



Fault Detection Technique for Inverter controls

A Control scheme in inverter-based resources (IBR) to simulate synchronous machines in unbalanced faults.

IP Status: Issued US Patent; Issued Patent No. 12,095,257

Applications

- Inverters for Renewable power generation (photovoltaic (PV), wind)

Technology Overview

Existing inverters of utility-scale renewable resources, such as solar and wind, operate differently during unbalanced faults than the synchronous generators of conventional power plants. With the increasing penetration of inverter-based resources (IBR), the existing protection schemes using commonly used protection relays will have significant limitations..

Researchers at the University of Minnesota have developed a relay management system technology for use in renewable/inverter-based energy applications. The system identifies faults and imbalances and then injects the appropriate currents to make the relays work in the existing transmission-protection infrastructure. This provides advantages of: (a) leveraging existing transmission-protection infrastructure and, (b) entailing a relatively simple implementation at the source of the problem (at the IBRs).

Phase of Development

TRL: 3-4

Currently in a concept stage, progressing towards a lab demonstration

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

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Researchers

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Category

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