

A Robust Damping Controller Design For A Unified Power Flow Controller

Rahim, A.H.M.A. Al-Baiyat, S.A.; King Fahd Univ. of Pet. & Minerals, Saudi Arabia;
Universities Power Engineering Conference, 2004. UPEC 2004. 39th International; Publication Date: 6-8 Sept. 2004; Vol: 1, On page(s): 265- 269 Vol. 1; ISBN: 1-86043-365-0

King Fahd University of Petroleum & Minerals

<http://www.kfupm.edu.sa>

Summary

The unified power flow controller (UPFC) is a FACTS device, which can be used to control the power flow on a transmission line. This is achieved by regulating the controllable parameters of the system: the line impedance, the magnitude and phase of the bus voltage. In addition to control of real and reactive power flow, the UPFC can be employed to enhance power system damping by modulating the converter voltages. This article presents design of a robust damping control strategy for the series converter voltage magnitude. A relatively new 'loop-shaping' graphical strategy has been used to implement the H- ∞ based robust performance and stability measures. The control design has been tested on a single machine infinite bus system for different disturbance conditions. Test results indicate that the proposed robust controller damps the system transient very effectively over a good range of operation.

For pre-prints please write to: abstracts@kfupm.edu.sa