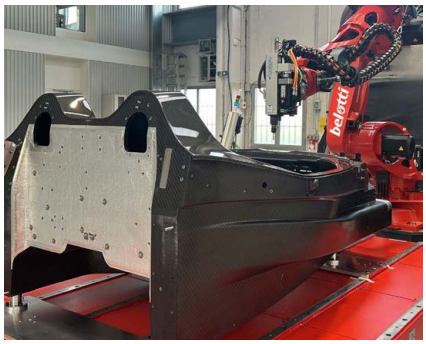
The Belotti ARC was officially launched and showcased during daily live demos at the recently held JEC World expo in Paris, offering visitors a firsthand experience of its capabilities and marking a significant milestone in composite machining and assembly automation.

The launch was also a key highlight at the Composite Exchange Conference “Streamlining Carbon Fiber Chassis Production with Automated Machining and Time-Sert Application”, held on March 4th at Agora 6, where Eng. Davide Seletti (CEO & General Manager of Dallara Compositi) and Loris Valsecchi (Belotti Sales Director) explored how automated machining and Time-Sert applications are revolutionising carbon fibre chassis production.

Key features and technology

The Belotti Automatic Riveting Cell features:

- COMAU 6-axis anthropomorphic robot with a 170 kg payload
- Compact, under-patent floating head by Cosberg



- Four-position rotary tables: from 1 to 2 tables for a modular configuration
- Siemens Sinumerik ONE CNC equipped with Run MyRobot
- Automatic feeding system for Rivets and Time-Sert inserts

Main benefits

This new technology represents a significant leap forward in optimising composite material machining and assembly processes. The main benefits include:

- One Head, Multiple Inserts: Rivets and Time-Sert inserts of different diameters are managed automatically by a single device.
- Maximum Flexibility & Reachability: the anthropomorphic robot emulates the flexibility of the human wrist, enabling access to even the most challenging areas.
- Easy & Intuitive Programming: ISO programming language for seamless operation.
- Quality without Compromise: the advanced, fully electronic system enables precise control of all parameters.
- Precision under Control: real-time process tracking and feedback for unmatched accuracy.
- Redefining Productivity: faster, more flexible, and cost-effective fastening technology.

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ARC | AUTOMATIC RIVETING CELL

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