Call for Papers

CIGRE SESSION 45

24th to 30th August 2014

http://www.cigre.org

Deadlines

RECEIPT OF SYNOPSES AT CENTRAL OFFICE:
15th May **2013***

NOTIFICATION OF ACCEPTANCE:
2nd September **2013**

RECEIPT OF FULL PAPERS AT CENTRAL OFFICE:
15th January **2014**

* Please contact your National Committee to know by which date they need to receive your synopsis for a prior screening.

International Council on Large Electric Systems
Conseil International des Grands Réseaux Électriques
http://www.cigre.org

STUDY COMMITTEES

SC A1 ROTATING ELECTRICAL MACHINES

PS1 → DEVELOPMENTS OF ROTATING ELECTRICAL MACHINES
- Improvements in design, manufacture, efficiency, operation and maintenance. Developments in insulation, machine capacity, cooling reliability, bearings and materials.
- Influence of customer specifications and grid operator requirements on the operation, design and cost of machines.
- New developments for extending the power rating of large generators.

PS2 → LIFE MANAGEMENT OF GENERATORS
- Refurbishment, replacement, power up-rating, efficiency improvement. Economic evaluation and influence of grid codes on refurbishment decisions.
- Effects of torsional oscillations on the shaft fatigue of generators.
- Failure analysis: determination of root causes and prevention, including robotic inspections.

PS3 → ROTATING MACHINES FOR DISPERSED GENERATION
- Design, manufacture, development, capacity, generation costs and operation problems, efficiency, monitoring and diagnosis.
- Effects of faults and system disturbances on design and control strategies of machines.
- Evolution and trends in machines for dispersed generation.

SC A2 TRANSFORMERS

PS1 → BEST PRACTICES FOR ASSET MANAGEMENT
- Health index as a tool for condition assessment and applications of transformer fleet ranking by condition and criticality.
- Best practices for maintenance and reinvestment strategies. Solid insulation ageing markers, on-line monitoring and diagnostics and the role of post-mortem investigations.
- Mitigation techniques against major events, spare transformer requirements and practices.

PS2 → TRANSFORMERS FOR SPECIALIZED APPLICATIONS
- Application of phase-shifting, converter, industrial and offshore/sub sea transformers, variable shunt reactors and other specialized designs.
- Specification, design, manufacturing and testing.
- Performance, reliability, operation & maintenance.

PS3 → FIELD EXPERIENCE WITH THE USE OF NON-CONVENTIONAL MATERIALS AND TECHNOLOGIES
- Transformer experience with alternative insulating liquids, gas and solids, improved winding and core material and technologies.
- Experience with new technologies for components: bushings, tap changers and other transformer accessories.
- High-Temperature Superconducting (HTS) transformer experience and applications.

SC A3 HIGH VOLTAGE EQUIPMENT

PS1 → EQUIPMENT TO CATER FOR CHANGING NETWORK CONDITIONS
- AC and DC substation equipment to meet new demands.
- Equipment for future distribution systems.
- New requirements for design, testing and equipment modeling.

PS2 → LIFETIME MANAGEMENT AND AGEING OF T&D EQUIPMENT
- Maintenance, monitoring and equipment diagnosis.
- Influence of asset management practices, operating duty and stresseson reliability.

PS3 → IMPACT OF EXTREME OPERATING CONDITIONS ON T&D EQUIPMENT
- Environmental stresses e.g. temperature, humidity, earthquake, wind, heavy rain, altitude.
- System stresses and over-stressing e.g. short-circuit current, temporary overvoltage, transient recovery voltage, uprating or higher operating voltages.
- Operational regime.

SC B1 INSULATED CABLES

PS1 → FEEDBACK FROM NEWLY INSTALLED OR UPGRADED UNDERGROUND AND SUBMARINE AC AND DC CABLE SYSTEMS
- Design, installation techniques, operation.
- Environmental issues and mitigation.
- Lessons learnt from permitting, consent and implementation.

PS2 → BEST USE OF EXISTING T&D CABLE SYSTEMS
- Condition assessment and diagnostic testing of cable systems.
- Trends in monitoring cables and accessories.
- Upgrading methodologies and related experiences.
- Trends in maintenance strategies.

PS3 → INSULATED CABLES IN THE NETWORK OF THE FUTURE
- Higher voltage levels for AC and DC cables.
- New functionalities expected from cable systems.
- Technical issues regarding long cables.
- Innovative cable types.

SC B2 OVERHEAD LINES

PS1 → MINIMIZING THE IMPACT OF NEW OVERHEAD LINES
- Design, construction and operation.
- Ecology, vegetation and wildlife management.
- Routing and visual acceptance.
- Design of, and experiences with, transitions to underground sections.

