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

2022 Small Turbine Certification Awardee: Ryse Energy LLC – Americas

Project dates: April 17, 2023–March 28, 2025

Project Overview

Certification of Upgraded Turbine Line Will Enable Big Gains in Micro Wind Reliability

Performance and reliability are critical for micro wind turbines, which range in size from 20 watts to 1,000 watts—particularly those deployed for remote monitoring, telecom, oil and gas, and marine applications with limited access to repair or technical support. Component testing and certification ensures the quality of these systems, confirming the micro wind technology's ability to provide consistent operation and simple on-site maintenance at a competitive price. However, the certification process can be too cumbersome and expensive for some companies.

To meet the growing demands of the distributed wind energy market and comply with current U.S. standards, Ryse Energy LLC – Americas (Ryse Energy, formerly Primus Wind Power) plans to update all six products in its AIR Range family of micro wind turbines. A new, more cost-effective circuit board will be paired with other hardware upgrades, advanced control algorithms, and a Bluetooth function that allows users to more easily program and control the turbine.

This Competitiveness Improvement Project (CIP) award will fund certification testing of the new circuit board to make sure it meets American National Standards Institute/American Clean Power Association (ANSI/ACP) and UL Federal Communications Commission (FCC) safety and quality standards. Ryse Energy, as Primus Wind Power, developed the prototype for the new circuit board with an earlier round of CIP funding and has received CIP awards supporting other certification and optimization projects.

> "Due to the significant costs involved, it would have been very difficult to develop and certify the AIR Range turbines without continued CIP support. We view remote applications as key to market growth, and certification of the updated circuit board is crucial to increasing our reach."
>
> *Ken Kotalik, director of global sales and operations, Ryse Energy LLC – Americas*

Project Outcomes and Deliverable

ANSI/ACP and FCC certification will confirm that Ryse Energy has successfully addressed reliability issues related to its earlier circuit board (originally designed in 2004). These certifications will validate the safety, function, performance, and durability of Ryse Energy turbines while also having the potential to bolster consumer confidence in the micro wind energy industry and help grow market share. Compliance with these standards also will make the turbines eligible for U.S. investment tax credits.

Project Approach

Testing protocols will be applied to certify all AIR Range products to ANSI/ACP and FCC standards. Ryse Energy also plans to have the controller tested to meet international electrical and emission standards, apply for membership in the Bluetooth Special Interest Group, and renew its listing with CSA Group, the Canadian certification authority.

"It is imperative to support domestic manufacturers' pursuit of certification so that they can offer consumers effective, rigorously tested products. By upgrading and certifying its complete line of turbines, Ryse Energy is ensuring the reliability of its products and helping build confidence in the entire micro wind industry."

Lee Jay Fingersh, technical monitor, National Renewable Energy Laboratory (NREL)

Project Collaborators

Current and future project partners include:

- Windward Engineering–certification testing
- Thornwave Labs–connected electronics engineering
- Ransford Engineering–engineering
- CSA Group–Canadian certification testing.

Project Financial Information

Award Amount: $475,000

Awardee Share: $153,374

Total: $628,374

Small Turbine Certification Award

One of nine types of CIP awards, Small Turbine Certification projects apply to turbines up to 150-kilowatt peak power that are seeking certification to ANSI/ACP 101-1-2021, *The Small Wind Turbine Standard*. The effort may also include work to list the turbine assembly or component(s) to applicable electrical safety standards.

About the Competitiveness Improvement Project

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

The Ryse Energy Air 30 wind turbine is one of the company's range of micro turbines. *Photo from Ryse Energy LLC (formerly Primus Wind Power)*

More Information

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

Primus Wind Power Inc. SUB-2023-10291

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