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

CRADA #370 (PNNL #37673)

September 2023

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General Motors LLC

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Prepared for
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Pacific Northwest National Laboratory
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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