



CIRED

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MADRID, SPAIN



THE 25TH INTERNATIONAL CONFERENCE & EXHIBITION ON **ELECTRICITY DISTRIBUTION**

CALL FOR PAPERS

14 SEPTEMBER 2018 » DEADLINE FOR RECEIPT OF ABSTRACT

- INNOVATIVE COMPONENTS AND ASSET MANAGEMENT · FLEXIBILITY TOOLS, CAPACITY MANAGEMENT & DSO/TSO INTERFACE · MICROGRIDS & ENERGY COMMUNITIES
- SUSTAINABILITY, E-MOBILITY & SMART CITIES · RESILIENCY & RELIABILITY
- DIGITAL TRANSFORMATION, ARTIFICIAL INTELLIGENCE & CYBERSECURITY

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

CIRE 2019 | FAST TRACKS FROM TOPICAL SUBJECTS TO SESSIONS (DETAILED PREFERENTIAL SUBJECTS INSIDE)

SESSION	INNOVATIVE COMPONENTS & ASSET MANAGEMENT	FLEXIBILITY TOOLS, CAPACITY MANAGEMENT & DSO/TSO INTERFACE	MICROGRIDS & ENERGY COMMUNITIES	SUSTAINABILITY, E-MOBILITY & SMART CITIES	RESILIENCY & RELIABILITY	DIGITAL TRANSFORMATION, ARTIFICIAL INTELLIGENCE & CYBERSECURITY
SESSION 1 Network components	<ul style="list-style-type: none"> New materials Modelling, testing Evolution of standards and functional specifications Safety aspects, ergonomics Innovative solution for maintenance, life extension and upgradeability including 3D printing Smart secondary substation Components for DC network 	<ul style="list-style-type: none"> Sensors and components for voltage and power flow management Components for the connection of distributed generation Power electronics Storage devices 	<ul style="list-style-type: none"> Components for microgrids, including sensors, storage devices, renewable energy integration and power electronics 	<ul style="list-style-type: none"> Components for e-mobility Components for large cities Eco design, life cycle analysis Reduction of losses Management of hazardous substances Limitation of visual and noise impact 	<ul style="list-style-type: none"> Condition assessment, ageing models Diagnostics of network components, on-line monitoring High reliability solutions, components for more resilient networks 	<ul style="list-style-type: none"> Digital tools and systems for network components maintenance Data analytics and AI for asset management Components incorporating local intelligence and communication capabilities Communication components and infrastructure Components for smart metering systems
SESSION 2 Power quality & electromagnetic compatibility	<ul style="list-style-type: none"> Asset management with reliability targets Network planning with Power Quality data Voltage quality monitoring and proactive asset management Innovative approaches for grounding systems Reliability of innovative technologies in the frequency range from 2 to 150 kHz Impact of new technologies on emission and immunity limits, development of new standards 	<ul style="list-style-type: none"> New inverter technologies, storages and DER for ancillary services Active monitoring and control networks for systems with high penetration of DER Voltage profile regulation and/or reactive power compensation back-up by end-users Compliance assessment of large scale renewable generation sources 	<ul style="list-style-type: none"> Technical standards for PQ in microgrids and local energy communities (LEC) Field measurements of PQ in microgrids Impact of local storage and energy management systems on PQ in microgrids and LEC 	<ul style="list-style-type: none"> Impact of energy saving devices (heat pumps, LED lighting, power supplies with active PFC) on PQ Impact of reduced PQ on energy efficiency of grid interactive inverters (loads and RES) PQ issues related to EV charging infrastructures (home charging, fast charging, wireless charging) 	<ul style="list-style-type: none"> Reliability benchmarking Metrics and research for characterising the value of reliability and resiliency Benefits and economic feasibility for investments in reliability and resiliency Flexibility versus resiliency 	<ul style="list-style-type: none"> PQ monitoring - big data analytics and management Advanced monitoring techniques PQ data reporting and benchmarking methodologies
SESSION 3 Network operation, control and protection	<ul style="list-style-type: none"> Practical consequences for grid operation with condition monitoring Impact of condition dependent loading on operation and protection Condition assessment, ageing of SCADA and protection equipment Protection of DC grids 	<ul style="list-style-type: none"> Network operation with and for 'prosumers' Automatic Smart Grid control to enable Smart Market Impact of local flexibility markets and dynamic tariffs on grid operation Static and dynamic feed-in management of DER Practical realisations of ancillary services on distribution level Common system responsibility of TSOs and DSOs 	<ul style="list-style-type: none"> Islanding operation on distribution level Microgrid operations 	<ul style="list-style-type: none"> Energy management in practice Operation strategies to reduce grid losses Reducing reactive power demand 	<ul style="list-style-type: none"> Resupply strategies and emergency management Reliability of automation systems and impact on grid operation 	<ul style="list-style-type: none"> IT-security in grid control and protection Collecting and handling big data
