

Transient Phenomena in Large Electric Power Systems

ZAGREB CROATIA

Symposium venue:

Hotel the Regent Esplanade
Mihanoviceva 1, Zagreb
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Registration

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Registration forms on :
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(Symposium & Tutorials)

Background and scope

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 is to provide a forum for discussing the nature of transient phenomena in present-day electric power systems and how these systems need to be designed to ensure a secure and robust service.

Participants

The Symposium is directed towards utilities, equipment manufacturers, design engineers, system operators, traders, regulators as well as universities, testing laboratories and research institutes. It should also be of interest to other organizations in the Electricity Industry.

Topics

The symposium comprises 10 sessions as described in the time-table hereafter. Each session will start with a presentation of the papers by their author, followed by a discussion. The topics addressed are as follow :

- Transient phenomena, insulation coordination
- Computation
- Lightning
- Transients and equipment
- EMC
- Modelisation
- Measurements
- Wind power
- Blackout control
- Power quality

Wednesday, 18th April

7.00 p.m. Welcome Cocktail

Thursday, 19th April

9.00 a.m. – 11.00 a.m. Opening Ceremony
Keynote address – C.A. Nucci
Invited Speakers – P. Kundur,
I. Toljan, H. Dommel
11.30 a.m. – 1.30 p.m. Session I & Session VI
3.00 p.m. – 5.00 p.m. Session II & Session VII

Friday, 20th April

9.00 a.m. – 11.00 a.m. Session III & Session VIII
11.30 a.m. – 1.30 p.m. Session IV & Session IX
3.00 p.m. – 5.00 p.m. Session V & Session X
5.30 p.m. – 6.30 p.m. Closing Session
8.30 p.m. Official Dinner

Saturday 21th April

8.00 a.m. – 7.00 p.m. Technical/Tourist Tours

3 tutorials will take place, before the Symposium (see on the CIGRE website) :

17 April : 09.00 – 12.30 Electromagnetic Transients in power systems, *Hermann Dommel, Ante Sekso Telento*
17 April : 03.00 – 06.30 Power system security : challenges in the New Industry Environment, Recent Experiences and Solutions, *Prabha Kundur*
18 April : 03.00 – 06.30 Lightning protection of power distribution and transmission systems, *Carlo Alberto Nucci, Ivo Uglesic*

PROGRAMME

TECHNICAL PROGRAM

I. Transient phenomena, insulation coordination

Thursday, 19th April
(11.30 am - 1.30 pm room A)

Chairman: A. Sekso

- 0101 Travelling wave-based relay protection schemes for improved power system performance
L. A. Kojovic, J. Esztergalyos
- 0102 Mitigation of common mode failures at multi-circuit line configurations by application of line arresters against back-flashovers
M. Kizilcay, C. Neumann
- 0103 Discussion on the interaction between transformers and the power systems
G. Sarcinelli Luz
- 0104 Developments on the line surge arresters application guide
A. Xémar, S. Sadovic, I. Uglesic, J.A. Martinez, L. Prikler
- 0105 Practice and tendencies in "insulation coordination" in transmission networks in Europe and in the world
A. Sekso Telento
- 0106 Some peculiarities in insulation coordination and mitigation measures against extreme sea salt pollution on Croatian 110 Kv "Islands connection"
D. Mihalic, J. Šimunić, A. Sekso Telento

II. Modelisation

Thursday, 19th April
(3.00 pm - 5.00 pm room A)

