عنوان مقاله:

Fuzzy Logic based Distributed Secondary Control for Islanded Microgrids

محل انتشار:

اولین همایش منطقه ای دستاوردهای نوین و افق های روشن شبکه های الکتریکی هوشمند (سال: 1396)

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خلاصه مقاله:

In this paper a fuzzy logic-based distributed secondary control is introduced for islanded microgrids. Inspired by techniques from cooperative control, the presented controllers use local information and neighbor communication to perform secondary control actions. Consensus protocols are used for regulating voltage, frequency and sharing the active and reactive power. To tune the communication weights used in the consensus-based distributed framework, a smart fuzzy logic-based method is presented. The presented method estimates appropriate communication weights according to the fuzzy states, and relation between inputs and outputs considering stability criteria. Moreover, considering the difficulties and importance in tuning the proportional-integral (PI) controllers used in distributed secondary controller, this paper introduces an intelligent method based on fuzzy logic to tune the PI parameters. Through the proposed strategy, the secondary control objectives such as frequency synchronization, voltage regulation, and proportional load sharing will be realized in a distributed manner. A microgrid test system with three sources is used to verify the effectiveness of the proposed contributions

کلمات کلیدی:

Consensus protocol, distributed control, fuzzy logic, microgrids, secondary control