基于 Matlab 的微电网动态特性分析

摘　要

随着互联网时代的推进和发展,传统大规模的电网给了人们的生活带来了极大的便利,很大的程度上提高和改善了我国人民的工作和生活水平。但是,近年来,世界很多国家的部分地区发生的大规模洪灾和停电事故给社会和人民带来的经济损失也都是巨大的。微电网的研究可以很好的解决微源与大电网之间的问题，很大程度上提高了电力系统的经济性。微电网主要有两种运行方式,它既能与传统电网很好的链接起来进行分布式并网的运行,也能直接脱离传统电网链接进行独自的运行。由于微电网的体系小，很容易受到外界的干扰，影响它的稳定性，所以对这部分的研究意义重大。

本文先是从多方面深层次的方面对微电网进行了阐述，介绍了微电网存在对于一个国家意义和作用，讲解了微电网是如何解决大电网系统和分布式电源之间的矛盾，然后主要通过单一的下垂系统对微电网进行了详细的阐述，在下垂控制系统中，主要从下垂控制器和接口逆变器下垂控制系统两方面阐述下垂控制系统的体系，再通过 Simulink 软件进行仿真。

通过 Simulink 软件,搭建了负荷并网以及 DG 切除的仿真模型，通过负荷并网与 DG 切除仿真来分析对传统微电网动态仿真中的动态模拟特性的直接作用影响，并通过详细分析逆变器各个基本参数对于传统微电网动态仿真中的动态模拟特性的直接作用影响。

关键词：微电网；分布式发电；下垂控制；孤岛运行

Abstract

With the advancement and development of the Internet era, the traditional large-scale power grid has brought great convenience to people's life and greatly improved the work and living standard of our people. However, in recent years, large-scale flooding and power failure in some parts of many countries in the world have brought huge economic losses to the society and people. The research of microgrid can solve the problem between microsource and large power grid, and improve the economy of power system to a great extent. There are two main operating modes of microgrid, it can not only be well connected with the traditional grid for distributed grid-connected operation, but also be directly separated from the traditional grid for independent operation. Because the system of microgrid is small, it is easy to be disturbed by the outside world and affect its stability, so the research on this part is of great significance.

This article first from many deep aspects of micro power grid, this paper introduces the micro grid existence significance and functions for a country, explained the

micro grid is how to solve the contradiction between the large power grid system and distributed power supply, and then mainly through a single system of prolapse of micro power grid has carried on the detailed elaboration, in the droop control system, mainly from the interface controller and inverter prolapse drooping control system from two aspects in this paper, the control system of the system, the simulation using Simulink software.

By Simulink software, and has set up a simulation model for the load grid and DG excision, through the load with DG interconnection removal simulation analysis to the traditional micro power grid, the characteristic of dynamic simulation of the simulation of direct effect, and through detailed analysis of the basic parameters for the traditional micro grid inverter, the characteristic of dynamic simulation of the simulation of direct effect.

Key words: micro-grid; Distributed generation; Droop control; An island run.