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Performance Improvement in Multi Area Diverse Source Interconnected Power System under IDDN Controller with AC-DC Line

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Abstract



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Abstract: This paper presents the soft computing algorithm-based modified classical controller for the load frequency control (LFC) of a multi-area diverse source (MADS) system. The modified classical controller of the integral-double derivative with filter (IDDN) optimized with the donkey and smuggler technique (DST) is presented for the interconnected power system (IPS) network's frequency regulation. However, the efficiency of the suggested DST-based IDDN is validated with the other regulator's performance. To bring the study closer to delays (CTDs) and its performance is evaluated using a 10% voltage DC line is incorporated with the MADS system and th performance. Finally, the suggested DST-tuned IDDN in coor robustness is verified through the sensitivity analysis.

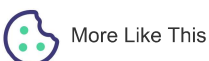
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 Contents

I. Introduction

The significant challenge that had been faced by the IPS operators is getting effective control over the frequency fluctuations especially when the electrical network is prone to load disturbances. The generating units in the electrical network must deliver the power to meet the momentary variations in demand. The mismatch arises from the difference between the electricity produced by the generating units and the current demand on the network. This mismatch in power greatly influences the frequency and hence the IPS frequency is fluctuated. It is necessary to manage the power imbalance in order to control frequency variations. Thus, the LFC mechanism is adopted with the generation units of the IPS network in ensuring the automatic regulation of the power mismatch. The LFC regulator performs the necessary actions by changing the generating point to minimize the mismatch.

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