PS2 → RELIABILITY AND DESIGN OPTIMIZATION
- Tools and methods.
- Impact of different designs on initial and life cycle costs.
- Cost effects of environmental, regulatory and public influence.

PS3 → CONDUCTORS: INSTALLATION AND LONG TERM PERFORMANCE
- Installation, maintenance and replacement methods including live line techniques.
- Creep and fatigue issues on new conductor types.
- Mechanical behavior of new bundle configurations.

SC B3 SUBSTATIONS

PS1 → SUBSTATION DEVELOPMENTS TO ADDRESS FUTURE NEEDS
- Integration of new approaches to grid automation in transmission and distribution substations.
- Impact of new grid developments on substation design.
- Off shore substations.
- Low cost and fast deployment distribution substations.

PS2 → LIFE-CYCLE MANAGEMENT OF SUBSTATIONS
- Renovation, refurbishment, extension and up-rating of substations.
- Asset management, maintenance, monitoring, reliability and sustainability issues.
- Managing risk in design, installation and operation of substations.

SC B4 HVDC AND POWER ELECTRONICS

PS1 → HVDC SYSTEMS AND APPLICATIONS
- Technology development including HVDC Grids.
- Connection of renewable resources.
- Project planning, environmental and regulatory issues.
- Project implementation and service experience.

PS2 → FACTS SYSTEMS AND APPLICATIONS
- Renewable Resources Integration.
- Increased network performance.
- Project planning, Environmental and Regulatory issues.
- Project Implementation and Service experience.

PS3 → POWER ELECTRONIC EQUIPMENT DEVELOPMENTS
- Converters for renewable generation and energy storage.
- DC circuit breakers , DC load flow controllers and fault current limiting devices.
- New semi conductor devices and converter topologies.

SC B5 PROTECTION AND AUTOMATION

PS1 → NEW PROTECTION AND AUTOMATION SCHEMES BASED ON ENHANCED COMMUNICATION POSSIBILITIES
- Protection and automation algorithms and their implementation.
- Benefits from new protection and automation schemes.
- Improving maintenance and operation of protection and automation schemes with remote configuration and testing.
- Use of enhanced communication and on-line information for improvement of maintenance of other equipment.

PS2 → EXPECTATIONS FROM STAKEHOLDERS ABOUT IEC 61850
- Expectations of users, vendors and system integrators related to the standard IEC 61850.
- Duties, roles and required level of knowledge of IEC 61850 from system integrators, users and vendors.
- Best practices for tools, training, standardization, documentation and flow of information among users, system integrators and vendors for IEC 61850–based solutions.

SC C1 SYSTEM DEVELOPMENT AND ECONOMICS

PS1 → IMPROVEMENT IN SYSTEM AND ASSET PERFORMANCE THROUGH APPLICATION OF ENHANCED ASSET MANAGEMENT METHODOLOGIES

- Case studies of asset management methodologies for:
  - Increased asset load cycling and low load transfers due to high penetration of RES.
  - Aging infrastructure.
  - Delivering customer value.
- Experience with the application of current and proposed AM standards.

PS2 → NEW SYSTEM SOLUTIONS AND PLANNING TECHNIQUES FOR:

- Flexibility of generation, load and grid facilities to enable high penetration of RES.
- Power systems evolving into supergrids or microgrids.
- Changing technologies.

PS3 → SECURING INVESTMENT IN TRANSMISSION NETWORKS WITH INCREASING RES

- Managing uncertainty in investment decision making.
- Demonstration of value to investment decision makers.
- Defining customer value when MWh transferred reduces.

SC C2 SYSTEM OPERATION AND CONTROL

PS1 → MANAGING NEW CHALLENGES IN OPERATIONAL PLANNING AND REAL-TIME OPERATION OF ELECTRIC POWER SYSTEMS

- Stability analysis, monitoring and control (i.e. voltage and frequency control, phase angle stability).
- Use of line loadability and dynamic ratings.
- Ancillary services, including operational reserves.

PS2 → EMERGING OPERATIONAL ISSUES FOR TRANSMISSION AND DISTRIBUTION INTERACTION

- Transmission, distribution and consumers Interfaces. Control centres and market operator interfaces.
- Education and training of operators.
- Visibility and awareness of operation issues.
- Modelling needs and data interchange.
- Controllability of distributed generation.
- Fault level management.
- Demand response.

SC C3 SYSTEM ENVIRONMENTAL PERFORMANCE

PS1 → ENVIRONMENTAL IMPLICATIONS OF ENERGY STORAGE TECHNOLOGIES

- Environmental assessment from a system perspective.
- Environmental comparison among technological alternatives.
- Social acceptance and implications.

