

Manufacturing Demonstration Facility

A National
Resource
for Industry





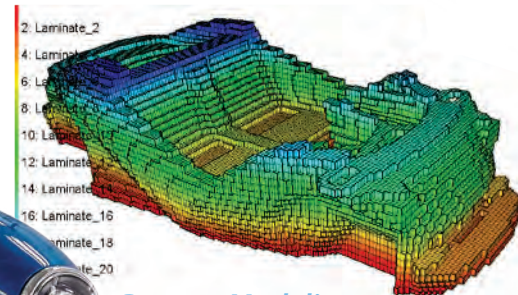
Where Innovation Happens

As the nation's premier research laboratory, Oak Ridge National Laboratory is one of the world's most capable resources for transforming the next generation of scientific discovery into solutions for rebuilding and revitalizing America's manufacturing industries. ORNL's expertise in materials synthesis, characterization, and process technology helps to reduce risk and accelerate the development and deployment of innovative energy-efficient manufacturing processes and materials targeting products of the future.

The Department of Energy's first Manufacturing Demonstration Facility, established at ORNL, helps industry adopt new manufacturing technologies to reduce life-cycle energy and greenhouse gas emissions, lower production cost, and create new products and opportunities for high-paying jobs.

Collaborating with Industry

Under the **MDF Technology Collaborations Program**, industry can leverage world-leading capabilities and expertise in short-term collaborative projects on the path to commercial implementation of advanced manufacturing and materials technologies. In all cases the objective is to strengthen the domestic manufacturing enterprise by driving innovation and accelerating adoption of clean energy manufacturing technologies leading to increased domestic production capacity, jobs for American workers, and regional economic development.



Process Modeling

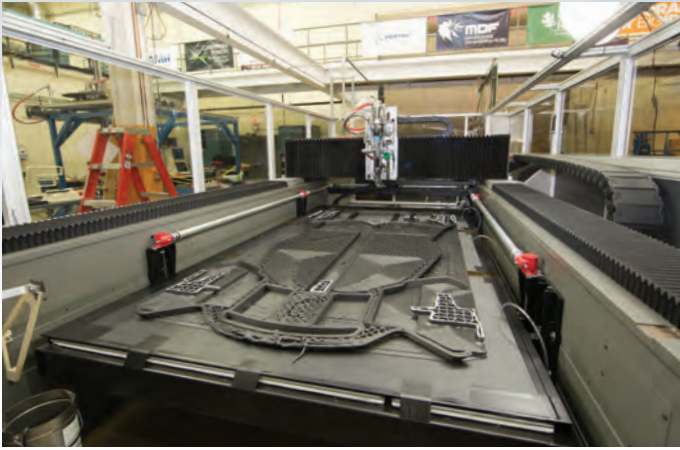
Solving problems before they happen. Predicting and correcting distortions and cracks before printing starts.

3D printed all-electric Shelby Cobra

Driving Rapid Integration of Next Generation Manufacturing

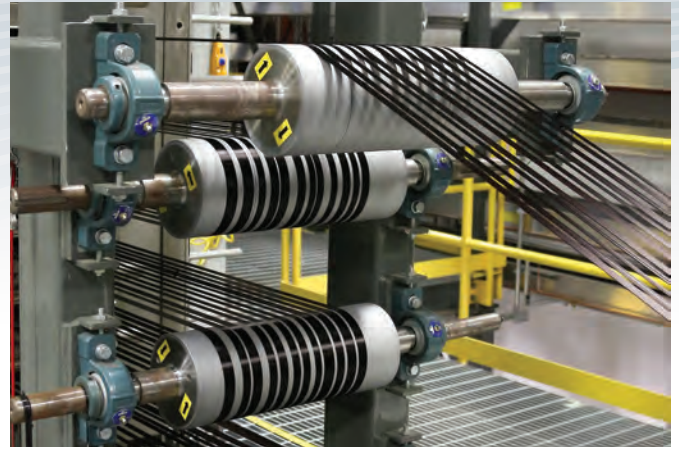
Developments at ORNL in advanced manufacturing such as Big Area Additive Manufacturing, or BAAM, technology and carbon fiber composite materials are enabling innovative solutions for applications in manufacturing, transportation, and beyond.

These breakthroughs accelerate the introduction of new technology into the marketplace and can revolutionize the way products are designed and built.



Additive Manufacturing

ORNL is collaborating with equipment manufacturers and end users to advance state-of-the-art technologies and revolutionize the way products are designed and built. Drawing on its close ties with industry and world-leading capabilities in materials development, characterization, and processing, ORNL is creating an unmatched environment for breakthroughs in additive manufacturing or 3D printing.



Carbon Fiber & Composites

ORNL is developing low-cost carbon fiber composite materials for vehicle and industrial applications to improve energy efficiency. An internationally recognized leader in the field, ORNL operates DOE's unique Carbon Fiber Technology Facility and works with leading companies to overcome commercialization and manufacturing barriers and realize the strength and energy-saving benefits of these new materials.

Complementary Manufacturing Research

Lightweight Metals Processing

using advanced synthesis and processing technologies for low-cost titanium alloys, magnesium alloys, and metal matrix composite products

Roll-to-Roll Processing

developing low-cost manufacturing of flexible electronics, photovoltaics, and energy storage systems using pulse thermal processing and other advanced processing technologies

Magnetic Field Processing

for dramatic enhancement of material properties beyond today's limits, including increased fatigue life and strength and stress relief

Low-Temperature Materials Synthesis

for lower energy and processing costs through biosynthesis of unique materials at low temperature

Batteries Manufacturing

for innovative processing using ORNL's unique prototyping materials and evaluation facility

World-Leading Research Facilities



High Temperature Materials Laboratory

Broad capability for materials characterization, synthesis, and testing



Spallation Neutron Source

World's most powerful accelerator-based neutron source



Carbon Fiber Technology Center

North America's unique and comprehensive carbon fiber development capabilities



Multiprogram Research Facility

Capability to execute national security science and technology projects



Oak Ridge Leadership Computing Facility

World's most powerful open scientific computing facility



Energy Research

Nation's broadest portfolio of energy generation and efficiency programs



Science and Technology Park

Co-locating partners in proximity to ORNL's expertise and innovations

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