



AN OVERVIEW OF MICROGRID CONTROL

ZHAOXIA XIAO^{1,2}, JIANZHONG WU², NICK JENKINS²

¹School of Electrical Engineering and Automation

Tianjin University

Tianjin, 300072, P. R. China

²Centre for Integrated Renewable Energy Generation and Supply

School of Engineering

Cardiff University, CF24 3AA, U.K.

ABSTRACT—A MicroGrid can be defined as an electrical network of small modular distributed generating units (whose prime movers may be photovoltaics, fuel cells, micro turbines or small wind generators), energy storage devices and controllable loads. A MicroGrid can operate in grid-connected or islanded mode and hence increase the reliability of energy supplies by disconnecting from the grid in the case of network faults or reduced power quality. The techniques that have been investigated to control MicroGrids in both modes are summarized as well as those proposed to maintain stability during the transitions from one mode to the other. Peer-peer control is contrasted with master-slave and the various approaches of droop control are discussed. The importance of energy storage to assist stability during transition between the operating modes is emphasised.