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Colorado State University

Enhanced Power Grid Efficiency through Improved Phasor Measurement Cleaning

Researchers at Colorado State University have created two new algorithms designed to remove faulty data from PMU readings. The first algorithm seeks out faulty data by first accounting for the sparsity of the faulty data points, and then comparing all data points to a syndrome, or calculated faulty data point. The second algorithm then eliminates each faulty data point from the data set by determining the locations of faulty data and directly removing those points.

These new algorithms have the advantages of being less complex than other standard and experimental methods, as well as more reliable in eliminating faulty data. As a result, estimations of the grid state are more accurate and the grid is more efficient. They ensure accuracy through continuous and repeated checks of the data set. These new algorithms are able to increase the accuracy of the grid state estimation without the need for adding more PMUs or more sensitive PMUs.

This new method of faulty data removal is especially appealing to power companies that need to estimate their grid state accurately. It offers a more reliable estimation of the grid state, enabling power companies to conserve electricity and create the most efficient power grid possible. PMUs are already in place within existing power grids, but they are expected to play an even larger role in smart grids. The new algorithms will be useful in both forms of power grid.

Patent Information

U. S. provisional patent pending
Foreign rights available

Inventor Information

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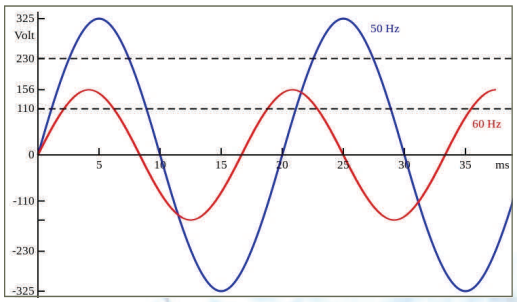

Features and Benefits

- More effective and less complex than traditional bad data removal methods
- More accurate grid state estimation without additional PMU installation, thus reducing installation and monitoring costs.
- Saves money for power companies and consumers by increasing grid efficiency without performance loss

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