Multiterminal unified power flow controller

Author: Mwinyiwiwa Bakari M.M.; Lu B.; Ooi B. T.

Abstract

This paper describes a multiterminal unified power flow controller (M-UPFC) for the management of real and reactive powers of several transmission lines emanating from a single bus. The example of the paper consists of the bus of a generator station. The M-UPFC is based on synthesizing several of L. Gyugyi's UPFCs so that they share a single pair of DC buses. The realizability of the M-UPFC has been demonstrated experimentally in a laboratory-size model constructed from three insulated gate bipolar transistor (IGBT), voltage-source, sinusoidal pulse width modulation (SPWM) converters. An example is given where it is shown that the M-UPFC is more economical than single UPFCs

Keywords: PWM power convertors; flexible AC transmission systems; insulated gate bipolar transistors; load flow control; power transmission control; power transmission lines; reactive power control