عنوان مقاله:

Stabilizing Microgrid Frequency by Linear Controller Design to Increase Dynamic Response of Diesel Generator Frequency Control Loop

محل انتشار:

مجله بهره برداری و اتوماسیون در مهندسی برق, دوره 7, شماره 2 (سال: 1398)

تعداد صفحات اصل مقاله: 11

نویسندگان:

H. Radmanesh - *دانشگاه هوایی شهید ستاری، دانشکده برق، تهرن، ایران*

M. Saeidi - *دانشجو*

خلاصه مقاله:

In this paper, a distributed generation including diesel generators, wind turbines, and microturbines are introduced, and their mathematical model is described using the Taylor expansion method. With the goal of computational complexity eliminating, the reduced order model (ROM) of microgrid components is considered. The results of the studies indicate that the microgrid frequency is unstable. The main purpose of this paper is stabilizing the frequency of the microgrid by design modified linear controller. It is shown that the using proposed linear controller increases the dynamic response of the diesel generator and therefore can be constituted stable microgrid. The results show that the diesel generator can control the frequency of the microgrid in unwanted islanding and load change conditions. To verify the validity and feasibility of the proposed controller, several simulations results have been presented on MATLAB/Simulink software. The simulation results show the appropriate performance of the proposed controller for example in islanding mode, frequency restoration time is less than ۱ (s) by using the proposed controller, as a result, .the microgrid can be exploited in island mode

کلمات کلیدی:

ریزشبکه, کنترل کننده, پایدارسازی, جزیره ای شدن, تولید پراکنده