PS2 → INTEGRATED SUSTAINABLE APPROACHES FOR T&D DEVELOPMENT

- New concepts for sustainable design strategies involving stakeholders (including procurement, construction, maintenance, decommissioning).
- Environmental improvements from new materials, equipment and ICT solutions - Project results and case studies.
- Life cycle assessment (LCA) and end-of-use of new and existing equipment.

PS3 → ACCEPTANCE OF HIGH VOLTAGE TRANSMISSION ASSETS NEAR URBAN AREAS

- Placement and permitting of new overhead lines, cables and substations.
- Economic evaluation of environmental impacts.
- Communication strategies: the role of social networks for stakeholders and companies.

SC C4 SYSTEM TECHNICAL PERFORMANCE

PS1 → POWER SYSTEM TECHNICAL PERFORMANCE IN THE ADVENT OF LARGE DEPLOYMENT OF POWER CONVERTER CONNECTED GENERATION TECHNOLOGIES

- Impact on stability and reliability of the power system due to large amounts of inverter based wind and solar PV generation, and large amounts of HVDC (wind plants and interconnectors).
- Impact of wind, solar-PV and tidal generation on power quality.
- EMC and power quality impact of large scale voltage source converter (VSC) based technologies.

PS2 → METHODS AND TECHNIQUES FOR THE EVALUATION OF LIGHTNING PERFORMANCE AND INSULATION COORDINATION

- Evaluation of lightning performance and models (e.g. leader-progression versus EGM) for EHV and UHV AC and DC lines.
- Protection of other exposed structures such as wind turbines.
- Insulation coordination for EHV and UHV AC systems including adequate modelling of apparatus.

PS3 → ADVANCED METHODS, MODELS AND TOOLS FOR THE ANALYSIS OF POWER SYSTEM TECHNICAL PERFORMANCE

- Application of hybrid tools for 3-phase and positive sequence modelling of power systems, and hybrid EMT and finite-difference time-domain analysis.
- Characterization and modelling of geomagnetically induced currents.
- Analysis of system performance with a large number of long AC cables, such as the potential for harmonic resonance.

SC C5 ELECTRICITY MARKETS AND REGULATION

PS1 → ELECTRICITY MARKET GOVERNANCE, MARKET MODELS AND MARKET DEVELOPMENT OBJECTIVES:

- Policy drivers, implementation mechanisms and regulatory jurisdiction.
- Market design aspects (voluntary vs mandatory, pool vs bilateral, viability...).
- Process for review of market performance and rule changes.

PS2 → INTERACTION BETWEEN CHANGING DEMAND AND ENERGY USAGE PROFILES ON MARKET DESIGN AND OPERATION

- Emerging changes in price responsiveness (for instance, demand elasticity).
- Demand response business models for market participation.
- Customer participation and distributed generation impacts on markets.

PS3 → INTEGRATING RENEWABLE RESOURCES FROM THE PERSPECTIVE OF THE ELECTRICITY MARKET

- Lessons learned and improvements for future RES integration.
- Customizing the market model to optimize RES management.
- Business aggregation or portfolio models for RES and alternative resources.

SC C6 DISTRIBUTION SYSTEMS & DISPERSED GENERATION

PS1 → DESIGN OF DISTRIBUTION NETWORKS WITH HIGH PENETRATION OF DER AND NEW LOADS

- grid connected and remote grid, microgrids, low voltage DC networks.
- increasing the ability to accommodate DER and new loads, such as electrical vehicles.
- impacts of changing electricity loading patterns.

PS2 → OPERATION AND CONTROL OF ACTIVE DISTRIBUTION NETWORKS AND DISPERSED GENERATION

- Innovation in distribution management systems (increasing observability, gateways for integration of local producers and active consumers).
- Experiences with increased DER penetration (including dynamic phenomena).
- Application of advanced communication solutions.

PS3 → NEW ROLES AND SERVICES OF DISTRIBUTION SYSTEMS FOR TRANSMISSION SYSTEM OPERATION

- Local energy management.
- Ancillary and flexibility services.

SC D1 MATERIALS AND EMERGING TEST TECHNIQUES

PS1 → ELECTRICAL INSULATION SYSTEMS UNDER DC VOLTAGE

- Material properties.
- Space and surface charges & potential distribution.
- Long term performance.

PS2 → EMERGING TEST TECHNIQUES AND DIAGNOSTIC TOOLS

- UHVAC and UHVDC.
- Atmospheric and altitude correction, harsh conditions.
- Development of new diagnostic and analyzing methods for asset management.

