A New Variational Mode Decomposition-Based Passive Islanding Detection Strategy for Hybrid Distributed Renewable Generations

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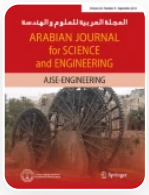

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Aims and scope

Submit manuscript

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Abstract

In this article, we develop a novel passive islanding detection strategy for a hybrid distributed generation (DG) system that uses variational mode decomposition (VMD). The voltage signal's ripple content is evaluated at the point of common coupling (PCC). It splits the input voltage signal into its individual modes or intrinsic mode functions (IMFs). The upper envelope of first mode's IMF has been used for island detection. This strategy relies

solely on internal, mutable, and variational processes. Results from the tests show that the suggested approach can reliably separate the islanding event from other events. Even with no power imbalance, the suggested approaches can identify islanding in about 0.15 s. It has been tested in a wide variety of operational scenarios and proved in non-island situations. The suggested solutions are easy to implement, since they do not require a classifier, also had no non-detection zone (NDZ), and function regardless of the amount and kind DG that might connect to the utility grid.

A Novel Time-Domain Passive Islanding Detection Technique for Grid-Connected Hybri…

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Ethics declarations

Conflict of interest

The authors declare no conflicts of interest.

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