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Tutorial – 2

Theme: Synchro-phasor Technology in Power Systems

Application of WAMS Analytics in the Indian

By

Dr. Anil Kulkarni & Dr. S. A. Soman, IIT Bombay

Abstract

Under the Unified Real Time Dynamic State Measurement (URTDSM) project, a large number of Phasor Measurement Units (PMUs) have been installed in the Indian power grid. A unique feature of this architecture is that all 400 kV and 765 kV transmission lines as well as 220 kV interstate transmission lines will be monitored by PMUs from both the ends. IIT Bombay has been involved in the development of analytics which utilize data from this Wide-Area Measurement System (WAMS) for monitoring, control and decision-support. These include linear/hybrid state estimation, modal estimation, relay vulnerability analysis, calibration of CT/CVTs and back-up relay supervision. Some of these analytics are already being. In this talk, we will describe the analytics that are being developed, and real-life case studies will be presented.

Biography

A.M. Kulkarni is a Professor in the Electrical Engineering Department, IIT Bombay India. He obtained his BE degree in Electrical Engineering from the University of Roorkee, India in 1992, and his ME and PhD degrees in 1994 and 1998 respectively, from the Indian Institute of Science, Bangalore. His broad areas of interest are in Power System Dynamics, HVDC and FACTS. Recently, he has focused on Wide Area Measurement Systems (WAMS). He has worked closely with utilities in India on several projects, including the PSS tuning exercise in the Eastern and Western regional grids and Sub-synchronous resonance studies. His current focus is on the use of WAMS for stability and control.

S. A. Soman is a Professor in the department of Electrical Engineering at IIT Bombay. He obtained his B.E. degree from MACT Bhopal in 1989 and PhD degree from IISc Bangalore in 1996. Since 1996, he is a faculty member in the Department of Electrical Engineering IIT Bombay. He has authored a book on Computation Methods for Large Sparse Power System analysis, and a NPTEL web course on Power System Protection. He is actively involved in software/analytics development and has authored software for day ahead load forecasting, network cost and loss allocation, and PMU analytics. Presently, he leads a team working on development of analytics under URTDSM project and for PMU analytics for GETCO.