



# Power System Stability: Modelling, Analysis and Control (Iet Power and Energy)

By Abdelhay A. Sallam, Om P. Malik

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## **Power System Stability: Modelling, Analysis and Control (Iet Power and Energy) By Abdelhay A. Sallam, Om P. Malik**

*Power System Stability: Modelling, Analysis and Control* provides a comprehensive treatment of the subject from both a physical and mathematical perspective and covers a range of topics including modeling, computation of load flow in the transmission grid, stability analysis under both steady-state and disturbed conditions, and appropriate controls to enhance stability.

Organized into four sections; (I) Modeling, (II) Power Flow, (III) Stability Analysis, and IV) Stability Enhancement and Control, this book begins with an introduction to stability modeling, describing the dynamic behavior of power systems which in turn leads to the modeling of each component in the power system. Different techniques are introduced to access the system stability and methods are described that can be used to enhance stability and control the system.

*Power System Stability: Modelling, Analysis and Control* also covers the development and physical real-time implementation of analytical and artificial intelligence based adaptive power system stabilizers to improve power system dynamic stability.

Topics covered include;

- \* modeling of the synchronous machine
- \* the synchronous machine connected to power systems
- \* modeling of transformers
- \* transmission lines and loads
- \* power flow analysis
- \* optimal power flow
- \* small signal stability
- \* transient stability
- \* transient energy function methods
- \* artificial intelligent techniques
- \* power system stabilizers
- \* series compensation

- \* shunt compensation
- \* compensation devices
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## **Editorial Review**

### **About the Author**

Om P. Malik has taught and carried out extensive research in the area of rotating electric machines, adaptive and AI control, and digital protection of power systems. He was a pioneer in the development of adaptive controllers for real-time applications to improve power system stability and such controllers are employed as power system stabilizers on large generating units.

Abdelhay A. Sallam is a Professor Emeritus of Electrical Engineering at the Port-Said University, Egypt. Dr. Sallam has taught courses on a variety of subjects including power systems, computer methods in power system analysis and distribution systems. He has also served as a consultant, advising companies on the design, installation of power networks, substations, and electric distribution systems.

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