PS3 → PROPERTIES AND POTENTIAL APPLICATIONS OF NEW MATERIALS

- Material for field grading.
- Eco-friendly materials.
- Super conducting materials.

SC D2 INFORMATION SYSTEMS AND TELECOMMUNICATION

PS1 → INFORMATION AND TELECOMMUNICATION TECHNOLOGIES FOR CONNECTING DISTRIBUTED ENERGY RESOURCES

- Facilities for control, monitoring, security and safety.
- Use of existing standards, interoperability and cybersecurity issues.
- Operating conditions, EMF, installation and maintenance issues.

PS2 → MAINTAINING OPERATIONAL IT RELIABILITY IN AN EVOLVING ENVIRONMENT

- Virtualization applied to power system operations and disaster recovery.
- Cloud services availability and security.
- Impact of operational systems on IT governance, practices and experiences.

PS3 → TRENDS IN MANAGING UTILITY COMMUNICATION NETWORKS

- Smart grid communication network and service management.
- Evolution of operation support systems.
- Security of communications and of the management system.

Information and recommendations

Why Preferential Subjects?

At CIGRE Sessions Authors do not present their papers.

The delegates read the papers in advance and they discuss them around a set of questions given in a Special Report which incorporates the gist of the papers.

To discuss the papers in depth, Session papers must therefore address a strictly limited list of topics, referred to as "Preferential Subjects" and selected by each Study Committee of CIGRE. The "Preferential Subjects" are the main part of this "Call for Papers".

How are papers selected?

The papers are selected on the basis of synopses.

- They are first screened by National Committees (where applicable), who are entitled to put forward a set number of Papers.
- Then the Study Committee Chairmen, who are in charge of the running of the discussions, will select the proposals received, under the coordination of the Technical Committee Chairman. Authors will be informed of the results.
- A Paper may still be turned down even once written out in full, if considered of insufficient quality.

Who can propose a paper?

- The main author (assuming there is more than one) must be an individual member or must be collective member staff.
  Co-authors are not required to be CIGRE members.
  Co-authors may be from different countries; in this case the Paper is identified as an "International paper".
- A paper must focus on one preferential subject and only one.
- A separate synopsis must be drawn up for each paper proposal.
- The synopsis – 500 words minimum – must closely reflect the various points to be developed in the paper.
- When sending the synopsis, the name and address of the main author - and more importantly his email address which will be used for notification of the selection results – the Study Committee reference and Preferential Subject addressed must be clearly specified.
- Template: Authors will make use of the sample pages for lay-out of synopses; these are available on the CIGRE website, page "2014 Session".

Where are synopses to be directed?

- If the main Author is from a country with a CIGRE NC:
  The synopsis must be sent by the main author to his CIGRE National Committee (Contact details are available on the CIGRE website: see "Links/ National Committees" from the homepage). Any synopsis sent directly to the Central Office will be returned to the sender.
  For International Papers, the proposal must be sent to the NC of the main Author, only.
- If the main author is from a country where there is no National Committee:
  The synopsis must be sent in electronic format (WORD or PDF) to the CIGRE Central Office, to the following address: Sylvie.bourneuf@cigre.org
- If the proposed paper is written on behalf of a Study Committee (SC Allotment): The synopsis is sent directly to the Study Committee Chairman, who will transfer it to the Central Office.

Deadlines for reception of the synopses

- **Synopses must be received at the Central Office by May 15th 2013 at the latest. Past this date they will not be accepted.**
  National Committees are required to send all paper synopses to the Central Office by 15th May 2013 at the latest, which implies that National Committees will have received these synopses earlier.
  Hence authors must contact their National Committee who will let them know by which date they need to receive the synopses (allowing time for screening and meeting the Central Office deadlines).
- **Authors from countries where there is no National Committee will be sending their synopsis directly to the Central Office. The strict deadline is 15th May 2013.**
- **Main authors will be notified of the selection results by 2nd September 2013.**
- **Deadline for receipt of the full Papers at the Central Office is January 15th 2014.**

Acknowledgement of reception

The Central Office will acknowledge receipt of the synopses within 2 weeks. If no acknowledgement is received, the sender should forward the message once again, to make sure the proposal(s) will be duly considered in the selection process.

All information on the 2014 Session can be found on the CIGRE website:

http://www.cigre.org/events/session

International Council on Large Electric Systems
Conseil International des Grands Réseaux Électriques

21, rue d'Artois - F 75008 Paris

→ *Contact for processing of Session Papers:* ***sylvie.bourneuf@cigre.org***

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