SESSION 4 Distributed energy resources & efficient utilisation of electricity	<ul style="list-style-type: none"> New DER assets and technologies including energy storage, demand side management, Power Electronics and control solutions Innovative DER asset monitoring technology and network state estimation approaches Technical findings from trials relating to stability, protection and system reliability Impacts on network assets from high DER penetration and operation 	<ul style="list-style-type: none"> Managing high volumes of DER including clustering of low carbon technologies Management of power flow, voltage, fault level and stability Benefits of energy storage and related control approaches Managing new energy profiles and harnessing flexibility of different DER and customer types Coordinating and managing DER and active customer activities across the TSO-DSO interface Commercial arrangements for delivering flexibility from DER and active customers 	<ul style="list-style-type: none"> Use of DER to manage Voltage and Frequency in Microgrids DC network trials Commercial models for Microgrids and Energy Communities Coordination and interfaces between Microgrids, Energy Communities, DSOs and TSOs 	<ul style="list-style-type: none"> Optimisation of DER across energy systems including transport, gas and heat The role of distribution networks in delivering low carbon, sustainable energy supplies Reducing network losses The role of energy efficiency Enabling new consumer services and Peer to Peer arrangements Techniques for demand management 	<ul style="list-style-type: none"> Technical reliability and performance Demand Response Contribution of DG to network and system security Integration and control of energy storage and effect on demand profiles Active control of DER for whole system optimisation and security Network islanding and resynchronisation capabilities 	<ul style="list-style-type: none"> Innovative telecommunications, data and control solutions for DER (e.g. IoT, web of cells) Larger scale DER integration data analytics and intelligence for distribution network management Development of control algorithms and philosophies Interoperability and development of standards DER data protocols and priorities for planning and TSO/DSO coordination
SESSION 5 Planning of power distribution systems	<ul style="list-style-type: none"> Managing differential, ageing in complex installations Multi-annual, operational experience of Asset Management system Artificial intelligence in Asset Management 	<ul style="list-style-type: none"> Operational scheduling: from one-shot planning to programmed adaptive behaviour Planning taking into account flexibility options DSO as system dispatcher Theory, Use cases and Experiences DSO as neutral data hub Cost benefit analysis applied to innovation and smart solutions 	<ul style="list-style-type: none"> Impact on network architecture and system development of services offered by microgrids and local energy communities Models and tools for including microgrids and local energy communities in development studies, including multi-energy hubs Microgrids and local energy communities to provide security of supply beyond the parameters associated with the DSO 	<ul style="list-style-type: none"> Life-cycle efficiency evaluations at system level Methodologies for accounting cumulated benefits of everyday distribution activities Integrated planning to take into account e-mobility impact on distribution facilities Impact of smart cities and sector coupling on distribution planning 	<ul style="list-style-type: none"> Use of HILP events in planning Trade-offs between optimization according to reliability vs resiliency issues New distribution schemes for increasing resiliency 	<ul style="list-style-type: none"> Infrastructural synergies at planning level Use of real-time information in planning Data analytics for planning Clustering Impact of Peer-to-Peer transactions in planning Artificial intelligence in planning Integrated multi-energies/multi-services planning
SESSION 6 DSO Business environment enabling digitalization & energy transition	<ul style="list-style-type: none"> Strategic asset management, business risk management, balance risk vs timing, asset management standards (ISO55000/PAS55) 	<ul style="list-style-type: none"> Engaging the customer, new business models, demand response, tariffs, local markets, smart meter requirements and roll-out, TSO/DSO information exchange 	<ul style="list-style-type: none"> Implementation of block chain LEC setup and integration Microgrid roles, regulation and market integration 'Prosumers' and "off-gridders" 	<ul style="list-style-type: none"> How DSOs support smart cities How DSOs support sustainability Incentives for reducing losses and improving energy efficiency Flexibility potential of storage, electrical charging and virtual power plants 	<ul style="list-style-type: none"> Investment timing vs risk, implementing cyber-security, business risk management, microgrids/off-grid 	<ul style="list-style-type: none"> Impact and implementation of regulation for digitalization, cyber-security, integrity, data management Open data policies and implementation

AI: ARTIFICIAL INTELLIGENCE / DC: DIRECT CURRENT / DG: DISTRIBUTED GENERATION / DER: DISTRIBUTED ENERGY RESOURCES / DNO: DISTRIBUTION NETWORK OPERATOR / HF: HIGH FREQUENCY / HILP: HIGH IMPACT, LOW PROBABILITY / IOT: INTERNET OF THINGS / LEC: LOCAL ENERGY COMMUNITY / PFC: POWER FACTOR CORRECTION / PQ: POWER QUALITY / TSO: TRANSMISSION SYSTEM OPERATOR

What's on for CIRED 2019?

