



Driving composites innovation through digital technologies

IACMI—The Composites Institute centers our Design, Modeling and Simulation (DMS) Area in Indiana. By quantifying cost-saving processes, materials, and best practices, the digital tools and technologies at this Purdue University facility are helping drive innovations to shorten the development cycle and decrease the cost of composites manufacturing.

The Composites Manufacturing & Simulation Center (CMSC), a Purdue University Center of Excellence, occupies over 30,000 ft² of the Indiana Manufacturing Institute (IMI) in the Purdue Research Park. The CMSC hosts the Thermwood Large Scale Additive Manufacturing Research Laboratory and the Dassault Systemes 3D Experience EDU Center of Excellence.

Facility Hosts and Partners

CMSC is a bridge between the academic and industrial communities, connecting the global composites industry and Indiana manufacturing to Purdue University. The CMSC research is driven by industry needs and grounded in academic rigor. It exercises a comprehensive set of simulation tools to model composite performance from manufacturing through retirement. In addition, state-of-the-art manufacturing and characterization facilities provide a one-stop-shop for composites design, manufacturing, prototyping, and model validation.

Key IACMI partners include Dallara, Dassault Systemes, Dow-DuPont, Evonik, Ford, IDI Composites International, TPI Composites, Volkswagen, and Wabash.

Research Features

Key Equipment and Technology:

- Manufacturing equipment for development of workflow simulation:
- Digital twin, digital thread and model-based engineering technologies
- Thermwood 105 Printer and Trimmer

Recent projects:

- Performance prediction of the 93-foot tall Al Davis Memorial Torch in the Las Vegas Raiders Stadium, constructed of 225 3D-printed blocks by Dimensional Innovations
- Thermoplastic stamp forming modeling and validation

Technical Area Advisors

Byron Pipes, PhD
Director, Design,
Modeling & Simulation
Technology Area
bpipes@purdue.edu

Johnathan Goodsell, PhD
Deputy Director, CMSC
jgoodsell@purdue.edu

