



Institute for Advanced Composites Manufacturing Innovation

Contract No. DE-EE0006926

Project Team: Collaborative Composite Solutions
Corporation

Project Period: June 2015 - May 2020

John A. Hopkins, CEO

U.S. DOE Advanced Manufacturing Office
Program Review Meeting

Washington, D.C.

July 17-19, 2018

Overview



TIMELINE & BUDGET

- June 2015 - May 2020
- Project 60% Complete
- Total Budget: \$175M

	BP1	BP2	BP3	Total
DOE Funded	\$4.8M	\$13.4M	\$19.5M	\$37.7M
Cost Share	\$4.4M	\$20.2M	\$28.5M	\$53.1M
Total	\$9.2M	\$33.6M	\$48.0M	\$105M

BARRIERS

- Cost of CFRP
- Rate of Production
- High Embodied Energy
- Low Recyclability

CORE PARTNERS

Wind Energy

National Renewable Energy Laboratory

Vehicles

Michigan State University

Compressed Gas Storage

University of Dayton Research Institute

Materials & Processing

Oak Ridge National Laboratory, University of Tennessee

Vanderbilt University

University of Kentucky

Design, Modeling & Simulation

Purdue University

MEMBERSHIP As of 6/1/18

166 current members representing academia (10%), associations (4%), government (5%), LE (28%), and SMEs (53%)

Objectives

5 Goals for accelerating advanced composites technology development



1

Establish technologies to enhance recyclability

Validate technologies for at least 80% recyclability or reuse into effective components

2

Develop energy efficient methodologies for composites processes

Reduce embodied energy of carbon fiber reinforced polymers by 50%

3

Demonstrate competitive production of fiber-reinforced polymers

Produce fiber-reinforced polymers to reduce cost and cycle times comparable to traditional materials

4

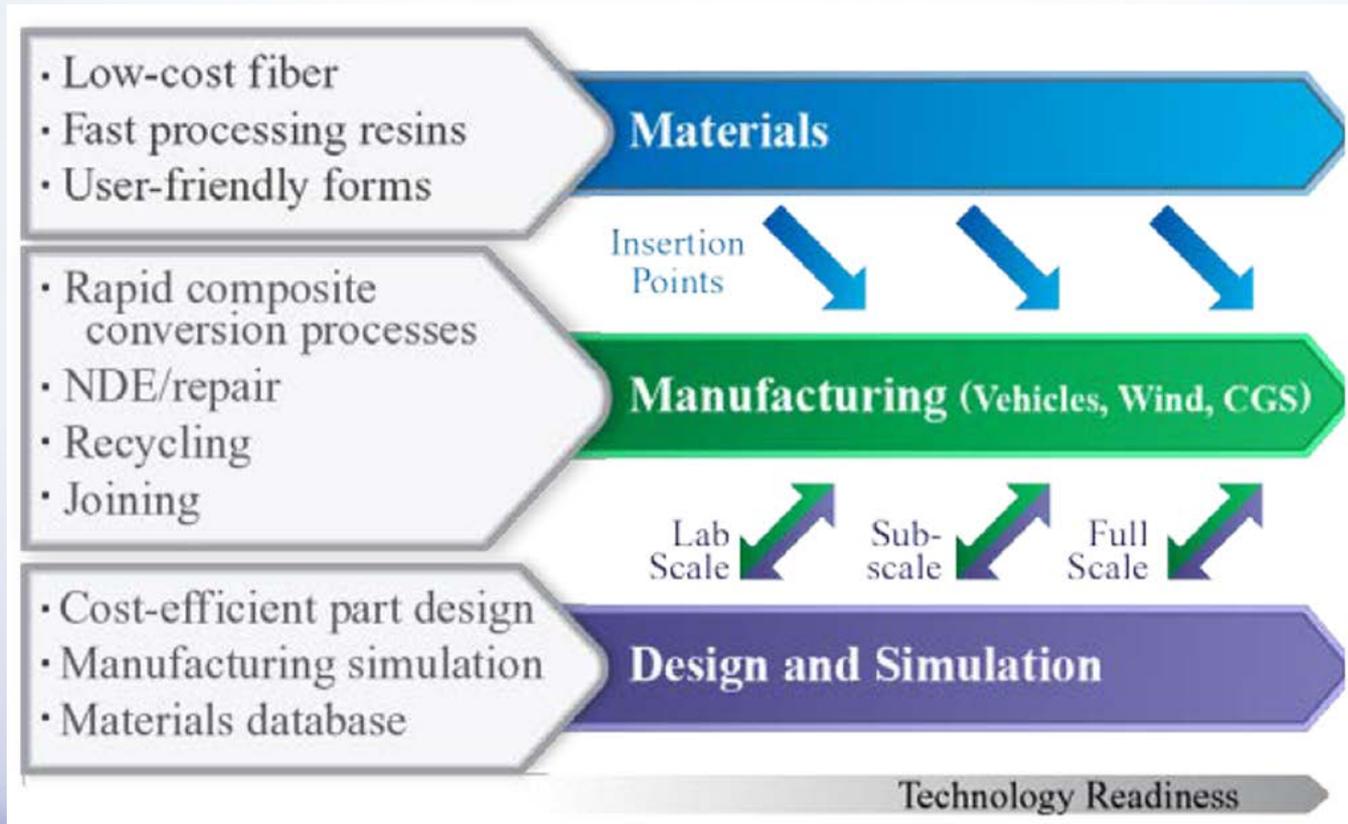
Reduce production cost of advanced composites by 25%

