

Credits: NASA

Mechanical and Fluid Systems

Composite Joint Connector

Structural joint with multi-axis load carrying capacity

NASA Langley Research Center has developed a composite joint connector that is more structurally efficient than joints currently on the market. Traditionally, composite joints can bear heavy loads along their length but tend to fail when stress is applied along multiple axes. This joint is designed to minimize stress concentrations, leading to overall increased structural efficiency when compared to traditional joints.

BENEFITS

- ➔ Increased structural integrity by reducing stress-related failure characteristics
- ➔ Can be formulated to fit a variety of joint shapes
- ➔ Corrosion resistant, lightweight, and electrically insulated
- ➔ Two or more tubular elements can be joined at a node point (3D structures)

APPLICATIONS

- ➔ Aerospace
- ➔ Automotive
- ➔ Outdoor structures
- ➔ Sporting goods

technology solution

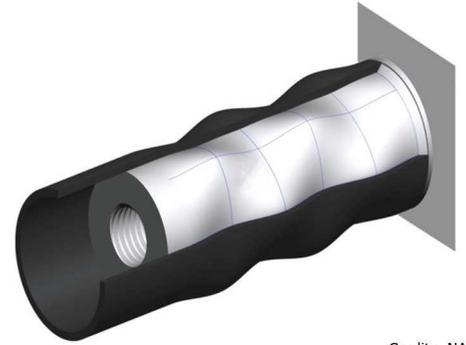


NASA Technology Transfer Program

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THE TECHNOLOGY

This technology is a joint connector for application between two or more tubular parts, or to connect one or more tubular parts to a fixed structure. This attachment technology is more structurally efficient and reduces failure characteristics due to the uniformity of composite material across the joint. In comparison to a typical joint, this technology reduces weight while minimizing stress variations that lead to structural failure. Moreover, typical joints must be bonded or screwed together, which further reduces efficiency. The invented technology, however, is designed so that it is both bonded and mechanically locked by design rather than relying on separate mechanical fasteners. The result is a design that mitigates failure of a structural joint.



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Joint Assembly Showing Three-Lobed Connector, Single Tube Element. (cover images shows Four-Lobed Connector).

PUBLICATIONS

Patent Pending

National Aeronautics and Space Administration

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