



**15<sup>th</sup> International Conference & Exhibition on  
ELECTRICITY DISTRIBUTION**

THE EUROPE'S LEADING INTERNATIONAL CONFERENCE & EXHIBITION ON  
ELECTRIC POWER DISTRIBUTION ENGINEERING

***The CIRED'99 Conference is organized by AIM***

*Association of Engineers graduated from the Montefiore Electrical Institute,  
University of Liège, Belgium.*

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## **INTRODUCING CIRED**

CIRED - **International Conference on Electricity Distribution** - is the leading Forum where the international electricity distribution community meets.

CIRED offers a biennial conference & exhibition where developments and best practices in technology and management of the technical side of electricity distribution are presented and reported.

CIRED brings together every two years hundreds engineers from all over the world and is a unique meeting point between electric utility managers, users, manufacturers, consultants and research facilities to exchange ideas and share experiences on technological changes. It is the place to become fully aware of new business developments and opportunities in Electricity Distribution.

CIRED is also a major exhibition reflecting the advances in the power distribution engineering, the place where decision makers meet and commercial contacts needed for the decade to come are made.

## **CIRED'99 TECHNICAL PROGRAM**

The CIRED'99 Conference preferred subjects are listed below paying particular attention to **dispersed generation** and **costs reduction**.

The changing tasks of management in Electricity Distribution where focus is moving from technology to business development are particularly highlighted in session 6.

### **1. NETWORK COMPONENTS**

*R. Dides (Chairman) and A. Doulet, Rapporteur (France)*

#### **1.1. Design**

- Impact on design due to new equipment (SF6, vacuum, introduction of power electronics, evolution of accessories for lines and cables)
- Lightning protection and impact on the design of overhead lines
- Superconducting systems, feasibility and case studies
- Test and diagnosis techniques
- Recent and significant evolution in standards

#### **1.2. Life cycle of components**

- Experience feedback
- Technical considerations before renewal
- Increasing of performances of components in service

#### **1.3. Environmental issues**

- Impact of actual materials
- Impact of new materials
- Environmental respect (reduction of visual impact, protection of birds' fauna)
- Impact of legislation and standards

### **2. POWER QUALITY AND ELECTROMAGNETIC COMPATIBILITY (EMC)**

*A. Robert, Chairman, J. Hoeffelman & E. De Jaeger, Rapporteurs (Belgium)*

#### **2.1. Power Quality**

- Quality and reliability of supply in a competitive market - Monitoring - Standards and recommended practices - Disturbances emanating from loads and autoproduction units (harmonics, flicker, unbalance) and from systems (voltage dips,...) analysis, prediction, effects and remedies, case studies - New contracts and services - Custom Power.

## 2.2. **Electromagnetic Compatibility**

- Electromagnetic compatibility in substations and industrial sites - Low frequency magnetic fields - Insulation co-ordination in MV and LV systems : protection against switching and lightning overvoltages - Safety problems : earthing policy and systems, neutral connection, step and touch voltages.

## 3. **SYSTEM MANAGEMENT**

*F. Otto, Chairman, and B. Ehmcke, Rapporteur (Germany)*

### 3.1. **Operation**

- Strategies for the operation
  - . manually or automation
  - . optimization of the organizational procedures
- Reduction of interruption duration
  - . planned outages of components (maintenance management, life line work)
  - . failure management (mobile service and aids, tools)
- Operation of worn out gear
  - . replacement strategy
  - . quality management during the rebuilding

### 3.2. **Network control** (monitoring, protection, control)

- Hardware and software for operation and load management
  - . neuronal networks
  - . SCADA systems
- Protection
  - . kinds of failures and their possibilities to gather the needed data
  - . integration of protection and control
- Documentation systems
  - . customer information system
  - . graphical information systems (GIS)

## 4. **DISPERSED GENERATION - MANAGEMENT AND UTILIZATION OF ELECTRICITY**

*A. Headley, Chairman, and A. Cross, Rapporteur (United Kingdom)*

### 4.1. **Dispersed Generation**

- Performance of installed dispersed generation systems, assessment of emerging technologies
- Connection issues, protection, impact of network operation, stability, voltage control, power quality
- Assessment of environment benefits e.g. Kyoto targets on CO<sub>2</sub> and feedback of experiences

### 4.2. **Energy Efficiency**

- Practical approaches that assist implementation of highly energy efficient end use processes and techniques
- Novel technologies, design and operation for reduced losses and greater efficiency

### 4.3. **Demand Side Management (DSM)**

- Influence of deregulation and competitive supply markets on user load analysis and management
- Utility driven initiatives and their integration into national/international objectives
- Metering and communication systems requirements
- Energy storage : technologies, experiences in load management and power quality improvement

## 5. SYSTEM DEVELOPMENT

*L. Azpiazu, Chairman (Spain) and A. Invernizzi, Rapporteur (Italy)*

### 5.1. **Impacts and influences in planning**

- Related with strategy, like new market acquisition, integrated resource planning, different services management, logistics improvement
- Related with new needs and demands from the customers like growth or reduction load demand, load curve shape and fundamentally dispersed generation
- Related with competition and legislation like market deregulation and privatization

### 5.2. **Criteria, methodes and systems to achieve the goals**

- Related with the network efficiency to improve losses, to optimize telecontrol and DA/DSM development, to compare new investment vs maintenance and to introduce quality cost and environmental factors in the solutions
- Implementing the IT new trends for different cases as integrating different suppliers, implementing centralized and/or distributed systems, incorporating new technologies of communications (Internet, GSM,...) and portable computers.

### 5.3. **Real and practical experiences**

- These experiences will show real application of tools and procedure used in massive and extensive electrification programs, evolution from overhead to underground networks and standardizing the voltage.

## 6. MANAGEMENT - ORGANIZATION - SKILLS

*N. Haase, Chairman (Denmark) and K. Mortensen, Rapporteur (Norway)*

### 6.1. **Business goals and strategies in Electricity Distribution**

- Changes and developments in business goals and strategies and in methods to develop goals and strategies

### 6.2. **Organisation and business structures in Electricity Distribution**

- Changes and developments in organisation and business structures and in methods to develop organisation and structures

### 6.3. **Human resource management and professional skills in Electricity Distribution**

- Changes and developments in human resource management , profesional skills – including technological skills and training – and in methods to support development of human resource management, profesional skills, and training

### 6.4. **Competitiveness including reduction in costs in Electricity Distribution**

- New approaches and experiences in improving competitiveness and reducing costs : fir instance : *Business Process Reengineering, Total Quality Management,...*

## 1. Network Components / Composants du réseau

**Chairman / Président : R. Dides (France)**

**Rapporteur : A. Doulet (France)**

### 1.1. Design / Conception

1/1. Thyristor aided diverter switch “TADS” - A progressive concept for the prolongation of maintenance - Free intervals of on-load tap-changers of transformes  
*J. Ainetter, G. Brauner, H. Mauer, Arsenal Research (Austria)*  
*T. Strof, A. Kalinintchenko, ELIN-OLTC (Austria)*

1/2. The first developed ASVG in China putting into operation in Zhengzhou Electric Power System  
*Wang Xiwen, Zhengzhou Electric Power Bureau (P.R. of China)*

1/3. Field test results on thyristor type Step Voltage Regulator  
*M. Tsuzuku, J. Takemura, Chubu Electric Power Co., Inc. (Japan)*  
*K. Osako, T. Kuriyama, Daihen Corporation (Japan)*  
*T. Nagata, K. Fugawa, Aichi Electric Co. Ltd. (Japan)*

1/4. Gotland HVDC light transmission-world's first commercial small scale DC transmission  
*U. Axelsson, A. Holm, Vattenfall (Sweden)*  
*C. Liljegren, GEAB (Sweden)*  
*K. Eriksson, L. Weimers, , ABB Power Systems (Sweden)*

1/5. The reliability of high breaking capacity fuse  
*J.C. Gomez, G.Campetelli, G. Zamanillo, Electrical Power System Protection Insntitute, Rio Cuaro National University (Argentina)*

1/6. The underground power networks of the future : what degree of reliability is appropriate ?  
*M. Morazzani, J.-M. Boyer, Alstom T&D STC (France)*  
→ **Version française** ←

1/7. Thermo-Electrical Model of a cold shrinkable joint for MV cables  
*B. Aladenize, Alcatel CRC (France)*  
*J. Cardinaels, Euromold Alcatel (Belgium)*

1/8. A longitudinally and vertically watertight medium voltage cable with a copper layer coating – Experiences and development tendencies  
*T. Niemand, I. Krage, VEW EUROtest GmbH (Germany)*  
*U. Rütten, Kabelwerk Studer (Switzerland)*  
**Report withdrawn**

1/9. Development of composite line spacers for distribution lines  
*I. Sumitani, T. Kurosawa, Tokyo Electric Power Company (Japan)*

1/10. Harmonization of synoptic block diagrams on the control pannels of MV switchgear and controlgear  
*Y.L. Tits, Electrabel (Belgium)*  
→ **Version française** ←

1/11. An innovative approach for distribution substations in a competitive environment  
*S. Werner, L. Fleischer, G. Koch, B. Niessing, Siemens AG (Germany)*

1/12. Detailed study of fast transient phenomena in transformers and substations leading to an improved system design

*T. Van Craenenbroeck, D. Van Dommeln, R. Belmans, K.U. Leuven (Belgium)*

*H. De Herdt, J. De Ceuster, J.P. Marly, Pauwels Trafo Belgium*

1/13. An asymmetrical magnetic actuator for MV circuit-breakers

*M. Bonjean, D. Marchal, R. Nicolaye, P. Thiry, Alstom T&D - EIB (Belgium)*

*W. Legros, S. Falzone, Montefiore Electrical Institute-University of Liege (Belgium)*

1/14. Synchronous medium voltage circuit-breakers : ABB solution based on magnetic drive and electronic control

*C. Cereda, ABB SACE TMS (Italy)*

*C. Gemme, ABB Ricerca SpA (Italy)*

*C. Reuber, ABB CALOR EMAG (Germany)*

1/15. Lightning strike sensor for power producing wind turbines

*T. Sorensen, M.H. Brask, DEFU (Denmark)*

*P. Johansen, Jomitek (Denmark)*

*F.V. Jensen, N. Raben, SEAS (Denmark)*

*J.T. Sorensen, H. Nielsen, Aalborg University (Denmark)*

*K. Olsen, M.L. Olsen, DTI (Denmark)*

1/16. Cost reductions in power cable systems using lean cable technology

*A.D. Barlett, East Midlands Electricity plc (United Kingdom)*

*J.J. Daly, B. Gregory, S. Phillips, BICC Cables (United Kingdom)*

## **1.2. Life cycle of components / Cycle de vie des composants**

1/17. Status maintenance strategy based on overall optimization and its practice

*Lai Qingbo, Dalian Electric Power Bureau (P.R. of China)*

1/18. Current ratings of underground cables for distribution management systems

*J. Pitkänen, E. Lakervi, Helsinki University of Technology (Finland)*

1/19. French service experience of MV polymeric housed surge arresters

*F. Maciela, EDF-DER, P. Le Roux, EDF-DEGS (France)*

*C. Gazzola, FERRAZ, F. Malpièce, SOULE, S. Tartier, SEDIVER (France)*

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1/20. Service experience with medium voltage XLPE cables in Germany

*H. Lindemann, HEAG Versorgungs-AG (Germany)*

*F. Merschel, RWE Energie AG (Germany)*

*U. Winkler, EnBW EVS AG (Germany)*

*P. Blasius, K.-H. Weck, FGH Mannheim (Germany)*

1/21. Results of measurements of the dielectric strength of distribution transformer oil due to a stochastic model.

*G.P. Andreou, Public Power Corporation (Greece)*

*S.I. Spartalis, B.E. Danikas, Democritus University of Thrace (Greece)*

1/22. Thermal diagnosis of MV switchboards : a cost-effective, dependable solution, based on an optical sensor

*C. Petit, Schneider Electric (France)*

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1/23. Vacuum interrupter impulse voltage testing procedures should recognize initial breakdowns as reconditioning events  
*K. Smith, Cutler-Hammer (U.S.A.)*

1/24. Diagnostic testing of medium voltage cables by partial discharge location - Recent field experience  
*M.S. Mashikian, C. Han, S. Ziegler, IMCORP™ (U.S.A.)*

### 1.3. Environmental issues / Contraintes de l'environnement

1/25. New underground economical distribution system direct buried  
*A. Dupont, C. Paradis, CITEQ (Canada)*

1/26. The simplified substation at ground level : a new MV/LV substation for sparsely populated areas  
*C. Guillaume, EDF-DER (France)*  
*P. Lauzevis, EDF GDF SERVICES (France)*  
*R. Jarrousse, Alstom-Serem Transpost (France)*  
*C. Lassalle, Schneider Electric (France)*  
→ **Version française** ←

1/27. Design, manufacturing, practice and information to minimize SF<sub>6</sub> release from electric power equipment  
*M. Marchi, ABB SACE T.M.S. (Italy)*  
*G. Mauthe, ABB Transmission & Distribution Management (Switzerland)*  
*L. Niemeyer, ABB Corporate Research Center (Switzerland)*  
*L. Sfondrini, ABB ADDA (Italy)*

1/28. Solutions of planning for minimization of mishaps provoked by birds in electric lines and the protection of birds  
*J. Casas, Sevillana de Electricidad (Spain)*  
**Report not available**

1/29. Optimizing transformer centre size. Visual impact  
*A. Quintero Alvarez, D. Vindel Cottureau, Union Fenosa (Spain)*

1/30. Superconducting fault current limiters – Getting a grip to short-circuit currents  
*S. Fischer, D. Povh, H. Schmitt, Siemens AG (Germany)*

1/31. Design aspects of high temperature superconducting fault current limiters  
*F.J. Mumford, ALSTOM Research & Technology Centre (United Kingdom)*

1/32. Market impacts of the economic and engineering performance of high temperature superconductors in electric power applications  
*B.W. McConnell, J.W. Van Dyke, Oak Ridge National Laboratory (U.S.A.)*  
*J.W. Mulholland, United States Department of Energy (U.S.A.)*  
**Report withdrawn**

1/33. Antifraud service drop cable in low voltage aerial distribution  
*G. Krysiak, CAMENOFE (Argentina)*

1/34. New design medium switchgear for windfarms  
*P.P. Leufkens, M. Binnendijk, Holec Medium Voltage (Netherlands)*  
*W.B. Brizee, Th. Sneekes, R.W. Weber, R. Wiecherink, ENW (Netherlands)*

## [Dialogue session / Séance de dialogue](#)

1/p1. Study and application of ring-operated network supply of distribution system  
*Sun Jisheng, XiangFan Power Supply Bureau (P.R. of China)*

1/p2. A quadruple MV transmission line with insulated conductors  
*P. Lehky, Z. Zalesak, EGU Power Institute Brno (Czech Republic)*

1/p3. Lightning arresters with polymeric housing : natural ageing  
*C. Gazzola, Ferraz (France)*  
*C. Pusineri, Rhodia Silicones (France)*  
*P. Peccoux, Thone Poulenc Industrialisation (France)*

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1/p4. Condition based maintenance of cable accessories using a new acoustic monitoring method  
*J.T. Benjaminsen, W. Hansen, L. Lundgaard, H. Faremo, SINTEF Energy Research*  
*K.B. Mortensen, CDP (Norway)*

1/p5. On-line control of cable electric lines. Diagnosis of MV underground networks. Tests in situ.  
*S.C. Pispiris, ICEMENERG (Romania)*  
*G. Tupu, SD Bucharest–Electrica SA (Romania)*  
*G. Badan, Electrica SA (Romania)*

1/p6. Concrete poles for overhead lines or antennas, fabricated by multiple elements with possibilities for assembly by helicopter  
*Ph. Bettens, Electricité Neuchâteloise SA (Switzerland)*  
*A. Ghiraldi, GRAM SA (Switzerland)*

1/p7. New tower design for improvement of environmental impacts of MV distribution overhead lines  
*L. Rolfseng, SINTEF (Norway)*  
*H. Thomassen, Trogstad Elverk (Norway)*  
*E. Torbjornsen, Østfold Energi Nett (Norway)*  
*E. Widenoja, H. Hemstad, Widenoja & Hemstad (Norway)*

1/p8. A vacuum circuit-breaker with permanent magnetic actuator and electronic control  
*E. Dullni, H. Fink, C. Reuber, ABB Calor Emag Mittelspannung GmbH (Germany)*

1/p9. Application of long flashover arresters for improvement of lightning protection and operating voltage reliability of distribution lines  
*G.V. Podporkin, V.E. Pilshikov, A.D. Sivaev, Streamer Electric Company (Russia)*

1/p10. On-line, early warning, remote partial discharge monitor for high voltage power transformers  
*J. Unsworth, N. Booth, D. Tallis, K. Ball, Centre for Materials Technology, University of Technology, Sydney (Australia)*

1/p11. Fibre-optical technology in MV XLPE cables in the Netherlands  
*A.H. van der Wey, KEMA (Netherlands)*  
*B.J. Grotenhuis, REMU (Netherlands)*  
*A. Kerstens, TFK (Netherlands)*



## **2. Power quality and EMC / Qualité de la tension et CEM**

**Chairman / Président : A. Robert (Belgium ▀ Belgique)**

**Rapporteurs : J. Hoeffelman & E. De Jaeger (Belgium ▀ Belgique)**

### **2.1. LF Disturbing Phenomena**

#### ***Phénomènes de perturbations basse fréquence***

2/1. Power quality and neutral current problems from unbalanced and non-linear loads in three-phase power systems

*O. Gul, M. Bayrak, Istanbul Technical University (Turkey)*

2/2. Light flicker caused by interharmonics

*M. De Koster, E. De Jaeger, W. Vancoetsem, Laborelec (Belgium)*

2/3. Flicker assessment : individual contribution of an arc furnace and flicker transmission

*L. Zabala, F.J. Pazos, Iberdrola (Spain)*

2/4. A project about voltage dips and short interruptions to meet customers' requirements

*J. Martinon, O. Poisson, F. de Chateauvieux, Electricité de France*

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2/5. Determining the harmonic network impedance mainly for planning purposes in low voltage systems

*F. Otto, W. Rupf, DREWAG Stadtwerke Dresden GmbH (Germany)*

*G. Winkler, J. Meyer, Technische Universität Dresden (Germany)*

2/6. Calculation of network equivalents using transient recordings

*P. Schegner, P. Schwaegerl, Technische Universität Dresden (Germany)*

*D. Siegmund, ESAG Energieversorgung Sachsen Ost AG (Germany)*

2/7. System impedances and background noise in the frequency range 2 to 9 kHz

*R. Gretsch, M. Neubauer, Universität Erlangen-Nuremberg (Germany)*

### **2.2. Power Quality / Qualité de la tension**

2/8. Power quality problems in India

*A.S. Pabla, Punjab State Electricity Board (India)*

2/9. Organizational and technological aspects that impact on supply quality

*C. Ferrarons, Grupo Endesa (Spain)*

2/10. Problems regarding power quality and services in Romanian distribution system. Intelligent hybrid systems implemented for power quality applications

*Gh. Mazilu, I. Lungu, St. Gheorghe, I. Conecini, Gh. Indre a SA – CONEL-ELECTRICA SA (Romania)*

2/11. Power quality issues at utilities serving rural areas and smaller towns

*S.T. Mak, S.E. Spencer, Advantage Engineering (U.S.A.)*

2/12. Regulation of quality of the electrical service in Argentina

*H.M. Laspada, EprE - Electrical Regulatory Entity of Mendoza (Argentina)*

2/13. Relationship between the reliability of supply to end users and the reliability of the Bulk Electricity System (BES) - Regulations and experiences gained within the model adopted by the Republic of Argentina  
*M.V. Gonzalez Sabato, A. Caro, O. Ramati, ADEERA - Association of Distributors of Electrical Energy of the Republic of Argentina*

2/14. The economic analysis of power supply quality  
*Cai Shimin, Nanping Electric Power Bureau (P.R. of China)*

### **2.3. Electromagnetic Compatibility (EMC) and safety problems *Compatibilité électromagnétique (CEM) et problèmes de sécurité***

2/15. A model to simulate EM switching transients in electric power distribution substations  
*G. Ala, P. Buccheri, M. Inzerillo, Università di Palermo (Italy)*

2/16. Transient overvoltages on secondary windings of MV/LV transformers due to capacitor energization - Correlation between computed values and experimental results  
*D. Fulchiron, P. Ferracci, S. Brook, Schneider Electric (France)*  
*M. Sacotte, J. Wild, Groupe Schneider France Transfo (France)*  
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2/17. Research and development required for advanced control of transient overvoltages in power and communication networks. A pre-study  
*R. Thottappillil, V. Scuka, Uppsala University (Sweden)*  
**Report withdrawn**

2/18. A simple transformer model for analysis of transferred lightning surges from MV to LV lines  
*A. Piantini, W. Bassi, J.M. Janiszewski, N.M. Matsuo, University of Sao Paulo (Brazil)*

2/19. Lightning overvoltages on LV networks fed by MV lines with a multigrounded neutral  
*Y. Rajotte J. Fortin, B. Cyr, Hydro-Québec (Canada)*

2/20. How to ensure the efficiency of a global earthing in MV networks  
*D. Halkin, J. Hoeffelman, Laborelec (Belgium)*

2/21. Fault voltages in LV networks during 1-phase MV shortcircuit – On our way to a total earthing concept  
*J.F.G. Cobben, F. Provoost, M. van Riet, NUON (Netherlands)*  
*A.P.J. van Deursen, P.C.T. van der Laan, J.B.M. van Waes, Eindhoven University of Technology (Netherlands)*

2/22. Limiting the danger of electric shock in relation to the mean of neutral point earthing in MV networks  
*W. Hoppel, J. Lorenc, Poznan University of Technology (Poland)*  
*J. Andruszkiewicz, Poznan Power Distribution Company (Poland)*

2/23. A stochastic approach to internal overvoltages due to earth faults in MV networks  
*S. Zutobradic, L. Delbianco, Energy Institute 'Hrvoje Pozar' (Croatia)*

## 2.4. Improving Power Quality and Managing Electromagnetic Fields *Amélioration de la qualité de la tension et gestion des champs électromagnétiques*

2/24. A shunt active filter for low voltage applications

*H. Bonhomme, B. Comblin, F. Delincé, Ch. Richel, K. Schipman, ABB Jumet (Belgium)*

2/25. Innovative system solutions for power quality enhancement

*K. Chan, A. Kara, ABB High Voltage Technologies Ltd (Switzerland)*

*P. Daehler, J. Guay, ABB Industrie AG (Switzerland)*

*R. Tinggren, ABB Secheron SA (Switzerland)*

2/26. The charter of electricity supply service in Italy

*G. Del Gobbo, M. Silvestri, L. Tarchioni, Enel (Italy)*

2/27. The effect of the reliability of local production units regarding the consumer's power quality

*P.L. Thomsen, Aalborg University (Denmark)*

*J. Naver, NESAs (Denmark)*

**Report withdrawn**

2/28. Calculation of sag quantities including protection settings and breaker failure in voltage sag prediction

*L. Driessen-Mutters, S. Rombouts, PNEM Netwerk (Netherlands)*

2/29. Power frequency magnetic fields from in-house secondary substations

*L. Aspemyr, E. Salinas, J. Luomi, Y. Hamnerius, J. Daalder, Chalmers University of Technology (Sweden)*

2/30. Low-frequency magnetic fields at secondary substations

*P. Leipold, K.-P. Panzlaff, Bewag Aktiengesellschaft (Germany)*

2/31. Electromagnetic environment management of substations

*L. Quinchon, L. Popiel, Electricité de France*

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### **Dialogue session / Séance de dialogue**

2/p1. Investigation of harmonic levels for the power network in Egypt

*A. El Mofty, K. Youssef, Alexandria Electricity Company (Egypt)*

2/p2. Fast processing of recorded data from alternating electric parameters using the CALDEQ32-program for the calculation of derived electrical quantities using discrete Fourier transform

*S. Zofcik, J. Dopjera, Nuclear Power Plant Research Institute - VÚJE (Slovakia)*

*J. DeLa Ree, The Bradley Department of Electrical Engineering, Virginia Tech (U.S.A.)*

2/p3. Statistical analysis of voltage dips and interruptions - Final results from the EPRI distribution system power quality monitoring survey

*D.D. Sabin, T.E. Grebe, M.F. McGranaghan, Electrotek Concepts (U.S.A.)*

*A. Sundaram, EPRI (U.S.A.)*

2/p4. Power quality early warning system

*U. Johansson, D. Sunden, Vattenfall Utveckling AB (Sweden)*

2/p5. Power quality measurement system based on a digital signal processor

*A. Prodic, EPS-JP Elektrovojvodina (Yugoslavia)*

*P. Pejovic, Belgrade Univesity - Faculty of Electrical Engineering (Yugoslavia)*

2/p6. Some problems of power quality in the Czech distribution networks

*V. Vyskocil, Z. Spacek, J. Hurkova, EGU Power Institute (Czech Republic)*

*K. Prochazka, EGC EnerGoConsult CB (Czech Republic)*

*P. Santarius, Technical University Ostrava (Czech Republic)*

*J. Bartak, K. Cvacka, West-Bohemian Power Utility (Czech Republic)*

*M. Schneider, Z. Hejpetr, Prague Power Utility (Czech Republic)*

*P. Vasenka, North-Moravian Power Utility (Czech Republic)*

2/p7. Permanent power quality measurement, monitoring and recording – Challenges to face for large implementation

*M. Dussart, Electrabel (Belgium)*

*T. Detroz, ACT'L (Belgium)*

2/p8. Power quality measurements and dip calculations in Finnish electricity networks

*J. Farin, VTT Energy (Finland)*

*M. Siirola, VTT Automation (Finland)*

*P. Pohjanheimo, P. Heine, E. Lakervi, Helsinki University of Technology (Finland)*

2/p9. Specifications definition of power supply quality-monitoring system

*G. Casalotti, AEM S.p.A. (Italy)*

2/p10. Power quality and disturbance recording

*D. Guillot, Alstom T&D Protection & Contrôle (France)*

2/p11. Is the Danish power quality in accordance with international standards ?

*J. Knudsen, NVE (Denmark)*

*A.E. Petersen, NESAs (Denmark)*

*A. Vikkelsøe, DEFU (Denmark)*

2/p12. Transient voltages coupled to shielded cables connected to substation earthing systems in case of lightning

*L. Grcev, University 'St. Kiril and Metodij' (Republic of Macedonia)*

**Report withdrawn**

2/p13. Analysis of the zone of influence of ground potential rise on wire-line

telecommunication installations around high-voltage substations in urban areas

*L. Grcev, V. Filiposki, V. Arnautovski, University 'St. Kiril and Metodij' (Republic of Macedonia)*

**Report withdrawn**

### **3. System Management / Gestion du réseau**

**Chairman / Président : F. Otto (Germany ▪ Allemagne)**

**Rapporteur : B. Ehmcke (Germany ▪ Allemagne)**

3/0. *Final activity report of CIGRE WG.3 'Fault Management' presented by the WG.3 Chairman : Dr. Matti Lehtonen, VTT Energy (Finland)*

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3/1. Review of a central business district distribution network in the light of the Auckland experience

*G.V. Roberts, EA Technology (United Kingdom)*

*T.L. Scott, Orion (New Zealand)*

#### **3.1. Operation / Exploitation**

3/2. Fault location in medium voltage networks

*M.M. Saha, ABB Automation Products AB (Sweden)*

*F. Provoost, NUON Technisch Bedrijf (Netherlands)*

3/3. Intermittent earth faults challenge conventional protection schemes

*H. Kuisti, J. Altonen, , ABB Transmit Oy (Finland)*

*H. Svensson, Varberg Energi AB (Sweden)*

*M. Isaksson, Jämtkraft Elnät AB (Sweden)*

3/4. Experience of remote control and automation of MV (11kV) substations

*P. Isgar, Southern Electric (United Kingdom)*

3/5. Electronics in LV electrical distribution network : the new approach

*F. Viaro, S. Colombo, A. Fidigatti, G. Rivetti, ABB SACE (Italy)*

3/6. Adjustment of restoration strategy and telecontrol system in MV networks

*A. Kox, H.-J. Haubrich, IAEW of Aachen University of Technology (Germany)*

*J. Nachtkamp, STAWAG Stadtwerke Aachen AG (Germany)*

3/7. The Antara RS system : an economical remote monitoring system using the telephone network

*P. Martinez Medina, W.M.M. Menheere, Holec Medium Voltage (Netherlands)*

3/8. Less impact of power failures due to substation automation

*V. Lohmann, ABB Power Automation Ltd. (Switzerland)*

*O. Preiss, ABB Corporate Research Ltd (Switzerland)*

3/9. Quality management of the maintenance works of the distribution networks

*I. Viziteu, G. Hazi, CONEL (Romania)*

*F. Munteanu, Iasi University of Technology (Romania)*

3/10. Maintenance planning of the electrical distribution systems

*R. Torrezan, E.G. Romanini, E. Boquetti, Elektro (Brazil)*

3/11. Integrated substation control system with equipment monitoring and diagnostics

*K. Caird, GE Harris Energy Control Systems (Canada)*

*W.J. Ros, GE Power Systems Energy Consulting (U.S.A.)*

3/12. Experience in implementing a condition-based asset management system with hand-held electronic data capture

*M. Lees, EA Technology (United Kingdom)*

*M. Dixon, Eastern Electricity (United Kingdom)*

3/13. Managing criteria applied on existing medium size distribution transformers

*G. Campaniello, O. Monzani, ABB Trasformatori SpA (Italy)*

*F. Pozzana, ENEL (Italy)*

3/14. Economically and technically optimized maintenance of plants and operating materials in high, medium and low voltage networks, as an example of a regional energy supply company

*M. Erbert, M. Klotz, W. Hohaus, WESAG (Germany)*

**Report not available**

3/15. Reliability centered maintenance strategy for MV-substations

*G. Balzer, Darmstadt University of Technology (Germany)*

*T. Orłowska, Polish Power Grid Company (Poland)*

*A. Strand, Energie-Versorgung Schwaben AG (Germany)*

*O. Schmitt, ABB Calor Emag Schaltanlagen AG (Germany)*

*D. Lehmer, HEAG Versorgungs- AG(Germany)*

### **3.2. Network control (monitoring, protection, control)**

#### **Contrôle du réseau (mise en œuvre, protection, contrôle)**

3/16. Earth-faults analysis of the medium voltage network grounded with low value resistance

*Z. Ristanovic, EPS-Elektrovojvodina (Yugoslavia)*

3/17. Compensated grounded MV networks protection against resistive phase to ground faults

*O. Chilard, L. Morel, Electricité de France*

*D. Renon, EDF GDF Services - CETE (France)*

→ **Version française** ←

3/18. Improvement of the power quality by reliable earth fault location protection in resonant earthed grids

*L.H. Fickert, Wienstrom (Austria)*

3/19. Introduction of adequate neutral earthing schemes in EVO's different medium voltage networks to meet power quality demands

*Th. Connor, J. Holbach, Siemens AG (Germany)*

*H. Zeuschel, P. Hühnlein, Energieversorgung Oberfranken AG (Germany)*

3/20. Distance location of earthfaults in compensated medium voltage networks

*H. Roman, Mitteldutsche Energieversorgung AG (Germany)*

*G. Druml, Haefely Trench GmbH (Austria)*

3/21. Concept "one feeder - one relay" for the control and protection of substations - Operation experience and new developments

*A. Belvaux, Siemens (Belgium)*

*S. Magnus, Electrabel (Belgium)*

3/22. Improved relay coordination and fault detection using a new relay platform  
*L.A. Kojovic T. Day, Cooper Power Systems (U.S.A.)*

3/23. Introducing the first part of a new standard for system interfaces for DMS  
*E. Lambert, Electricité de France*  
*W.D. Wilson, Schneider Ltd (United Kingdom)*

3/24. PCCN : from study to realisation  
*B. Boissnault, J.F. Brisset, A. Pinget, Electricité de France*  
*L. Hossenlopp, Alstom (France)*  
*H. Libens, ICE (France)*  
*C. Souchère, Schneider Electric (France)*  
→ **Version française** ←

3/25. Analysis of experience feedback on digital protection equipment, comparison between predicted and operational dependability, impact on maintenance  
*D. Potier, F. Vaillant, Schneider Electric (France)*  
→ **Version française** ←

3/26. Concept for a highly sophisticated generation of protection and control devices  
Utilities requirements and experience  
*R.-D. Walz, EAM (Germany)*  
*K. Ferling, M. Igel, Alstom SA (Germany)*

3/27. Network manager versus network operator  
*A. Rodriguez, UFACEX (Spain)*

3/28. Software and organisation to manage distribution network data and geographical information  
*P. Bertolini, A. Rica, EDENOR (Argentina)*  
*G. Bernard, J.-M. Fournier, A. Marlier, Electricité de France*  
→ **Version française** ←

3/29. Integration of computer systems for improved distribution system operation and customer service  
*K. Sand, I. Stolen, Powel Data (Norway)*  
*T. Nilsson, Vattenfall AB (Sweden)*

3/30. Practical implementation of state estimation in a DMS environment  
*J. Pereira, J. Tomé Saraiva, V. Miranda, Instituto de Engenharia de Sistemas e Computadores (Portugal)*  
**Report withdrawn**

3/31. High frequency modelling of LV & MV distribution networks concerning power quality and data transmission  
*S.M. Munk, NES A/S (Denmark)*

3/32. Innovative solutions for distribution automation and automatic meter reading  
*R. Cettou, S. Mattatia, Services Industriels de Genève (Switzerland)*  
*P.H. Dondi, J. Favre, ABB Power Automation Ltd (Switzerland)*

## [Dialogue session / Séance de dialogue](#)

3/p1. A new operation center in Electrabel Brussels : a global approach for open solutions, built on modern technology and oriented toward the future

*Ph. Sommereyns, Electrabel Urban Distribution Brussels (Belgium)*

*G. Suter, Telegyr Systems Corp. Zug (Switzerland)*

3/p2. Synergism between intelligent devices and communication systems for outage mapping in distribution networks

*S.T. Mak, Advantage Engineering , Inc. (U.S.A.)*

3/p3. Incipient failure detection & location for underground cables

*C.M. Walton, London Electricity Plc (United Kingdom)*

3/p4. Predicting the location of evolving earth faults in 10 kV cable network by distributed intelligence

*E. Jacobsen, A. Hyldekrog, Copenhagen Energy (Denmark)*

*K.J. Jeppesen, ABB Energy & Industry (Denmark)*

**Report withdrawn**

3/p5. Operation experiences system with integrated control systems for substations

*H. Hylla, R. Trebst, Mitteldeutsche Energieversorgung Aktiengesellschaft (Germany)*

3/p6. A DMS platform for monitoring and analysing large distribution networks

*P. Rousseaux, I. Quoilin, T. Van Cutsem, University of Liège (Belgium)*

*J.-L. Orban, C. Beck, Gillam (Belgium)*

3/p7. The interoperability of the PCCN level substations

*O. Jaray, J.-P. Thomesse, LORIA-INPL (France)*

*J.P. Tavella, Electricité de France*

→ **Version française** ←

3/p8. Integrating a GIS and DMS system using object-oriented technology with an extended EPRI model for distribution

*E. Würgler, K. Herger, Telegyr Systems Corp. (Switzerland)*

3/p9. Support of core business processes in a utility by integrated IT Solutions

*S. Almsengen, Viken Energinett (Norway)*

*J. Kapp, Siemens Business Services (Germany)*

*T. Spoede, EWE (Germany)*

*N. Vierheilig, Siemens AG (Germany)*



#### **4. Dispersed generation - Management and utilisation of electricity** **Production décentralisée – Gestion et utilisation de l'énergie électrique**

**Chairman / Président : A. Headley (United Kingdom ▪ Royaume-Uni)**

**Rapporteur : A. Cross (United Kingdom ▪ Royaume-Uni)**

##### **4.1. Dispersed Generation / Production décentralisée**

4/1. Small power plants connected with MV networks

*P. Bauhofer, H. Netzer, TIWAG - Tiroler Wasserkraftwerke AG (Austria)*

4/2. Microturbines for dispersed generation

*S. Barsali, M. Ceraolo, R. Giglioli, P. Pelacchi, University of Pisa (Italy)*

4/3. Determination of distributed resources benefits in a restructured industry using system analysis methods

*F.I. Denny, Louisiana State University (U.S.A.)*

4/4. Small-scale single phase embedded generators connected at LV

*A. Beddoes, Y. Dickson, L. Kerford, EA Technology (United Kingdom)*

4/5. Dynamic behaviour of dispersed generation on the public MV network

*M. Stubbe, J. Dubois, Tractebel (Belgium)*

*F. Wellens, Laborelec (Belgium)*

*M. Dussart, Electrabel (Belgium)*

→ **Version française** ←

4/6. Proper operation of step-voltage regulators in the presence of embedded generation

*J.D. Foster, C.A. Colopy, Cooper Power Systems (U.S.A.)*

*S. Grimes, Electricity Supply Board (Ireland)*

4/7. International standards for power quality of dispersed generation

*J.O. Tande, SINTEF Energy Research (Norway)*

*N. Jenkins, UMIST (United Kingdom)*

4/8. Guidelines on grid connection of wind turbines

*K. Kolbaek Jensen, DEFU (Denmark)*

4/9. Islanded operation of MV networks

*Ph. Juston, R. Belhomme, P. Cholley, EDF-DER (France)*

*J.L. Fraisse, EDF-DEGS (France)*

→ **Version française** ←

4/10. Guidelines for grid connection of wind turbines

*A. Larsson, Chalmers University of Technology (Sweden)*

4/11. Connection of embedded generation to LV networks

*P. Lemerle, D. Cortinas, S. Viter, J.L. Meyer, Electricité de France*

*J.-L. Fraisse, Electricité de France – EDF GDF Services (France)*

→ **Version française** ←

4/12. A framework for development of tariffs for distribution networks with embedded generation

*J. Mutale, G. Strbac, N. Jenkins, UMIST (United Kingdom)*

*S. Curcic, EA Technology Ltd (United Kingdom)*

4/13 The electrical distribution owner and dispersed generation  
*R. Petersson, Sycon Energikonsult AB (Sweden)*

4/14. Using renewable energies for rural decentralized electrification in developing countries  
*A. Schmitt, R. Soler, G. Marboeuf, Electricité de France*  
→ **Version française** ←

4/15. The value of wind power for an owner of a local distribution network  
*L. Söder, KTH - Royal Institute of Technology (Sweden)*

4/16. Connection of co-generation plants with the medium-voltage network of public utilities  
*S. Stieb, A. Wildenhain, BEWAG AG (Germany)*  
*W. Zimmermann, ABB Calor Emag Schaltanlagen AG (Germany)*

4/17. MV-network-connection of dispersed generation : network reinforcements vs. optimised operation  
*J. Tzschope, H.J. Haubrich, Aachen University of Technology (Germany)*  
*D. Bergs, J. Nilges, RWE Energie AG (Germany)*

## **4.2 Energy Efficiency / Rendement énergétique**

4/18. A procedure for the optimal management of load shedding in local networks  
*V. Cataliotti, L. Mineo, A. Sannino, Universita di Palermo (Italy)*

4/19. Energy storage in power grids - Applications and opportunities  
*C. Levillain, A. Marquet, D. Chantelou, E. Serres, C. Bonety, Electricité de France*  
→ **Version française** ←

## **4.3. Demand Side Management (DSM) / Maîtrise de la demande d'énergie (DSM)**

4/20. Electric energy conservation - A bad business to the utilities ?  
*A. Amendola, M.C. Rocha, Eletrobras (Brazil)*

4/21. SIDAC : an integrated system to detect anomalies in consumption patterns of utility customers  
*E. del Rio, E. Galindo, Iberdrola (Spain)*

4/22. Hourly demand curves for residential end uses in Argentina and potential for load management  
*G.S. Dutt, C.G. Tanides, Universidad de Buenos Aires (Argentina)*

4/23. A demand side management (DSM) priority selection technique - Its design and implementation  
*M.S. Elsobki (Jr.), Cairo University (Egypt)*  
*S. Wahdan, Egyptian Electric Authority (Egypt)*

4/24. Demand side management at an electrical distribution utility – Methodology, applications, results, evaluations and projections  
*F.M. de Figueiredo, Brasilia Utility / Brasilia University (Brasil)*  
*J.A. Jardini, University of Sao Paulo (Brasil)*

4/25. DSM and customer services in competitive electricity market in Finland  
*S. Kärkkäinen, VTT Energy (Finland)*  
*E. Lakervi, P. Heine, Helsinki University of Technology (Finland)*

4/26. DSM through time-of-use-tariffs  
*N.F. Leite, H.T. Loque, T. M.M. Alves, P.T. Markiewicz, CEMIG (Brazil)*

### [Dialogue session / Séance de dialogue](#)

4/p1. Impact of large dispersed generation units on the design of a real 110-kV-distribution network

*G. Clemens, H.-J. Haubrich, Aachen University of Technology (Germany)*

*Th. Nippert, Hamburg Electricity Board (Germany)*

**Report withdrawn**

4/p2. Applications with proton exchange membrane (PEM) - fuel cells systems for heat and electricity generation in a deregulated energy market

*B. Kohlstruck, Alstom Energietechnik GmbH (Germany)*

4/p3. The influence of large-scale dispersed co-generation on short circuits in rural networks

*G.C. Paap, D. Teklu, L. van der Sluis, Delft University of Technology (Netherlands)*

*F. Jansen, Energie Noord West NV (Netherlands)*

4/p4. ARENE : a new simulator reduces the cost of equipment tests

*O. Devaux, P. Lemerle, O. Delsol, S. Martino, Electricité de France*

4/p5. Determination of optimal direct load control strategy using linear programming

*Z.N. Popovic, EPS-Elektrovojvodina (Yugoslavia)*

## **5. System Development / Développement des réseaux**

**Chairman / Président : L. Azpiazu (Spain ▪ Espagne)**

**Rapporteur : A. Invernizzi (Italy ▪ Italy)**

### **5.1 Impacts and influences on planning Impacts et influences sur la planification**

5/1. An electrical energy distribution utility adapted to the new model regulation of the Brazilian electricity industry

*F.M. Figueiredo, CEB Energetic Utility of Brasilia (Brazil)*

*I. Camargo, M.A. Oliveira, University of Brasilia (Brazil)*

5/2. Future concepts for medium voltage distribution networks : a new philosophy

*G.C. Schoonenberg, A.R.A. Pikkert, Holec Medium Voltage (Netherlands)*

*F. van Overbeeke, ENECO (Netherlands)*

*C. Spoorenberg, Smit Transformatoren B.V. (Netherlands)*

5/3. Perspectives of integrated resource planning at local electricity markets in

Poland on the example of Poznan Power Distribution Company

*J. Andruszkiewicz, Poznan Power Distribution Co. (Poland)*

*M. Kwiatkowski, Polish Power Grid Co. (Poland)*

5/4. The quality of supply and the assessment of the technical limits of a distribution network

*J. Nahman, D. Peric, Faculty of Electrical Engineering (Yugoslavia)*

5/5. Comprehensive evaluation on reliability management of power supply enterprises

*Li Jiansheng, Zhengzhou Power Bureau (P.R. of China)*

*Miao Yu, Henan Bureau of Technical Supervision (P.R. of China)*

5/6. HV and MV network planning involving dispersed generation

*F. Dispot, S. Motte, Electricité de France*

→ **Version française** ←

5/7. Planning of distribution networks in high wind penetration areas using GIS facilities

*N.G. Boulaxis, M.P. Papadopoulos, National Technical University of Athens (Greece)*

*G. Glinou, Center of Renewable Energy Sources (Greece)*

5/8. Network planning and operation in the environment of competition

*G. Brauner, Technical University of Vienna (Austria)*

*W. Tenschert, E. Vierlinger, Energie AG Oberösterreich (Austria)*

5/9. Integration of demand side management – Agreement between distributors and customers in a power trade system under liberalized market conditions

*I. Heinrich, P. Tölke, LEM Ingenieurbüro (Germany)*

*S. Blake, NRG Energy Inc. (Germany)*

*Mr. Jacob, MIBRAG (Germany)*

*Mr. Liebscher, Mr. Herbst, DREWAG (Germany)*

5/10. Extended modelling of electrical loads for distribution networks for an increased use of existing resources with regard to a deregulated energy market

*E. Handschin, J. Teupen, Universität Dortmund (Germany)*

*B. Heers, L. Jendernalik, Th. Kohlstrung, VEW Energie AG (Germany)*

5/11. Distribution regulation in competitive environments : investment, pricing and access

*I.J. Pérez-Arriaga, J. Dolader Clarà, L. Maqueda Hernando, National Electricity Regulatory Commission of Spain*

5/12. Procurement of integrated IT systems for the deregulated electric utility

*J. Andersson, P. Johnson, KTH – Royal Institute of Technology (Sweden)*

## **5.2 Criteria, methods and systems for achieving the goals**

### ***Critères, méthodes et moyens pour atteindre les objectifs***

5/13. Genetic algorithm for the optimal location of capacitors in distribution systems

*J.L. Hernandez, D. Moitre, L. Aromataris, G. Rodriguez, Universidad Nacional de Rio Cuarto (Argentina)*

5/14. Selection and management of distribution transformers using artificial neural networks

*J.A. Jardini, H.F. Schmidt, C.M.V. Tahan, PEA-Escola Potitécnica - Universidade de Sao Paulo (Brazil)*

*S.U. Ahn, Empresa Bandeirante de Energia (Brazil)*

5/15. A quality driven software for expansion planning in an open regulated electricity market

*N. Kagan, M.R. Gouvêa, C.M.V. Tahan, H. Arango, C.C.B. Oliveira, Universidade de São Paulo (Brazil)*

5/16. Application of fuzzy logic and transshipment model to spatial load forecasting

*T. Wang, P. Wang, M. Fan, Z. Yue, Electric Power Research Institute (P.R. of China)  
Ruili Guan, Changping Power Company*

5/17. MV networks planning tools integrated within the geographic information system

*A. Caregari, R. Cicoria, P. Laterza, M. Mazzoni, W. Palenzona, E. Ricci, M. Spoldi, ENEL (Italy)*

5/18. Fault and interruption statistics : experiences, utilitarian values, new requirements

*J. Heggset, SINTEF Energy Research (Norway)*

*P. Langseth, Norwegian Electricity Federation (Norway)*

*K. Larsen, Halogaland Kraft (Norway)*

*M. Lossius, Vest-Agder Energiverk (Norway)*

*T. Dyrhaug, Nordmore Energiverk (Norway)*

*B.T. Hjartsjo, Stattnet (Norway)*

5/19. Replacement planning strategy to optimize life cycle profit

*A.O. Eggen, E. Solvang, SINTEF Energy Research (Norway)*

*J.A. Foosnaes, Nord-Trondelag Elektrisitetsverk (Norway)*

*K.H. Hansen, Troms Kraft (Norway)*

*W. Hanssen, Trondheim Energiverk (Norway)*

*A. Ronning, Roros Elektrisitetsverk (Norway)*

*K. Tufte, Sandefjordregionen Energiverk (Norway)*

*K. Odegard, Viken Energinett (Norway)*

5/20. Data collection, load modelling and probabilistic analysis for LV domestic electrification

*C.T. Gaunt, R. Sellick, GIBB Africa (South Africa)*

*R. Herman, University of Stellenbosch (South Africa)*

*M. Dekenah, Marcus Dekenah Consulting (South Africa)*

*S. Heunis, VKE Engineers (South Africa)*

5/21. PREDIELEC : a short-term electric load forecasting system using an artificial neural network

*E. Gomez, V. Perez, M. Iglesias, Iberdrola Ingenieria y Consultoria (Spain)*

5/22. A configurable software platform for the distribution network research

*P. Habertisch, D. Voirin, O. Jeannin, Electricité de France*

→ **Version française** ←

5/23. Distribution planning of large urban networks : software, algorithms, practice and experience

*L.A.F.M. Ferreira, P.M.S. Carvalho, DEEC - Instituto Superior Tecnico (Portugal)*

*L.M.F. Barruncho, Edinfor - Electricidade de Portugal*

*L.A. Jorge, F.C. Branco, C.A. Santos, SLE - Electricidade de Portugal*

### **5.3 Real and practical experiences / Expériences réelles et pratiques**

5/24. The electrification of fast developing areas

*A. Marien, S. Hecq, P. Saintes, F. Leboutte, Tractebel Energy Engineering (Belgium)*

5/25. 230 volt standardization - The next steps

*D.K. Sweeting, Sweeting Consulting Services (Australia)*

5/26. Maintenance and replacement decision support system

*J. Oestergaard, O. Joergensen, DEFU (Denmark)*

*A.O. Eggen, E. Solvang, Sintef Energy Research (Norway)*

*A. Larsson, Vattenfall Mälarnät (Sweden)*

5/27. Reduction of interruption duration in Alexandria distribution network

*M.S. Deif, N.G. Eassa, Alexandria Electricity Company (Egypt)*

5/28. Planning of investments and organisation of operating facilities to supply electricity to the rural areas of developing countries

*M. Dangouloff, G. Marboeuf, Electricité de France*

→ **Version française** ←

5/29. Planning of high - and medium voltage systems in urban areas

*P. Müller, Stadtwerke Leipzig GmbH (Germany)*

*H.-J. Koglin, University of Saarland (Germany)*

*H. Solf, Energy + Consult Dr. Solf & Partner GmbH (Germany)*

*K. Bielenberg, Wuppertaler Stadtwerke AG (Germany)*

*M. Heyland, K. Schilling, Siemens AG (Germany)*

5/30. System Management of concentrated electric load

*S.K. Calla, Rajasthan State Electricity Board (India)*

*B. Purohit, Tata Infotech (India)*

*S. S. Purohit, L & T Software (India)*

5/31. Reduction of reactive power flows and power losses in Enel distribution system  
*M. Silvestri, L. Tarchioni, Enel (Italy)*

**Dialogue session / Session de dialogue**

5/p1. SERDIS System : a new approach in optimized planning of distribution investments

*A. Amendola, M.C. Rocha, Eletrobras (Brazil)*

5/p2. Functional models for the technical-economical analysis of not traditional distribution electric systems configurations

*M.G. Ippolito, G. Morana, University of Palermo (Italy)*

5/p3. Integration of uncertainties in generation costs in OPF studies

*J. Tomé Saraiva, Universidade do Porto (Portugal)*

**Report withdrawn**

5/p4. A method for optimal developing of urban medium and low voltage networks

*G. Comanescu, Politechnical University of Bucharest (Romania)*

*S. Coculescu, CONEL (Romania)*

5/p5. Mobile SIMS - Improving operational performance

*M. Rautapää, T. Laine, Tekla Oy (Finland)*

5/p6. Development of Design & Account System for distribution lines construction

*C. Hori, H. Furuya, Tokyo Electric Power Company (Japan)*

5/p7. Improving electrical distribution network operation and management at EDP – Current experience in scope of a DA project

*D. Costa-Cabral, EFACEC Sistemas de Electronica (Portugal)*

*A. Gomes Varela, Electricidade de Portugal*

5/p8. Number of distribution feeders of primary MV network utilized in the radial operation of secondary LV grid network

*V. Blazek, P. Sadilek, Technical University Brno (Czech Republic)*

5/p9. Optimum restructuring of low voltage distribution networks

*C. Blug, H.-J. Koglin, Universität des Saarlandes (Germany)*

*J. Nilges, RWE Energie AG (Germany)*

5/p10. Three-phase and single-phase rural electrification in developing countries using the insulated shield wires of HV lines energized at MV

*F. Illiceto, F.M. Gatta, S. Lauria, University of Rome 'La Sapienza' (Italy)*

*G.O. Dokyi, Volta River Authority (Ghana)*

5/p11. Interactive planning tools for strategic development of MV networks in geographical information environment

*K. Bakic, T. Mohar, Electroinstitute Milan Vidmar (Slovenia)*

## **6. Management – Organization – Skills / Gestion – Organisation – Compétences**

**Chairman / Président : N. Haase (Denmark ▪ Danemark)**

**Rapporteur : K. Mortensen (Norway ▪ Norvège)**

6/0. The Norwegian Monopoly Regulation Regime - Consequences for the network companies.

*Ø. Torkildsen, H.T. Ylvisåker, BKK Distribusjon AS (Norway)*

### **6.1 Business goals and strategies in electricity distribution / Objectifs économiques et stratégies dans le secteur de la distribution d'électricité**

6/1. Competitive conditions in the electrical market for the companies for the distribution of energy - Identification of comparative advantages and marketing strategies

*E.O. De Agostino, EDEA S.A. (Argentina)*

6/2. Experience in technical distribution management systems

*J. Grau, H. Gonzalez, L. Ruiz Diaz, A. Leghissa, Edenor (Argentina)*

6/3. Investments in electric networks : five key-factors to reach planning efficiency

*P. Bertolini, A. Rica, Edenor (Argentina)*

6/4. Event based change management

*P. Lohmann, NES A/S (Denmark)*

6/5. Strategies for the renovation of protection and control systems in electrical substations

*L. Hossenlopp, Alstom (France)*

6/6. Delfland Energie in a changing world

*C.J. Remijnse, J.A.G. Bekkers, Energie Delfland (Netherlands)*

6/7. Developments in transmission and distribution networks in the Netherlands

*M.J.J. Bielders, J.P. Hodemaekers, M.A.M.M.van der Meijden, N.V. REMU (Netherlands)*

6/8. Changing the business focus of utilities

*M. Conceição Gonçalves, Electricidade de Portugal*

6/9. Investment selection and scheduling in an electric distribution network

*E. Gomez, L.F. Escudero, J. Salmeron, Iberdrola Ingenieria y Consultoria (Spain)*

*R. Criado, E. Valtierra, Iberdrola (Spain)*

6/10. Retirement modelling for the long-term planning of the replacement of distribution assets

*J.A.K. Douglas, C.H. Morris, PB Power Ltd - Merz and McLellan Division (United Kingdom)*

6/11. Methodologies for business development strategies in a changing environment

*F.D. Riley, EA Technology (United Kingdom)*



## **6.2. Organisation and business structures in electricity distribution** **Organisation et structures économiques dans le secteur de la distribution d'électricité**

6/12. The impact of the implementation of a technical management system in an electric power distribution company

*J. Grau, D. Colombo, E. Minio, Edenor (Argentina)*

6/13. The transition from a public to a private management model in a power distribution company - Light case

*L. Mendes, A.L. Simões, Light – Serviços de Eletricidade (Brazil)*

**Report withdrawn**

6/14. New model for logistics and subcontracting distribution projects at Union Fenosa S.A.

*J. Rodriguez Domingues, Norconsults S.A. (Spain)*

*F. Quinteiro Puertas, Union Fenosa S.A. (Spain)*

6/15. Optimising resources under normal and adverse weather conditions

*C. Edge, Midlands Electricity (United Kingdom)*

*F. Riley, F. Sharman, D. Rigler, EA Technology (United Kingdom)*

6/16. A new organization : optimizing results

*C.J. Lindell, R.D. Koszyk, D.A. Pagel, Commonwealth Edison Company (U.S.A.)*

## **6.3 Human resource management and professional skills in electricity distribution**

### **Gestion des ressources humaines et des compétences professionnelles dans le secteur de la distribution d'électricité**

6/17. Towards company-wide adoption of computer-based training in a large electrical utility

*A. Bertin, S. Mori, A. Stefanini, ENEL (Italy)*

**Report withdrawn**

6/18. Electrical equipments maintenance training systems applying intelligent training and virtual reality : evaluation of pilot applications

*L. Guarrera, F. Gerli, AEM SpA (Italy)*

*F. Buciol, ENEL SpA (Italy)*

*A. Bertin, TXT Ingegneria Informatica SpA (Italy)*

6/19. Why change programs fail : Business development and implementing lasting change

*F.J.A. Duynstee, Energie Noord West (Netherlands)*

## **6.4 Competitiveness including reduction in costs in electricity distribution** **Compétitivité, y compris la réduction des coûts, dans le secteur de la distribution d'électricité**

6/20. Quality policy based on the 'cruciality' of electrical distribution equipment

*J. Neyens, P. Goossens, Laborelec (Belgium)*

*M. Desmedt, Electrabel (Belgium)*

6/21. Increasing operational results and profits geared by a suitable prioritization of capital expenditure, monitored by management distribution system  
*E. Picucci, P.A. Picucci, O. Orciuolo Picucci, Elektro Eletricidade e Serviços (Brazil)*

6/22. Excellency in attendance - To attend better, reducing costs  
*A.A. de Oliveira, M. de F. Melo Franco, Centrais Eletricas de Goias – CELG (Brazil)*

6/23. Methods and experience in improving competitiveness through cost reductions resulting from the restructuring of internal processes, quality management and other methods in distribution networks  
*J. Buschke, K.-P. Panzlaff, Bewag Aktiengesellschaft (Germany)*

6/24. Direct on-site quantity survey for construction work and customer quotations with the help of handheld computers  
*B. Fenn, HEAG Versorgungs-AG (Germany)*

6/25. Regulation of Norwegian distribution grid companies  
*B. Uthus, I. Wangensteen, SINTEF Energy Research (Norway)*  
*T.A. Berg, BKK (Norway)*  
*M. Rogn, SKK (Norway)*  
*J. Kellberg, Vattenfall AB (Sweden)*

6/26. Process re-engineering and total quality management at electric utility companies – Two Portuguese experiences  
*C. Loureiro, Electricidade de Portugal*

6/27. A real BPR application to distribution network development  
*F. Raga, F. Prefaci, N. Ruano, I. Garcia, E. Capelastegui, L. Azpiazu, Iberdrola (Spain)*

6/28. Engineering standardization process for seven utilities  
*E. Suarez Figaredo, Grupo Endesa (Spain)*

6/29. Customer-supplier partnerships and total quality management in customer-supplier partnership contracting  
*E. Pichot Royo, Union Fenosa (Spain)*

6/30. Union Fenosa quality management system for networks over 20 kV  
*J.L. Otero Codesal, J.M. Martin Giraldo, Union Fenosa (Spain)*

6/31. Means for cost effective use of tools for planning, operation and maintenance  
*G.H. Kjolle, K. Samdal, SINTEF Energy Research (Norway)*  
*H.M. Brandtun, REN (Norway)*  
*B. Haukland, BKK Distribution (Norway)*

6/32. Integration of the information system as a support to distribution  
*M. Urquijo Pancorbo, Iberdrola Distribution (Spain)*

*Dialogue session / Séance de dialogue*

6/p1. A framework towards effective IT strategy for modern electric utilities

*K.-H. Cheong, KTH-Royal Institute of Technology (Sweden)*

6/p2. Personnel training - Essential element of human resources management in transmission and distribution of electric power subsidiaries

*M. Paun, SC Electrica SA (Romania)*

*T. Dumitriu, D. Constantinescu, CONEL – SC Electrica SA (Romania)*

6/p3. Improvement in the service to the client orders in a metropolitan region in Brazil

*M.R. Gomes, J.D.S. Sarmiento, K.D. de Oliveira, J.A. Ragone Filho, G.P. P.*

*Mascarenhas, CEMIG (Brazil)*