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## INTRODUCTION

**J**ournal of Energy special issue: Papers from International CIGRÉ Symposium "Transient Phenomena in Large Electric Power Systems"

Welcome to this special issue, which is based on selected papers presented at the International CIGRÉ Symposium "Transient Phenomena in Large Electric Power Systems", held in Zagreb, Croatia, on April 18<sup>th</sup>-21<sup>st</sup>, 2007.

The International Symposium was organized by the Croatian CIGRE National Committee and Study Committees C4 (System Technical Performance), A1 (Rotating Electrical Machines), A2 (Transformers), A3 (High Voltage Equipment) and C1 (System Development and Economics). The goal of the Symposium was to examine the various aspects of transient phenomena in large electric power systems.

Seven main topics were covered in the ten sessions. The Symposium extended over three days, organised in half-day sessions during which authors presented their papers and then participated in a panel discussion. Participants from manufacturers and utilities, along with those from universities and research centres, gave their presentations and took part in discussions. Three invited lectures were held and 54 papers were accepted.

Electric power systems are subjected to a wide range of transient disturbances, which impact its overall performance. It is a challenge to build and operate power systems so that the safety of individual equipment, the security of the integrated power system and the quality of power supply are not unduly compromised. The general purpose of the Symposium was to provide a forum for discussing the nature of transient phenomena in electric power systems and how these systems need to be designed to ensure a secure and robust service.

The following topics were covered by Symposium:

- insulation coordination aspects, including temporary, resonance and transient overvoltages in shunt/series compensated OH-lines, shunt compensated cables, mixed OH-line-cable sections, HVDC-converter-stations, interconnection lines and as anticipated for half-wave-length lines;
- transient current and TRV aspects due to long distance transmission;
- EMC problems caused by power system transients and mitigation techniques;
- power quality issues as impacted by power system transients;
- transient behaviour of power systems leading to blackouts: recent experiences and mitigation techniques;
- system security management with regards to lightning;
- experience and management of transients during operation when radio base stations are located on transmission line towers.

From the 54 papers presented at Symposium, 16 papers were accepted for publication in Journal of Energy after having undergone the peer-review process. We would like to thank the authors for their contributions and the reviewers who dedicated their valuable time in selecting and reviewing these papers. It was very challenging to collect a balanced overview of the entire Symposium, but we believe that the papers which were selected represent some of the best research about transient phenomena in power systems. We hope this special issue will provide a valuable insight into power system transients, as well as a pleasant and inspiring reading.

## Guest Editors

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