With support from the Competitiveness Improvement Project, Star Wind Turbines aims to earn third-party certification for its STAR74-6 small wind turbine model. *Photo from Star Wind Turbines*

U.S. Department of Energy Competitiveness Improvement Project (CIP)

2020 Small Wind Turbine Certification Awardee: Star Wind Turbines

Project Dates: March 2021–December 2023

Project Overview

Certification of Small Wind Turbine Will Increase Consumer Confidence

Third-party certification can significantly increase customer confidence in small wind turbines. For the distributed wind turbine industry, this certification is critical to expand their market and increase sales.

With support from the Competitiveness Improvement Project's Small Turbine Certification Award, Star Wind Turbines aims to earn third-party certification for their small wind turbine model STAR74-6. Certification will help instill public confidence in the product's performance and safety standards. The STAR74-6 is capable of powering 20–30 homes, and producing 110,000–140,000 kilowatt-hours per year. The model can run both on- or off-grid, contains battery charging, and has active yaw (a smart control system that changes the orientation of the wind turbine's rotor to maximize energy capture). The STAR74-6 model can also be integrated with solar energy and comes with a self-raising hydraulic tower that eliminates the need for a crane.

> "The certification of small wind turbines is essential to build customer confidence and ensure performance and safety. The Competitiveness Improvement Project has been indispensable in achieving our certification goals."
>
> Jason Day, owner and manager of Star Wind Turbines

Project Outcomes and Deliverables

Certification of Star Wind Turbines' STAR74-6 small wind turbine model will provide consumers with reliable data on peak power, yearly energy, and sound levels that enable them to make an informed purchasing decision. Plus, as owners of a certified turbine, customers can qualify for a federal investment tax credit, further incentivizing consumers to purchase this product. Star Wind Turbines will earn certification of its generator and

Star Wind's STAR74-6 wind turbine is designed for locations without much wind. *Photo courtesy of Star Wind Turbines*

turbine electrical system, readying the system to meet National Electric Code, which will allow it to sell in another large market: local building departments.

Once testing is complete, the International Code Council (ICC) Small Wind Certification Council, an independent, accredited certification company, and Intertek, an electrical certification company, will certify the results of these assessments. Both certifications are required to qualify the wind turbine for the federal investment tax credit. And they will help grow Star Wind Turbines' sales and installations in the United States, improve customer confidence in the product, and enhance the reputation of the small wind turbine industry.

Project Approach

To achieve the goals of this award, Star Wind Turbines' STAR74-6 small wind turbine model will undergo testing for:

- Performance, sound, and safety
- Longevity, including a 1,000-hour endurance test and 15-hour, high-wind test
- Structural stability, which will also undergo analysis
- Static blade performance
- Small wind turbine electrical certification.

Project Collaborators

- ***RenewTest, LLC*** — Performance and safety testing
- ***INTERTEK***—Electrical certification
- ***ICC Small Wind Certification Council*** —Third-party certification of the STAR74-6 wind turbine

Project Financial Information

Award Amount: $208,500
Awardee Share: $69,500
Total: $278,000

> "The innovative, six-bladed design of the STAR74-6 wind turbine is unique because it's designed specifically for low-wind environments, which are typical for distributed wind projects. With help from the Competitiveness Improvement Project, the certification of this turbine will give Star Wind greater access to a larger number of state and federal incentive programs. This will make the turbine more affordable, allowing consumers to take advantage of a turbine designed for larger energy users such as farms and other agricultural businesses."
>
> Scott Dana, NREL technical monitor

Small Turbine Certification Award

One of eight types of Competitiveness Improvement Project awards, Small Turbine Certification Awards:

- Evaluate wind turbines with a rotor swept area less than or equal to 200 square meters
- Apply the International Electrotechnical Commission 61400-2:2013 standard and/or American Wind Energy Association SWT 1 standard to turbine designs.

About the Competitiveness Improvement Project

The U.S. Department of Energy's (DOE) Competitiveness Improvement Project supports U.S. leadership in distributed wind technologies. Managed by the National Renewable Energy Laboratory on behalf of DOE's Wind Energy Technologies Office, the Competitiveness Improvement Project supports innovation to advance wind energy as a low-cost, distributed generation technology option.

More Information

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

Download the *DOE fact sheet*

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