

Dynamic patterns in the small-signal behavior of power systems with wind power generation

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Abstract-

This paper investigates the dynamic patterns in the small-signal behavior of power systems with wind power generation. The interactions between synchronous generators and wind generators are investigated. In addition, the impact of increased wind generation penetration on the damping and frequency of the synchronous generator's electromechanical oscillations is addressed. Wind generators of three different technologies are considered throughout this study. Very detailed dynamic models of wind generators are used and detailed.

Index Terms- dynamic patterns; wind power generators; synchronous generators; small-signal stability; electromechanical oscillations

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