

## **Elimination of voltage violations in the Spanish electricity market: Part II: Case study**

E. Lobato Miguélez; L. Rouco Rodríguez; T. Gómez San Román; F.M. Echavarren Cerezo

### **Abstract-**

**The solution of voltage violations in each hourly scenario of the Spanish electricity market must consider: (a) the connection of off-line units (considering the active and reactive power injection effect), (b) the adjustment of the voltage control resources (generator voltages, transformer taps and shunt reactors and capacitors) and (c) the preventive solution of the voltage violations under the occurrence of the postulated contingencies. This is the second part of a two-part paper. Part I has analyzed the complexity of eliminating voltage violations proposing a simple methodology that includes the following steps: (a) contingency analysis (b) decoupled solution of voltage violations for each hourly scenario and (c) daily coupled solution of voltage violations. In addition, Part I has described the mathematical formulation of a set of mixed-integer optimization algorithms designed to obtain the hourly decoupled solution and the daily coupled solution of voltage violations in the Spanish electricity market. In Part II the methodology and performance of the algorithms will be illustrated and compared using an actual example of the Spanish electricity. The hourly solution of the algorithms is compared from an economic and technical point of view and the system cost reduction of the daily solution is demonstrated.**

**Index Terms-** Contingency analysis, power system dispatch, security assessment, congestion management

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If your institution has an electronic subscription to Electric Power Systems Research, you can download the paper from the journal website:

[Access to the Journal website](#)

### **Citation:**

*Lobato, E.; Rouco, L.; Gómez, T.; Echavarren, F.M. "Elimination of voltage violations in the Spanish electricity market: Part II: Case study", Electric Power Systems Research, vol.75, no.2-3, pp.110-115, August, 2005.*