Chairman: Z. Maljkovic

- 0201 An EMTP extension for computing earthing system transient step and touch voltages
S. Vujević, P. Sarajčev
- 0202 Transients caused by sequential circuit breaker tripping issued by busbar protection
I. Uglešić, I. Ivanković, V. Milardic
- 0203 Analysis of single-pole auto-reclosing requirements on 500kV transmission lines using the dynamic arc model
Z. Osrin, S. Yusof, A. Razib Dawood, A. Musa, G. Irwin
- 0204 CEMIG experience in the analysis of transient recovery voltages associated with transformer-fed faults.
A. C.O. Rocha, S. O. Moreira, L. H.S. Duarte
- 0205 Structure-preserving dynamic equivalents for large-scale power systems using border synchrony
B. Mallem, B. Marinescu, L. Rouco
- 0206 Oscillatory stability analysis of a power system over a large set of operating conditions
J.C. Pino, R. Ramirez, D. Cirio, E. Gaglioti

III. Computation

Friday, 20th April
(9.00 am - 11.00 am room A)

Chairman: R. Joho

- 0301 Impact of energy storage on system performance under fault conditions
H. Xie, L. Ångquist, H-P Nee
- 0302 Numerical analysis of power system electromechanical and electromagnetic transients based on the finite element technique
I. Jurić-Grgić, M. Kurtović, R. Lucić
- 0303 Influence of the secondary arc on the operation of single phase auto-reclosure of the 400 kV interconnection between Hungary and Croatia
G. Bán, L. Prikler, A. Tombor, G.Tari, J. Zerényi, M. Kizilcay

VI. Wind power

Thursday, 19th April
(11.30 am 1.30 pm room B)

Chairman: C. Ray

- 0601 Analysis of influence of the connection of the wind farm Ravna 1 to the Croatian power system
T. Dropulić, K. Meštrović, D. Petranović
- 0602 System studies of voltage drops caused by energising MV wind turbine transformers
T. Ma
- 0603 Power quality analysis of MV distribution system before connection of the wind farm
J. Šimić, M. Lasić, S. Gros
- 0604 Detailed transients simulation of a doubly fed induction generator wind turbine system with the EMTP-type OVNI simulator
M. L. Armstrong, J. R. Martí, P. Kundur
- 0605 Wind generation issue in Spain and real time production control
T. Dominguez, E. Prieto, G. Juberías, M. de la Torre, A. Córdoba
- 0606 Effect of wind energy on the power system inertial response and frequency control
T. Aboul-Seoud

VII. Transients and equipment

Thursday, 19th April
(3.00 pm - 5.00 pm room B)

Chairman: M. Saravolac

- 0701 Dielectric, switching and system requirements under out-of-phase conditions, during synchronisation and under comparable stresses.
A.L.J. Janssen, F. Iliceto, Q. Bui-Van, S. Morais, M. Waldron, B. Middleton
- 0702 Overvoltages at vacuum switching devices operation
P. Vukelja, J. Mrvic, D. Hrvic
- 0703 Optimizing electric parameters and operation range of hydro-generator in refurbishing
K. Čelić, S. Berberović, M. Pužar
- 0704 The impact of ferroresonance and low frequency phenomena on power transformers and transmission systems
M. Osborne, P. Jarman, C. Charalambous, Z. Wang
- 0705 Significance of frequency response analysis in condition state monitoring of power transformers with applications in improvements of overvoltage protection
I. Dolić, S. Bojić, J. Topić, A. Sekso Telento
- 0706 Controlled energizing of three-phase transformer : analysis of test results
H. S. Bronzeado, S. O. Pinto, P. Jonsson, J.C. de Oliveira, M.L.R. Chaves

VIII. Blackout-control

Friday, 20th April
(9.00 am - 11.00 am room B)

Chairman: P. Kundur
(assistant : Mrs. M. Armstrong)

- 0801 Prevention of major disturbances: proposal of a methodology and its implementation in the Portuguese transmission grid
M. Matos Fernandes, L. Lima Perro, A. C. Reis Rodrigues
- 0802 CANCELLED Voltage and angle stability monitoring: possible approaches in the framework of a wide area measurements system (WAMS)
C. Candia, A. Danelli, G. Giannuzzi, M. Pozzi, R. Salvati, R. Zaottini
- 0803 CANCELLED - Design criteria for a load-shedding scheme: an extensive simulation approach in a Dynamic Security Assessment (DSA) environment
M. Cignatta, A. Danelli, M. Salvetti, M. Pozzi, R. Salvati, R. Zaottini

