



AN ALGORITHM FOR SITING NONLINEARLY-DESIGNED ROBUST EXCITATION CONTROLLERS IN POWER SYSTEMS

DEQIANG GAN

*ISO New England Inc
One Sullivan Road
Holyoke, MA*

ZHIHUA QU

*School of Electrical Engineering & Computer Science
University of Central Florida
Orlando, FL, USA*

AND

HONGZHI CAI

*Foxboro Company
33 Commercial Street, C42-2C
Foxboro, MA, USA*

ABSTRACT—In this paper, the problem of siting controllers developed based on a nonlinear power system model is addressed. Emphasis is placed on improving transient response of the power system using limited number of controllers located at well selected sites. A performance index that measures quantitatively transient response of each generator and consequently effects of controllers is introduced. The nonlinearly-designed, decentralized, robust excitation controller is chosen as the class of controllers considered for siting, although all kinds of nonlinear controllers are admissible. Numerical results of simulations validate the theoretical development in the paper.

Key Words: Nonlinear control, controller siting, transient stability.