

Focus on Ohio Industry

Advanced Composites

Valuable Ohio Resources

- National Composite Center
- Center for Multifunctional Polymer Nanomaterials and Devices
- The University of Akron
- Case Western Reserve University
- University of Dayton Research Institute
- Center for Advanced Polymer and Composite Engineering
- The Ohio State University
- PolymerOhio, Inc.

“Our projects typically result in companies establishing market leadership and competitive advantage by deploying fast, efficient innovation.”

*Lou Luedtke,
National Composite Center*

Learn more about Advanced Composites in Ohio:

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Ohio—Leadership in Materials

Through the use of advanced materials technologies (including nanomaterials) companies in Ohio are producing composites that offer significant breakthroughs in performance attributes.

National Composite Center (NCC)

NCC is the total development solution for the advanced materials industry. As a quick commercialization agent, manufacturing accelerator and business incubator, the Center serves the aerospace, defense, ground transportation, industrial and infrastructure markets.

Understanding the unique properties of composites, NCC leads companies from concept to testing and trouble shooting, state-sponsored scale-up, prototyping, product testing and training of personnel once new manufacturing equipment and techniques are established.

- **Nanotechnology** NCC is working to analyze, characterize and process nanoparticles and then qualify the resulting nanocomposite material to ensure batch consistency. NCC is also a recognized expert in its work to commercialize thin film applications in nanocomposites. The Center is partnering on a number of projects to develop processing technologies as well as design and build the associated

equipment. Through collaboration with leading government, industrial, and academic partners, NCC also provides critical engineering and technology support for a variety of nanotechnology programs. By combining these areas of activity, NCC is quickly building a center of expertise for total nanocomposite technology solutions.

Continued →



Resources:

- www.PolymerOhio.org
- www.compositecenter.org
- <http://cmpnd.org>
- www.capce.ohio-state.edu
- www.odod.state.oh.us

Composites make it possible to create large, durable parts without cumbersome weight. For example, composite technology will be used to produce 50 –100 meter blades in large wind turbines.



(Continued from page 1)

- **Design Optimization** NCC helps manufacturers integrate composites into structural designs and harvest substantial cost and weight savings among other benefits.
- **Rapid Fiber Preforming** NCC's signature Rapid Fiber Preforming technology, which controls the precise placement of fibers to create near net shape preforms, dramatically reduces manufacturing costs, improves reproducibility, and reduces scrap and material waste.
- **Thermoplastics** In-depth knowledge about material, design, processing and post-processing of thermoplastic composite tapes, long fiber thermoplastic composites, and glass mat thermoplastics to help manufacturers make production level parts.
- **Closed Molding** A wide range of closed molding methods including patented technologies like Quickstep.
- **Materials Testing Laboratory** Equipped to meet mechanical, optical and thermal composite testing needs.


www.compositecenter.org

The Advantages of Composites A Quick Review

- Composites, due to lower density, can deliver a weight savings of 25 to 50 percent over traditional materials.
- Strength-to-weight and stiffness-to-weight ratios are the primary reasons composites are used.
- The fiber/resin mix can be customized to meet stiffness, strength and manufacturing requirements
- Part consolidation means a reduced number of assemblies and a reduced fastener count
- Reduced machining
- Tapered sections and compound contours easily accomplished
- Resistant to corrosion
- Resistant to fatigue damage with good damping characteristics
- Low coefficient of thermal expansion



CMPND (Center for Multifunctional Polymer Nanomaterials and Devices)

With locations at The Ohio State University, The University of Akron and the University of Dayton,  CMPND offers state-of-the-art resources for nanotechnology research and commercialization. Equipment, facilities and knowledge resources stand ready to enable scale up, prototyping, and testing of materials, processes and device assembly techniques.

CMPND Target Markets

- Polymeric nanocomposites
- Polymer photonic components and devices
- Biomedical devices and systems

Nano Central

With over 50 companies and six university research collaborators participating, CMPND represents a broad array of nano resources and expertise.

<http://cmpnd.org>