TECHNICAL PROGRAM

- 0304 **Power quality problems due to transformer inrush current**
A. Tokić, I. Uglešić
- 0305 **Starts from dark - feasible scenarios**
L. Kocis, K. Witner
- 0306 **Overvoltage due to capacitor banks switching in a 12 kV system**
N. Chattranont, T. Meananeatra

IV. Measurements

Friday, 20th April
(11.30 am - 1.30 pm room A)

Chairman: N. Jaman
(assistant : S. Bojic)

- 0401 **CANCELLED - On site measurements of switching overvoltages in hydro power plant Zakucac**
K. Meštrović, M. Poljak, R. Gardijan, J. Šimić
- 0402 **CANCELLED - Overvoltages on short high-voltage overhead lines**
P. Vukelja, J. Mrvic, D. Hrvic
- 0403 **Measurement and simulation of hydro-generator's asynchronous operation**
Z. Maljković, Ž. Zebić, M. Pavlica
- 0404 **Wireless digital data acquisition system for the measurement of high frequency transients in power substations**
W H Siew, Y. Wang, M. Faheem, B. Musa, K. Liu
- 0405 **Measurement of the switching over-voltages at the disconnection of the high voltage shunt reactors in the Romanian power system**
P. Stroica, D. Stefan

V. Lightning

Friday, 20th April
(3.00 am - 5.00 pm room A)

Chairman: A. Janssen

- 0501 **Economic positioning of line lightning arresters based on observation and analysis of lightning surges**
A. Halim Abu Bakar, M. Ridzal Othman, H. Osman
- 0502 **Performance of medium voltage overhead distribution lines against lightning discharges**
M. A. M. Saran, M. L. B. Martinez, R. R. Bonon, H. R. P. M. de Oliveira, C. A. Nucci, M. Paolone
- 0503 **Modelling guidelines for overhead transmission lines in lightning studies**
J. A. Martinez-Velasco, F. Castro-Aranda
- 0504 **Models to transformers windings for lightning surges - testing and simulation results**
C. de Salles, M. L.B. Martinez
- 0505 **A method for the assessment of the indirect lightning performance of distribution networks**
A. Borghetti, C.A. Nucci, M. Paolone
- 0506 **Use of high resolution flash density maps in evaluation of lightning exposure of the transmission lines**
J. Kosmač, S. Vižintin, V. Djurica

The final order of the Papers within the sessions will be decided by the respective session chairmen

Lunches are on one's own. One coffee break between the morning sessions.

- 0804 **Impact of recent blackout return of experiences on utility operational IT infrastructures**
L. Schmitt, J.Giri
- 0805 **Practical results of on-line stability monitoring for the UCTE power system**
W. Sattinger, R. Baumann, PH. Rothermann
- 0806 **At the edge of voltage collapse in Slovenian power system after outage of NPP Krsko and 400 Kv node Tumbri**
M. Stojsavljević, D. Nemeč, I. Toljan

IX. EMC

Friday, 20th April
(11.30 am - 1.30 pm room B)

Chairman: K. Mestrovic
(assistant : J. Simic)