Three full days of technical presentations and discussions covering the very latest challenges and issues facing electricity distribution today and in the future, including:

- **Main sessions** with extended presentations of papers by selected authors
- **Internationally recognised keynote speakers** of the distribution industry
- Lively **panel discussions and round-tables** with the industry's current experts
- Structured and attractive **poster sessions, with pre-arranged guided tours** → your opportunity for in-depth discussion with presenting authors
- **International industry exhibition** with leading global companies → your chance to get a view of the technology of the future
- **Research and Innovation Forums (RIFs)** → your first chance to hear and discuss what could affect your industry's future.

This exciting programme will be completed with:

- An **opening forum** with high level keynotes and debate on topical challenges
- **Pre-conference tutorial sessions** to update your knowledge on the latest developments linked to electricity distribution
- A selected programme of stimulating **technical visits**

Why should you submit a paper?

Submitting a paper to **CIRED 2019** is a unique opportunity to present your views and share your ideas with hundreds of leading professionals. CIRED provides a unique forum to discuss and debate technical, operational and business matters, including the opportunity to interact with key players from utilities, industrial users, manufacturers, regulators, consultants and academics.

Benefits to submitting:

- Every accepted paper will be published and distributed to all attendees via the CIRED 2019 proceedings
- Every author of an accepted paper will be given the opportunity and will be strongly encouraged to display his/her work in the CIRED interactive poster session with guided tour
- Selected authors will be invited by the session chairmen to give a 12-minute presentation in the main sessions with the aim of ensuring an interesting and balanced debate
- Papers with a special focus on research and innovation will be selected for presentation and discussion in the RIF

Technical Committee

CHAIRPERSON: PIERRE MALLET (FRANCE)		
	CHAIRPERSONS	RAPORTEURS
SESSION 1	Christophe Boisseau (France)	Arnaud Allais (France), Philippe Picot (France)
SESSION 2	Britta Heimbach (Switzerland)	Jan Desmet (Belgium), Jan Meyer (Germany)
SESSION 3	Markus Zdrallek (Germany)	Andreas Abart (Austria), Carsten Böse (Germany), Ignaz Hübl (Austria)
SESSION 4	Simon Terry (UK)	Helfried Brunner (Austria), Ricardo Prata (Portugal), Goran Strbac (UK)
SESSION 5	Fabrizio Pilo (Italy)	Riccardo Lama (Italy), Giovanni Valtorta (Italy)
SESSION 6	Peter Söderström (Sweden)	Peter Kjaer Hansen (Denmark), Dag Eirik Nordgård (Norway)

How to submit a paper

Prospective authors are invited to submit an abstract of 2 A4 pages (including diagrams and illustrations) by **14 September 2018**. All the papers will be peer reviewed by the Technical Committee and by the National or Liaison Committee of the author's country, if any. Successful authors will be invited to submit a full paper by 14 January 2019.

Simply go to the website to download the abstract template and submit online www.cired2019.org

Deadlines

14 September 2018 → Deadline for receipt of abstract

13 November 2018 → Notification of acceptance

14 January 2019 → Full paper submission

CIRED 2019 Organisers

Michèle Delville & Céline Dizier | AIM, rue des Homes 1 · 4000 LIEGE (Belgium) | Tel. +32(0)4 222 29 46
m.delville@aim-association.org | c.dizier@aim-association.org | www.cired2019.org



SESSION 1 NETWORK COMPONENTS

Session 1 deals with all aspects related to the components used in the electricity distribution networks: cables, overhead lines, primary and secondary substations, transformers, switchgear plus their control, protection and monitoring systems, new active power electronics devices. It covers topics related to the life cycle optimisation of assets from design through installation, operation and maintenance, monitoring and diagnosis, to end of life management, including new techniques such as Big Data and Artificial Intelligence. The session also covers environmental aspects including eco-design and life cycle analysis, standardisation, ergonomics and safety. It aims at providing an overview of the state-of-the-art in component design and proposals for future components, including the ones needed for smart grids, e-mobility, smart cities and microgrids. This session is an opportunity for DSOs and manufacturers to share their objectives.

