

57. Title: A microgrid control framework for preventing power blackouts

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Keywords: Microgrid, Generated power, Blackout, Battery storage

Domain: Power Generation & Distribution

Summary: A microgrid control framework is developed for preventing power outages by providing stable and constant power supply to the consumers. It provides sensor-less technique for estimating speed and position of the wind generator. The microgrid control framework recognizes the problem/failure in the grid and isolates the microgrid so as to avoid power outages. Further, the excess generated power can be stored in battery storage and supplied to reduce the shortfall of electricity. The microgrid control framework follows synchronization criteria as per IEEE-1547-2018. The framework provides smooth transition from grid to isolated mode and vice-versa. It acts as a localized electrical system that can operate autonomously and deliver power to the community or household.

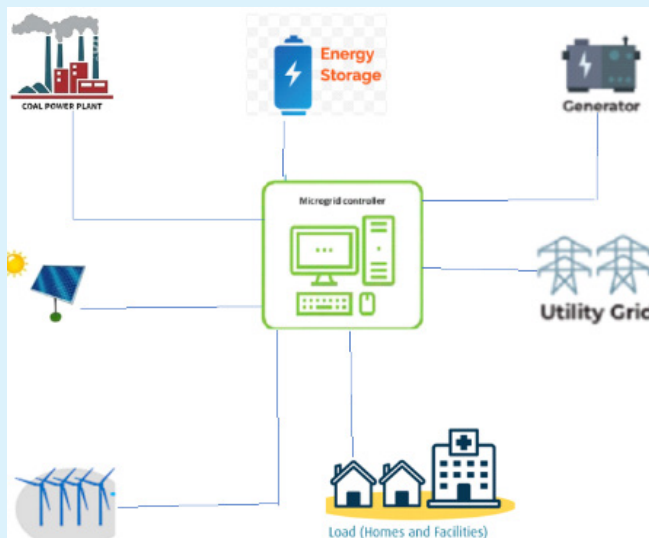


Diagram: Schematic representation of microgrid

Advantages:

- » Provides constant power
- » Ensures reliability of the load demand fulfillment
- » Improves power efficiency
- » Microgrid framework allows operation in dual mode

Applications: In microgrids to avoid power outage, autonomous power delivery to a residential area

Scale of development: A functional prototype framework is developed and tested extensively in Laboratory environment.

Technology Readiness Level: 4

IP status: Indian Patent Application 202111043976