

Day of the robots

New robotic technology for making composite parts is speeding V-22 production

By Jeff Barnett

At Boeing's facility in Philadelphia, Celso Silvera, a composite fabricator on the V-22 Osprey program, has two invaluable teammates.

Neither is human.

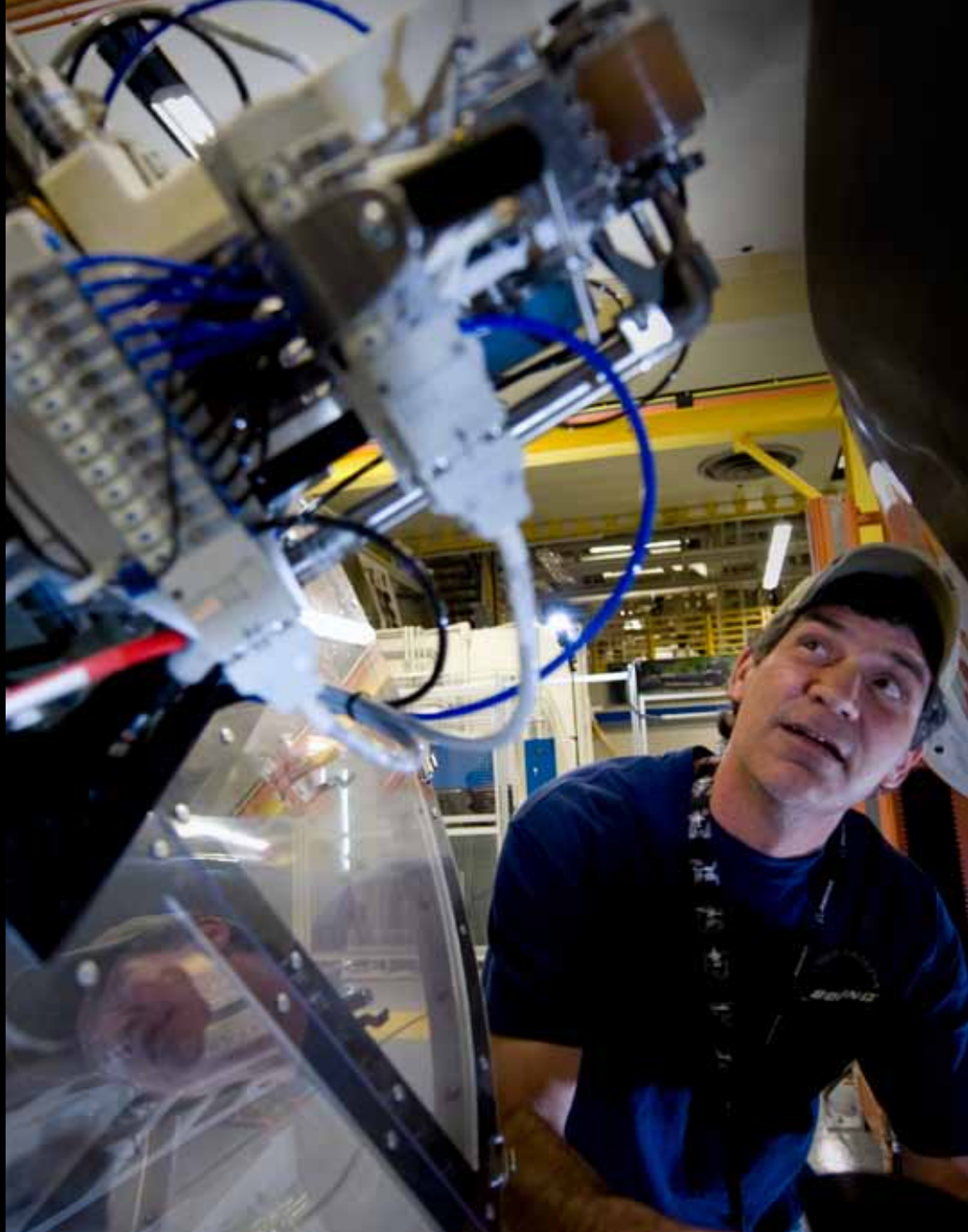
The twin robots work in tandem to create the composite curved sections located aft of the aircraft's wing by laying and overlapping composite fiber to a predesignated shape. The completed parts are then moved to the V-22 assembly line.

"It means we can turn these composite parts out faster," Silvera said of the two machines. "That makes my job easier and frees me up to do other valuable work."

Today's military and commercial aircraft use more composites than ever. But traditional fiber-placement-machine technology typically supports a single-part build at a time and is much more expensive. This older technology also has physical limitations. Once in place, the equipment usually can't be moved to another production area.

But the robotic machines being used on the V-22 program at Boeing's Composite Center of Excellence can be moved to nearly any existing factory with "minimal footprint and effort," according to Robert Vitlip, Philadelphia site project lead. "Best of all, it's much less expensive than traditional technology and offers ongoing savings through its life cycle."

Developed by Boeing Research & Technology in Seattle and the composite center in Philadelphia, the fiber-placement machine combines off-the-shelf technology with Boeing-patented composite capabilities.



"This is the first production robotic fiber-placement technology application of this kind in industry," Vitlip said, "and it offers a significant leap ahead in process efficiency and cost savings, especially over traditional machinery. That means a faster rate of production—vital with the program's planned rate and production schedule increases."

The technology represents the best of the "One Boeing" approach, said John Kivitz, senior manager at the composite center.

"We brought together the most knowledgeable personnel, best technologies and expertise within Boeing," he said. "This is Boeing-owned technology that can be applied for future commercial and defense-related products."

Added Brice Johnson, Boeing Technical Fellow: "This is a very unique, very new capability for Boeing. The ability to customize this kind of low-cost composite system is a major milestone." ■

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PHOTO: Darryl Purrfield, composite fabricator, inspects robotic fiber-placement equipment used on the V-22 at the Composite Center in Philadelphia.

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