Components for smart grids and e-mobility

- Components incorporating local intelligence and communication capability
- Smart secondary substations
- Sensors and components for voltage and power flow management
- Communication components and infrastructures
- Power electronics
- Components for DC networks
- Components for the connection of distributed generation
- Storage devices
- Components for e-mobility

Components reliability, diagnosis and maintenance strategy

- Condition assessment, aging models, lifetime assessment
- AI, Big Data and other advanced techniques applied to diagnostics and maintenance
- Online monitoring of distribution system assets, including underground cables
- Use of new digital tools and drones for diagnostics and maintenance
- Life extension, upgradeability

Components for large cities distribution networks

- Compact/underground and in-building substations
- High reliability solutions
- Short circuit current mitigation
- Lines with high power transfer capabilities

Components for rural areas

- Components for large scale underground cabling
- Components for more resilient networks in case of high impact-low probability events
- Innovative solutions for maintenance and life extension of overhead lines
- Components for rural electrification

Towards "green components"

- Eco-design
- Life-cycle analysis
- Reduction of losses
- Management of hazardous substances
- Limitation of visual and noise impact

Innovation in design of components

- Modelling
- Testing
- New materials and processes (ex : 3D Printing)
- Ergonomics
- Evolution of standards
- Functional specifications
- Safety aspects
- Fraud-proof components

SESSION 2 POWER QUALITY AND ELECTROMAGNETIC COMPATIBILITY

Session 2 deals with power quality (PQ), with the more general concept of electromagnetic compatibility (EMC) and with related safety problems in electrical networks. Special focus is put on continuity of supply (supply interruptions, reliability) and voltage quality (voltage level, flicker, unbalance, harmonics, voltage dips) as well as related measurement and analysis techniques.

This session also deals with electromagnetic compatibility (mains frequency to 150 kHz), electromagnetic interferences and electric and magnetic fields issues.

Power quality

- Issues in future distribution systems with distributed energy resources and associated storage systems
- Impact of new technologies (lighting devices, EV chargers, etc.)
- Challenges for DC grids and microgrids including islanded operation
- Management, planning, operating strategies for PQ
- Strategies to include PQ requirements in advanced distribution automation schemes
- Consequences of large windfarms, long AC cables, HVDC, FACTS, etc. for the transmission system
- Measurement techniques and indices (DC, frequencies up to 150 kHz)
- Calculation and assessment of emission limits
- Mitigation techniques for PQ phenomena
- Aspects of standardisation and regulation

Continuity of supply

- Outages, interruptions and dips (statistics, indices, customer costs etc.)
- Voltage dip immunity of grid-connected equipment (e.g. interactive inverters)
- Ride through immunity of grid-interactive inverters during voltage dips and swells
- Ride through solutions using new technologies (e.g. flywheels)

PQ monitoring and analytics

- Benchmarking of PQ
- Efficient design and implementation of PQ monitoring campaigns
- Data mining and data analytics for PQ related data
- Standards for PQ data format and data interchange
- Innovative techniques for PQ data visualisation

EMC, EMF, immunity and safety issues

- Low frequency interference, impact on metallic installations (pipelines, communication lines)
- EMC of smart meters, power line communication, ripple control systems and smart electronic devices
- Impact of PQ on life time of equipment
- Immunity issues related to new technologies
- Standardisation aspects of immunity
- Electric and magnetic fields: simulation, monitoring and standardisation
- Mitigation techniques (shielding, active compensation)
- Lightning overvoltages and lightning protection
- Earthing systems, step and touch voltages, neutral grounding practices
- Safety issues in smartgrids and microgrids including islanded operation

SESSION 3 OPERATION, CONTROL AND PROTECTION

Session 3 deals with the operation of networks, including control technology and system protection, which is a more and more challenging topic in the emerging environment of smart grids, distributed generation and e-mobility. The relevant technical and economic targets of distribution grid operators, the expectations and requirements of stakeholders as well as solution strategies of scientists and manufacturers of new products will be presented and discussed in Session 3. Both recent practical experiences and the results from current research as the basis of future developments are very welcome.