5

Create 5,000 jobs in the composites field

Technical Innovation

- Institute partners co-invest in capabilities based on technology roadmaps
- Industry-led project teams collaborate with core innovation partners in application and cross-cutting technology areas (**Production Relevant Environment for Innovation**)
- Project formation favors supply-chain demonstrations and application-driven solutions (**Supply Chain-based Framework for Decision-Making**)



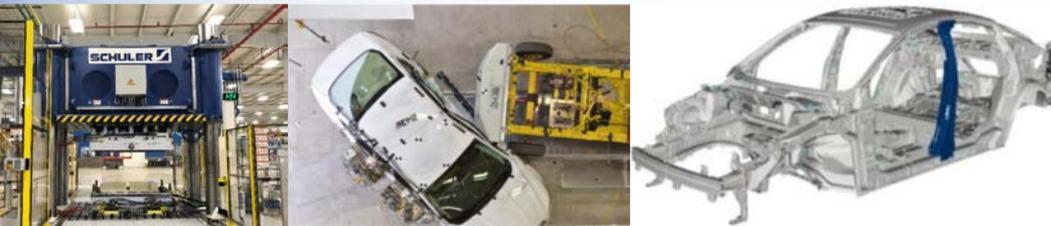
Results and Accomplishments

Project to optimize carbon fiber production enabling high volume manufacturing of lightweight automotive components

Progress to date:

- Developed novel intermediates and chemistry
- Demonstrated automated processing technology
- Novel product/process implemented in the Ford GT
- Technology package in last stages of qualification

Potential for broad implementation



Completion of phase 1 project led by DuPont which validates new carbon fiber preform manufacturing process

- New material created to improved fabric formability characteristics compared to traditional woven materials

20% reduction in embodied energy

34-60% reduction in cost

40+ projects are completed or in progress



June 2017

- ✓ 21 IACMI interns placed at core partner and industry member sites

July 2017

- ✓ 300+ attended the IACMI Members Meeting in Dayton, OH
- ✓ Hosted roadmapping workshop to coordinate R&D efforts among the five IACMI technology areas

October 2017

- ✓ Engaged 400+ across the US during MFG Day
- ✓ Scale-Up Research Facility ribbon-cutting in Detroit

November 2017

- ✓ Debuted composite snow sled built by UTK students at Ober Gatlinburg opening day
- ✓ Hosted 140+ at training workshop with Composites One (C1) at Purdue University

December 2017

- ✓ IACMI 9m wind blade prototype finalist for innovation award at CAMX

January 2018

- ✓ 300+ attended Members Meeting in Detroit

March 2018

- ✓ IACMI 9 m wind blade prototype finalist for JEC World Innovation Award
- ✓ Partnered with Society of Women Engineers to host 100 students for demos and STEM activities

April 2018

- ✓ Knoxville hosted inaugural ACMA Recycling Workshop
- ✓ Hosted 180+ for C1 training workshop at SURF

June 2018

- ✓ 40+ IACMI interns placed at member sites
- ✓ Hosted 150+ for C1 training workshop at NREL/CoMET

Transition Planning: Building on Success



Runway

- ✓ Established IACMI brand across markets
- ✓ Working models for collaboration in place
- ✓ Demonstrated value and leadership established in core partners
- ✓ Momentum in serving member consortium

Strategic Innovation Assets

- ✓ Core Partners of Universities and National Laboratories
- ✓ New Core Partners
- ✓ Consortium Members
- ✓ Industry Trade and Workforce Development Partners
- ✓ Other Strategic Resources

Funding & Support

- ✓ Membership, Projects, Shared Assets
- ✓ States and Core Partners
- ✓ Workforce, Special Programs, Leveraged
- ✓ Federal: DOE, DOD, NASA, NIST
- ✓ Other

Future Operations

- ✓ Focus on Consortium: Industry member relations, partitioned collaboration spaces with proven operating models and unique resources
- ✓ Pre-Competitive to Near Competitive Projects
- ✓ Fast Access to Physical and Digital Resources
- ✓ User Model Approach with Emphasis on Outcomes and Impact
- ✓ Innovation Demonstrations for Higher TRL Projects
- ✓ Low Volume Prototyping
- ✓ Business Development Support for Innovation-based Market Growth

Questions?

Contact info:

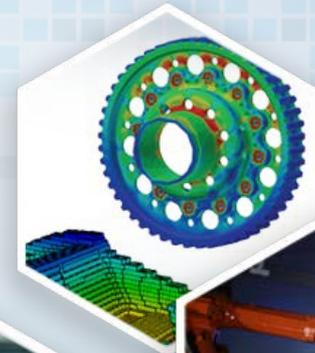
John A. Hopkins

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Overview – Partner Detail

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Partner Facilities

- Colorado
- Ohio
- Michigan
- Tennessee
- Indiana

Technology Areas

- Wind
- Compressed Gas Storage
- Vehicles
- Materials and Process
- Modeling and Simulation

