Abstract

Nowadays electrical load demand is increasing day by day. Conventional grids alone cannot meet the increasing load demands as their generation is limited by natural resources like coal, water etc. This results in frequency problems. Even the existing Load Frequency Controllers may not solve this problem. This resulted in Smart Grids with renewable generation like wind, solar etc. and plug- in hybrid electric vehicle (PHEV) which can supply the increased load demand from different energy sources. Smart grids are a reality which require good controllers. Hence different controllers like Ziegler-Nichols tuned PID, PSO tuned PID, MATLAB tuned PID and ADRC controllers are tested for a two-area smart grid with PHEV and wind generation through simulations.

References

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Index Terms

Computer Science
Signal Processing
Keywords

Load frequency control  Smart grid  Plug-in hybrid electric vehicle  Vehicle-to-grid  Battery
control  state-of-charge

Particle swarm optimization

PID controller

Active disturbance rejection  controller.