Abstract

The frequency control of reheat interconnected two area power systems are mainly characterized by non-linearity and uncertainty. A hybrid neural network and fuzzy control is proposed for load frequency control in the power systems considering governor dead band (GDB) non-linearity. Fuzzy with neural network is employed to forecast the control input requirement and system's future output, based on the current Area Control Error (ACE) and the predicted change-of-ACE. The Control Performance Standard (CPS) criterion is adopted to the fuzzy controller design, thus improves the dynamic quality of system. The system was simulated and the output responses of frequency deviations in area 1 and area 2 and tie-line power deviations for 1% step-load disturbance in area 1 were obtained. The comparison of frequency deviations and tie-line power deviations for the two area interconnected thermal power system considering GDB nonlinearity with Redox Flow Batteries (RFB) reveals that the system with hybrid fuzzy neural controller enhances a better stability than that of system with integral controller.

References

Control Performance Standard based Load Frequency Control of a two area Reheat Interconnected Power System considering Governor Dead Band non-linearity using Fuzzy Neural Network

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Index Terms

Computer Science  Control Systems
Keywords
Automatic Generation Control  Governor Dead Band  Control Performance Standards  Redox Flow Batteries.