Lecture Report

(1) Name: Elsaid Elsayed Elaraby

(2) Title: Associate Professor

(3) Affiliation: Electrical Engineering Department, Qassim University, KSA

(4) Short Biography:
E. E. Elaraby received his Ph.D. degree from the Department of Artificial Complex Engineering, Hiroshima University. He was a postdoctoral fellow at the Department of Artificial Complex Systems Engineering, Hiroshima University from May 2004 to April 2006. He is an Associate Professor at the Department of Electrical Engineering, Qassim University, KSA. His research interests are power system planning, operation and ancillary services pricing in electricity markets. Dr. El-Araby is a member of IEEE.

(5) Subject and Schedule of the Lectures:
As a part of the course ``Power Systems Operation and Control" in Department of Electrical Engineering, Graduate School of Engineering.

August 3, 2012, 09:00-12:00 Basic of optimization Techniques,
August 3, 2012, 13:00-15:00 Economic Dispatch Problem and its formulation,
August 3, 2012, 15:00-17:00 Available tools for solving economic dispatch Problem

August 4, 2012, 09:00-12:00 formulation of the unit commitment problem,
August 4, 2012, 13:00-15:00 Advanced solution methodologies for the hard optimization formulation (unit commitment problem solution methods,
August 4, 2012, 15:00-17:00 Power system security.

August 6, 2012, 09:00-12:00 Optimal power flow and its significance in power system operation and planning,
August 6, 2012, 13:00-15:00 Security constrained Optimal Power flow and solution methods of OPF,
August 6, 2012, 15:00-17:00 Automatic Generation Control.

The lectures with technical lessons in English were intended to give complementary topics on the Power systems Operation and control. In the first lecture, I introduce the principles of the optimization techniques to be used in most of the course topics. Next, I introduce the economic dispatch problem which is a practical application to the optimization in power systems. The unit commitment problem and is presented in the third lecture to figure out the decision making for committing the units based on the available load forecast and economic dispatch of the units. Next, the power system security problem is introduced to let the students know how to keep the voltage security and line flow limits through the DC sensitivity factors as well as the contingency selection tools. The optimal power flow is introduced to extend the economic dispatch problem to more practical application of the optimization methods with considering the whole controllers in the system and maintain the power balance equations. Finally, the setting of the generation during the operation is presented through the automatic generation control topic.

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