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PNNL-35401

Friction Stir Scribe Joining of Carbon Fiber Reinforced Polymer (CFRP) to Aluminum (Abstract)

CRADA #370 (PNNL #37673)

September 2023

Leo Fifield

General Motors LLC

U.S. DEPARTMENT OF ENERGY

Prepared for the U.S. Department of Energy
under Contract DE-AC05-76RL01830

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Richland, Washington 99354

Abstract

The objective of this project is to develop and demonstrate friction stir scribe (FSS) joining of carbon fiber reinforced polymer (CFRP) to aluminum on light-duty vehicle body-in-white (BIW) joints. The project will also overcome the major obstacles of implementing FSS technology in a fully 3-D production robotic work cell and demonstrate the required CFRP-aluminum joint strengths in industrially relevant light-duty, BIW components. Specifically the project will develop the critical process technology, models and tools necessary to advance the FSS method through experimentation, validation at the laboratory scale, and integration into a production-like robotic environment. The ultimate goal is to demonstrate the technology on industrially relevant components based on process development and numerical simulation performed at scale.

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