- 0901 **Electromagnetic interference on measuring equipments of HV substation due to switching**
B. Vahidi, Sh. Farokhi
- 0902 **On certain experience with a power line communication system**
P. Valozic
- 0903 **Solving EMC problems in the design of new HV test laboratory**
I. Uglešić, M. Křepela, V. Milardić
- 0904 **Developing limits for controlling disturbances produced by large installations connected to power systems**
G. Beaulieu, R. Koch, M. Halpin, L. Berthet, P. Goossens
- 0905 **Mitigation techniques of electromagnetic interference due to disconnecter switching in air-insulated substations**
S. Carsimamovic, Z. Bajramovic, M. Veledar, M. Ljevak, A. Carsimamovic, P. Osmokrovic
- 0906 **Electromagnetic compatibility in various kinds of substations in Croatian transmission networks and mitigation measures**
S. Bojic, A. Sekso Telento, I. Dolić
- 0907 **Criteria of effectiveness for EMC mitigation techniques within HV substations**
T. Živic
- 0908 **Novel earth electrodes in substations for improved electromagnetic compatibility (EMC)**
P.H. Pretorius, A.C. Britten, K.R. Hubbard, M.E. Mathebula

X. Power quality

Friday, 20th April
(3.00 pm - 5.00 am room B)

Chairman: M. Zeljko

- 1001 **Voltage dip immunity of equipment in installations, scope and status of the work**
M. Bollen, M. Stephens, K. Stockman, S. Djokic, A. McEachern, J. Romero Gordon
- 1002 **Voltage support transformer improves power quality during power system transients**
L. A. Kojovic
- 1003 **Modelling guidelines and solution techniques for voltage dip prediction**
J.A. Martinez-Velasco
- 1004 **CANCELLED - Power quality indices for transient disturbances for systems with grid connected wind plants**
A. Bracale, G. Carpinelli, A. Russo, P. Verde
- 1005 **The impact of events in the Slovene high-voltage network on the power quality in the distribution networks**
K. Deželak, A. Korak, T. Konjic, G. Štumberger, J. Voršič
- 1006 **Evaluation of different methods for voltage sag source detection**
B. Polajžer, G. Štumberger, S. Seme
- 1007 **Fault location and characterizing voltage sags from limited measurements on a transmission system**
M. McGranaghan, R. Dugan, D. Sabin, F. Elmendorf

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VISA REQUIREMENTS

Please apply at your earliest to the Croatian Embassy or Consulate in your own country to comply with visa requirements.

REGISTRATION FEES

Member
300 €

Non Member
350 €

Accompanying Person
100 €

to be paid only to

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(see the conditions specified
on the registration form on
website)

Registrations

The Symposium is open to all. Registrations can be made in advance using the registration form and also on arrival to the Symposium. Early registration means early delivery of your conference documents.

The registration fees cover :

- Attendance and participation in discussion meetings (sessions and tutorials)
- The CD-ROM of papers (forwarded to delegates by air-mail) if payment is received before March 20th, and available at the Croatian NC.
- Participation in the welcome cocktail and official dinner,
- Coffee breaks,
- The city tour of Zagreb planned on Thursday 19th.
- The technical/tourist visit to National Park Plitvice Lakes and Smiljan (birthplace of Nikola Tesla) planned on Saturday 21st.

Late registrants will be able to collect their CD-ROM of papers on arrival at the Symposium.

Optional tourist visits during the Symposium for accompanying persons and also after the Symposium for attendees will be organized against payment (see on accommodation form on website)

Hotel Reservations

Rooms will be available for delegates at the Symposium Headquarters, and in neighbouring hotels.

The corresponding hotel form is available on website and from National Committees.

Payment of fees

All attendees at meetings are expected to pay the full registration fees (including authors of papers).

Registration form and corresponding registration fees should be sent directly to :

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Payment is accepted by Bank remittance till April 1st only, and Credit Card (MasterCard, Visa, Diners, American Express).

Registrations will be accepted during the Symposium. The fees should be paid on arrival.

Cancellations

Cancellations received by April 1st will be refunded in full except the administrative fee of 50 €.

Cancellation fees received after April 1st will not be refunded.

Technical Organizing Committee

Prabha Kundur	(CA)	Chairman of the Symposium
Ivica Toljan	(HR)	Co-Chairman of the Symposium, Chairman Croatian NC
Carlo Alberto Nucci	(IT)	Chairman SC C4
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