Operation

- Workforce management tools and techniques to improve operation efficiency
- Maintenance strategies and condition assessment
- Data demand, data management and documentation
- Organisation strategies and schemes for grid operators or service companies
- Blackout, restoration strategies and crisis management
- Impact of decentralised generation and virtual power plants on grid operation
- Operation of industry grids
- Augmented reality methods in grid operation

Control and communication

- Concepts for SCADA systems in a developing environment
- Centralized versus decentralized control strategies
- Providing system services on distribution level
- Automation on distribution level and self-healing grids
- Voltage control in MV- and LV-grids and reactive power management
- Handling bottlenecks using/ caused by flexibility activation

- IT-Security aspects of information access and information exchange
- Convergence of power grids and communication grids
- Communication standards techniques and protocols for smart grids and smart metering
- Experience with multivendor solutions and interoperability
- Applications of Phase Measurement Units (PMU) on distribution level

Protection

- New protection schemes and functions for up-to-date grid structures
- Protection simulation models, tools and new functions
- Refurbishment strategies for protection systems
- Impact of distributed generation on traditional protection systems
- Protection management considering remote access and IT security
- Reliability aspects of IEC 61850 based protection
- Practical experience with grid islanding - detection, control and protection
- Protection concepts in grids with low short circuit current
- Post mortem analyses of faults and fault records
- Testing of protection relays, functions and systems

SESSION 4 DISTRIBUTED ENERGY RESOURCES AND EFFICIENT UTILISATION OF ELECTRICITY

Session 4 deals with the challenges of adapting distribution networks to facilitate the efficient integration of low carbon, renewable and Distributed Energy Resources (DER).

These include Distributed Generation (DG), energy storage, new loads (e.g. electric heating and Electric Vehicles (EVs)), active demand and aggregation of DER (e.g. Virtual Power Plants).

DER integration challenges are likely to feature across all CIRED sessions so Session 4 specifically focuses on emerging technologies and solutions, results from research, development or demonstration programmes with results from network and system integration trials being particularly valued.

Session 4 papers will highlight the integration of DER within distribution networks through technical, commercial and regulatory solutions.

Papers may describe developments in network management, demand side response, energy storage integration, efficient utilisation of electricity, network monitoring, telecommunications and data analytics and the role of DER in wider DSO business operations.

Also within the scope of Session 4 is whole energy system optimisation (including integration across other infrastructure systems and energy vectors), efficient management of network losses and the results from the larger smart grid demonstration projects.

New DER technologies and concepts

- New DER assets and technologies including energy storage, demand side management and control solutions
- Innovative telecommunications, data and control solutions for DER (e.g. IoT, web of cells)
- Development of control algorithms and philosophies
- Innovative DER asset monitoring technology and network state estimation approaches
- DC network trials
- Technical reliability and performance of Demand Response
- DER data protocols and profiles for TSO/DSO coordination
- Network islanding and resynchronisation capabilities

Integrating and managing DER in Distribution networks

- Management of power flow, voltage, fault level and stability
- Larger scale DER integration data analytics and intelligence for distribution network management
- Interoperability and development of standards
- Larger scale DER integration impact on network assets
- Managing high volumes of DER including clustering of low carbon technologies
- Flexibility commercial arrangements for DER and active customers
- Control strategies for energy storage and its effects on demand profiles

DER roles in network and system operation

- Coordinating and managing DER and active customer activities across TSO-DSO interface
- Technical findings from trials relating to stability, protection and system reliability
- Benefits of energy storage and related control approaches
- Active control of DER for whole system optimisation, efficiency and security
- Managing new energy profiles and harnessing flexibility of different DER and customer types
- Optimisation of DER across energy systems including transport, gas and heat (multi vector energy systems)
- The role of distribution networks in delivering low carbon, sustainable energy supplies
- Trials and operational experience of network loss reduction techniques
- Trials and operational experience of the role and impact of energy efficiency
- Contribution of DG to network and system security, reliability and stability

SESSION 5 PLANNING OF POWER DISTRIBUTION SYSTEMS

Session 5 deals with all aspects related to the short and long term development of high, medium and low voltage distribution networks, with reference to the changing requirements for electricity distribution including, but not limited to, smart grids and active distribution networks, electric vehicles, storage, active demand and distributed energy resources integration, present and future customer quality of supply requirements, and optimum asset utilisation techniques and strategies.

There is increasing interest in strategies designed to meet the rapidly changing level of demand in both rural and urban areas, the extension of electrification in rural areas requiring a high quality of supply, and development strategies intended to increase resiliency against low probability high risks extreme events.

Demand and generation forecast

- Evolution of the demand characteristics
- Methodologies for demand forecast in an assigned area
- Electric vehicle impact on the electrical demand
- Ways to regulate the impact of electrical vehicles in demand
- Vehicle-to-grid strategies
- Renewable energy sources generation forecast

Performance requirements, results and benchmarking

- Economical versus technical performance
- System reliability and degree of adequacy
- Methods for performance assessment
- Results of performance evaluation and benchmarking
- Evaluation of technical and non-technical losses
- Satisfaction of customers and other stakeholders
- Predictive assessment of power quality
- