



• Call for papers

2006 Session



Cigre Session **41**

27th August > 1st September 2006

The General Session is CIGRE's main event. Furthermore, it is a top ranking event for the worldwide Electric Power Industry both as regards its contents and its audience.

The success of the General Session requires carefully chosen Preferential Subjects and high quality papers. The Preferential Subjects selected for the 2006 General Session do indeed reflect the main issues that are currently being faced by the Electric Power Industry : I therefore feel certain that many of you will be keen to put forward high quality papers able to feed stimulating discussions, thus providing an important contribution to the relevance of the 2006 General Session and to the ongoing success of CIGRE.

A. Bolza - Technical Committee Chairman

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Preferential Subjects for the 2006 Session

■ SC A1: Rotating Electrical Machines

1. Developments in Electrical Machine design and experience in service

- Trends in cooling and material technology, improvements in efficiency and novel machines
- Superconductivity and novel machine designs and applications
- Trends and new design developments on solving common known problems

2. Life Cycle and Failure Risk Assessment and Management tools

- Upgrading, Power up-rating, efficiency improvement, reliability improvement
- Methods of life cycle assessments and costing
- Condition/risk based maintenance
- Failure analysis, prediction and prevention
- Testing, monitoring and diagnosis.

3. Machines for distributed Generation and Renewable Energy (Wind power, micro-turbine, wave power, bulb hydro units)

- Design, development, operating and maintenance experience
- Efficiency, performance and reliability field experience. Impact of environment on machine.
- Electrical Machine controls and protection.
- Future trends in machines for distributed generation

■ SC A2 : Transformers

1. Transformers Reliability, Technical, Economical and Strategic Aspects

- Technical & Economical considerations for specification and design
- Dynamic loading and overloading
- Effects of ageing, stress, maintenance
- Data collection

2. Phase Shifter Transformers

- Application consideration
- Tapchangers, Phase angle regulation
- Overloading, Specification
- Thermal monitoring of existing and new PSTs for increasing power flow control
- New Design

3. New Development of Electrical Transients on Transformer Performances (event. Panel or Workshop with SC B4 and C4)

- Switching surges, Power electronics
- Experiences with GIC events
- Impact on insulation system
- Testing techniques & Standards
- Measuring & Mitigation techniques

■ SC A3 : High Voltage Equipment

1. Novel HV Equipment (switchgear, surge arrestors, instrument transformers, capacitors, insulators) and Development Tools

- Reduced environmental impact
- Improved reliability
- Application of new materials (e.g. composites)
- Use of modelling to partly replace development and type testing

2. Management of Ageing HV Equipment (assets)

- Criteria/tools for condition assessment
- Qualification/ retrofit of equipment for more severe duties
- Experience on reliability, availability and endurance performance of primary equipment.
- Field experience of digital secondary equipment for control/monitoring

3. Extreme Stresses on HV Equipment – Occurrence, Effects and Design of Equipment

- Extremely high short circuit currents
- Overloading, increased operating voltages and non-standard TRV/ITRV and short line fault requirements
- Switching of very long lines (> 250 km) under no-load, load and fault conditions
- Extreme climatic conditions
- Impact on present international standards

■ SC B1 : Insulated Cables

1. Products Development and new Installations of High voltage AC and DC Underground and Submarine Cable Systems

- Latest state of the art of cables and accessories
- Improvements and developments of products and systems
- Testing
- New installations

2. Operation and Maintenance of High voltage AC and DC Underground and Submarine Cable Systems

- Service experience
- Monitoring and diagnostics
- Operation and maintenance policies and practices
- Up-rating, upgrading
- Life cycle assessment

3. Cable Systems in the Changing Operating Environment

- Environmental restrictions, social awareness
- Economical constraints
- Relevant issues from dispersed generation
- Relevant issues from distribution systems
- Utilisation of existing assets

■ SC B2 : Overhead lines

1. New Developments of Geographical Information and asset management for Overhead lines System (Common session with D2)

- New developments of IT (geomatic,...) applied to OHL lines design, construction and operation.
- Ways to gather, process, and store data on existing lines (flights and laser survey, vegetation survey, GPS diagnostic & monitoring tools,...)
- Economical aspects and assessment of the benefits of these technologies

2. OHL Design : Deterministic and Probabilistic Methods comparison

- Advantages and disadvantages of these methods for new lines or refurbishing...
- Collection and statistical treatment of climatic data for probabilistic design
- Level of reliability according to experience from countries using different methods
- Evolution of the standardization of Design rules ; Economical aspects

3. New components and new Diagnosis Tools & Methods for OHL

- New components and materials
- Technical and economic justification in new lines
- New diagnostic tools and methods to assess life expectancy, risk and maintenance strategy of components in service

■ SC B3 : Substations

1. Life Management of Substations

- Life-cycle-costing (LCC) - application in the selection and purchasing of equipment, including evaluation and sensitivity analysis
- Optimised use of assets, including dynamic loading
- Optimised approach / solutions for substation renovation
- Life-cycle-assessment (LCA) and end-of-life strategies

2. Substation Technology Developments and Implementation

- Mixed technology designs and new functionalities
- Impact and long term manageability of digital process busses (like IEC 61850) as fundamental interface between primary and secondary equipment
- Standardisation or Innovation - considerations and experience

3. The Environment

- Designs for environmental compatibility
- Design and maintenance approaches to cope with extreme ambient conditions

■ SC B4 : HVDC and Power Electronics

1. New HVDC And Power Electronic (PE) Technologies And Projects

- Enhanced voltage sourced converter applications
- Advances in PE devices
- Novel PE applications
- New HVDC Projects

2. Issues Concerning HVDC And Power Electronic Projects

- Environmental requirements for new applications and upgrades
- Environmental monitoring programs for existing schemes
- Fault diagnosis and lifetime prediction at operation and maintenance levels
- Operating experiences of projects
- Studies and experiences on cost reduction

3. Role Of HVDC And Facts To Assist Sytem Performance

- Dynamic design requirements of projects for severe operating conditions
- HVDC and PE technologies contributions to system restoration
- Studies and experiences on how to incorporate HVDC and PE modeling into system planning
- Technical and economic benefits experienced

■ SC B5 : Protection and Automation

1. Impact of IEC61850 on Protection and Automation

- Experiences of Utilities and Manufacturers
- Specification
- Migration strategies
- System integration and testing
- Procurement practices :Multi-vendor/ System integrator responsibilities
- Project execution: Implementation, Tools, Commissioning
- Operation and Staff training

2. Protection Systems and Substation Automation for Major disturbances

- New local protection and control approaches to minimize impact :
 - Actions to prevent cascade tripping,
 - Load shedding, islanding,
 - Autoreclosing
- Techniques for maintaining system integrity and security during large disturbances
 - Actions to maintain system stability
 - System Protection Schemes
 - Power restoration practices

■ SC C1 : System Development and Economics

1. Drivers in Capital Investment Decisions and Power System Design

- Regulatory framework and design of the network
- Allowed revenue and network investment decisions
- Stakeholder expectations and system design
- Regulatory framework and network reliability and supply security
- Security standards versus regulatory capital expenditure programme

2. Uncertainties of Load, Generation, Interconnection and Trades and Development Planning

- Managing uncertainties to comply with security standards
- Electrical, geographical and planning boundaries
- How can an acceptable plan be defined ?
- How can these uncertainties be defined ?
- Investment risk and investment decisions

3. Replacement / Refurbishment of Assets and Security of Supply.

- Decision process for replacement versus refurbishment
- Impact of systems (network, IT) and component reliability on supply security
- Safety, environmental and stakeholder issues impact on decisions and security of supply
- Asset reliability (failure rates and repair time) and system security standard

■ SC C2 : System Control and Operation

1. Development of Operational Security Standards / Grid Codes driven by Increased Concerns for Critical Technical Malfunctions and Physical or Cyber Intrusions

- Alternative principles to n-1 security.
- Social aspects on security levels.
- Weather related risk assessment
- Management of capacity limits and reserve margins, new reserve sources.
- Countermeasures against unauthorised intrusions.

2. Operational Use of New Technology for Detection and Mitigation of Critical System Conditions

- Wide Area Measurement Systems and Protection Schemes.
- Early Warning Mechanisms.
- Operational management and functional verification of system protection schemes.
- Advanced switching support and emergency handling tools

3. Ability of Control Centres to Handle Emerging and Acute System Contingencies that involve a Multitude of System Operators and Other Actors

- Visualization of security violations on a wide area level.
- Interaction and coordination procedures.
- Training of operators in emergency awareness and external interaction.
- Information exchange between system operators/reliability coordinators.
- Information to external actors, market institutions, authorities and the public

■ SC C3 : System Environmental Performance

1. Local and Global Environmental Impacts of Centralized Versus Distributed Generation

- Assessment from a system perspective
- Impacts due to the influence on transmission and distribution losses
- Costs and benefits; criteria of evaluation
- Importance of regulatory limits on large and small installations
- Potential impact on the cost and trading of green certificates

2. Economic Implications of Growing Environmental Constraints on the Design and Operation of Power Systems

- Approaches taken by the competitive and regulated parts of the power sector
- Expected trends of the costs of compliance with new limits
- Influence of sector organization: unbundling versus vertically-integrated utilities
- Changes in system planning and operation approaches ; methodologies

■ SC C4 : System Technical Performance

1. Performance of Power Systems against Lightning-Originated Disturbances

- Impact of developments in surge arresters and of knowledge of lightning parameters on quality of power supply, insulation coordination and EMC hardening

2. Impact of Monitoring and Diagnostics on Insulation Coordination

- Assessment of insulation performance by application of advanced diagnostic tools
- Experience with application of monitoring and diagnostic tools for condition assessment and life extension
- Impact of diagnostics on failure rates and service performance

3. EMC and EMF Assessment and Mitigation of Associated Problems

- Immunity and emission characteristics of power installations (substations, power links, FACTS devices, etc.)
- Mitigation methods for reducing the influence of power systems on other installations and on the environment

4. Coordination of Power Quality Levels between Customers and Various Players

- Practical and legal aspects of coordination of levels between customers, retailers, distribution companies and transmission companies
- Experience of companies in coordinating emission levels
- Extent to which indices and objectives recommended by CIGRE WG C4.07 are being applied by companies
- Suitability of compatibility levels presently being applied from equipment and system points of view

■ SC C5 : Electricity Markets and Regulations

1. The Role of Regulators and Regulations in a Market Environment

- Drivers for transmission expansion / generation expansion
- Role of governments in regulation
- Managing non dispatchable generation / regulation ?
- System reliability : "traded loads vs obligation-to-serve-load"
- Benchmark for 'Power Quality'?

2. Electricity Markets and Market Designs

- Market design : which worked, which have not ? why ?
- How can the industry measure 'market liquidity' ?

- What markets are appropriate to implement ?
- What is 'resource adequacy' and how can it be valued ?
- What risk mitigation tools are offered and successful ?

3. Financial and Economic Incentives

- How is Credit Risk balanced against Market viability ?
- What are the proper economic incentives to encourage load-based markets ?
- How can current constraints to facility investment be overcome ?
- What services are or could be offered to support credit and clearing and are such services beneficial ?

■ SC C6 : Distribution Systems and Dispersed Generation

1. Operating Systems with Dispersed Energy Resources (DER) or Renewable Energy Resources (RES)

- Interfacing devices and interaction issues
- DER/RES availability and system reliability
- Contribution of distribution networks integrating DER/RES to the operation of power systems
- Requirements on information and communication systems aimed to DER/RES aggregation and control
- New regulatory needs and effects

2. Demand Management (DM) and Demand Response (DR)

- DM and DR as capacity and energy resource
- DG as an option of DM and DR
- Role, willingness and approach of Distribution Network Operator in implementing DM&R projects
- Role of regulators

3. Innovative Distribution Systems Facilitating Widespread Deployment of DER

- Active distribution networks
- Microgrids
- Virtual power plants

■ SC D1 : Materials and Emerging Technologies

1. Partial Discharge measurement with Non-conventional Systems

- Sensors, sensitivity, calibration
- Related knowledge rules
- Comparison with conventional systems

2. Materials Issues in Emerging Technologies

- Reusing of materials
- Refurbishment
- Life extension

3. High performance Materials and New Materials for Severe Operating Conditions

- Nano materials
- Superconducting materials
- Space charge-less materials
- Bio dielectric materials
- Eco-friendly materials, etc...

■ SC D2 : Information Systems and Telecommunications

1. New Developments of Geographical Information and Asset Management for Overhead lines (OHL) System

- New developments of IT (geomatic, ...) applied to OHL design, construction and operation.
- Possible ways to gather, process, store and retrieve data on existing lines (flights and laser survey, vegetation survey, GPS diagnostic & monitoring tools,...)
- Economical aspects and assessment of the benefits of these technologies

2. Behaviour of the Information Systems and its Associated Telecommunication Infrastructure used for Operation of the Electricity Network during Adverse Circumstances

- Experiences learned from big black-outs ;
- Measures to improve their performance: dimensioning of batteries, inverters, chargers, redundancy-built systems, etc...
- Fault-tolerant design investments versus risks (and their associated costs) of failures during normal and exceptional electric systems disturbances

3. Development Strategies to Deal with the Increasing Use of IT in the Electricity Business

- Real-time and commercial/management systems borderline : conflict scenario?
- Risks/secure operation of real-time operation, market operation, communication with peers and customers, etc..
- Present experiences : lessons learned and cost/benefit analysis ;
- Practical cases on IT security issues related with the Telecontrol systems

HOW TO PARTICIPATE ?

Papers discussed at the CIGRE Session are papers selected on the basis of proposals. Paper synopses are drawn up and their selection follows a process described in detail in the "General Rules for Sessions", available on the CIGRE website.

WHAT ARE THE RULES ?

- The main author must be a member of CIGRE (individual or representative of a collective member). Co-authors are not required to be CIGRE members. They may be from different countries, in which case the paper falls into the 'International papers' category.
- A paper must correspond to a Preferential Subject and to one only. It must contribute to technical progress and not only merely quote earlier publications.
- A synopsis must be drawn up for each paper proposal.
- The synopsis – 500 words minimum – must closely reflect the various points developed in the paper.
- The name and address (email included) of the main author must appear on the synopsis.

WHERE ARE SYNOPSES TO BE DIRECTED ?

- If the main author is from a country with a CIGRE National Committee the synopsis must be sent to this National Committee (any synopsis forwarded directly to the Central Office will be returned).
- If the author is from a country where there is no CIGRE National Committee, the synopsis must be sent to the **CIGRE Central Office, 21, rue d'Artois - F 75 008 Paris**, in both paper form and by email (catherine.ott@cigre.org).

DEADLINES

- **All synopses must be received at the Central Office by 15th May 2005. No synopsis will be accepted past this date.**
- **Authors will be notified of the selection results by 31st August 2005.**
- **Deadline for receipt of the full papers is 15th January 2006.**