

U.S. Department of Energy Competitiveness Improvement Project

2024 Manufacturing Process Innovation Awardee: Bergey Windpower Co.

Project dates: Oct. 23, 2024–July 22, 2026

Project Overview

Process Improvements Will Reduce Blade Manufacturing Costs, Increase Manufacturing Volumes

Bergey Windpower Co. (BWC) manufactures the blades for its Excel 15 wind turbine in house. While this helps keep costs down, the original (Gen-1) blade design is costly and time-consuming to produce. To lower blade manufacturing costs, increase turbine production, and meet growing customer demand, BWC created a Gen-2 blade design for the Excel 15 that will reduce molding labor, improve glass and carbon-fiber lamination schedules, and incorporate lower-cost resins and other improvements.



A Competitiveness Improvement Project Manufacturing Process Innovation Award will enable Bergey Windpower Co. to implement innovative manufacturing processes to increase production of its Excel 15 wind turbine (shown here) and compete with other energy technologies. Photo from American Windpower

Funding from the 2024 Competitiveness Improvement Project (CIP) will enable BWC to refine and implement these improvements and pursue ISO 9001 certification for its factory. Since 2012, CIP funding has helped BWC develop and certify the Excel 15 wind turbine through several completed projects. BWC currently has another active CIP project focused on developing a financing affiliate.

“Producing new blade molds and integrating anticipated equipment and processes carry high up-front costs. The cost-shared support BWC is receiving through its 2024 CIP award allows us to implement innovations on a much faster schedule, benefiting both us and our customers.”

Mike Bergey, President & CEO, Bergey Windpower Co.

Project Outcomes and Deliverable

The goal of the project is to lower the cost of blade manufacturing for the BWC Excel 15 wind turbine and raise the production rate to support increased turbine deliveries. Reducing blade manufacturing costs will allow BWC to lower the sales price for the Excel 15 wind turbine. Increasing the production rate will shorten delivery times and support higher sales volume.

Project Approach

BWC will begin manufacturing the Gen-2 blade for the Excel 15 using automated processes to cut costs and increase production rates.

First, BWC will review current manufacturing processes and costs, evaluate the original set of process improvements, and conduct new evaluations, such as alternative painting methods. BWC will then work with a specific fiber-reinforced plastics mold manufacturer, an investment casting company, and various materials and equipment suppliers to transition to the Gen-2 blade and implement the process improvements curated through the new investigations. BWC will work with the Moore Norman Technology Center to implement ISO 9001 certification of the BWC factory.

Project Collaborators

Current and future project partners include:

- *Mastercraft*—Will fabricate the master mold plugs and the production blade mold skins (BWC will fabricate the mold frames)
- *Alpha Casting*—Will create the master and fabricate blade hub stiffeners using a lost-wax investment casting process
- *Magnus Venus Products*—Will provide automated resin mixing and infusion equipment for the blade production process
- *Moore Norman Technology Center*—Will implement ISO 9001 certification for the BWC factory.

Project Financial Information

Award Amount: \$500,000.00

Awardee Share: \$732,858.80

Total: \$1,232,858.80

“Since its first CIP award in 2012, Bergey Windpower Co. has been dedicated to reducing the cost and improving the efficiency of its Excel 15 wind turbine. This new project will help the company meet growing demand for this popular turbine with a lower-cost blade design, innovative manufacturing processes, and factory certification.”

Brent Summerville, Technical Monitor, National Renewable Energy Laboratory (NREL)



Bergey Windpower Co. manufactures the blades for its Excel 15 wind turbine in house. With Competitiveness Improvement Project funding, the company will develop a new manufacturing process that will reduce manufacturing time and cost. Photo from Mike Bergey, Bergey Windpower Co.

Manufacturing Process Innovation Award

One of 10 types of CIP awards, Manufacturing Process Innovation projects support designing, building, and validating improved manufacturing processes for a defined-production wind turbine, leading to a reduced levelized cost of energy.

About the Competitiveness Improvement Project

The U.S. Department of Energy's (DOE's) CIP awards cost-shared subcontracts and technical support to manufacturers of small and medium-sized wind turbines. Managed by NREL on behalf of DOE's Wind Energy Technologies Office, CIP helps advance wind energy as a cost-effective, distributed generation technology option.

More Information

Visit NREL's website at www.nrel.gov/wind/competitiveness-improvement-project.html

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