

8. Title: An ultra-battery energy storage system for load frequency control in a multi-area power network

Inventor: Prof. Bhim Singh, Department of Electrical Engineering

Keywords: Load frequency control, Ultra-battery bank, Supervisory control

Domain: Energy Management

Summary: An Ultra-Battery Energy Storage System (UBESS) is provided for load frequency control in a multi-power network. The system includes an ultra-battery bank, a converter, and supervisory control. The supervisory control enables flow of a current corresponding to a reference current command, in the ultra-battery bank. An optimizer is provided which can predict a control input and plant input over a control sample and a plant sample at a sampling instant. The controller is trained with a dataset of current commands and their corresponding current values, prior to turning on the system.

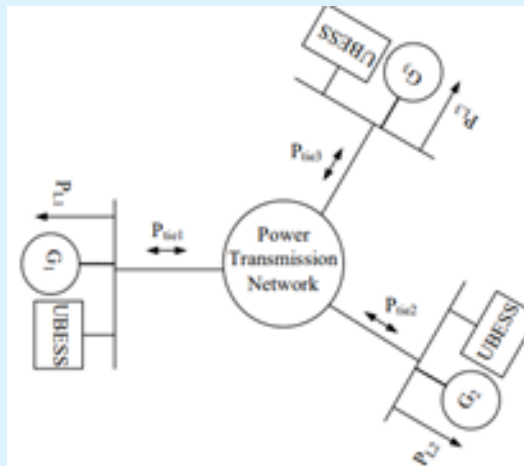


Diagram: Schematic representation of the system

Advantages:

- » Minimizes frequency fluctuations and power deviations in the multi-power network
- » Allows operation of the system within a predetermined range of voltage
- » improves the stability of the grid

Applications: Energy storage and management in a multi-power network

Scale of development: A functional prototype is developed and validated by testing extensively in simulated Laboratory environment.

Technology Readiness Level: 5

IP status: Indian Patent Application 201911049727