



Control of Small, Distributed Energy Resources

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a microsource controller that ensures stable operation of a large number of distributed energy resource generators.

OVERVIEW

Distributed energy resources (DER) are small power generators that are typically located at customer sites where the energy they generate is used. Small DER produce low emissions, can be manufactured at low cost and can be placed near the customer's load. They offer a promising option to meet the rapidly growing demand for more reliable power across the United States.

THE INVENTION

UW-Madison researchers have developed a microsource controller that ensures stable operation of a large number of distributed energy resource generators. This cluster of microsourses and loads allows for efficient connection to a power system of small, low cost and reliable distributed generators such as microturbines, fuel cells and photovoltaic cells. The system can include a microsource composed of a prime mover, a DC interface and a voltage source inverter; a means for controlling real and reactive power coupled to the microsource; and a means for regulating voltage through droop control to the microsource. Power electronics provide the control and flexibility to ensure stable operation for large numbers of distributed generators.

APPLICATIONS

- Stable operation of DER generators

KEY BENEFITS

- New generators can be added to the system without modification of existing equipment.
- A collection of sources and loads can connect to or isolate from the utility grid in a

THE WARF ADVANTAGE

Since its founding in 1925 as the patenting and licensing organization for the University of Wisconsin-Madison, WARF has been working with business and industry to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.



rapid and seamless fashion.

- Each inverter can respond effectively to load changes without requiring data from other sources.
- Voltage sag and system imbalances can be corrected.
- Capable of separating from the power grid while continuing to operate independently when power grid problems occur, and reconnecting to the grid once problems are solved

ADDITIONAL INFORMATION

Related Technologies

The inventors improved this technology by simplifying the power controller, removing the fundamental instabilities present when operating near full power output and demonstrating active limit controls for special operating regions.

Tech Fields

Engines & Power Electronics - Utility & microgrid

Clean Technology - Energy & resource efficiencies

CONTACT INFORMATION

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842.

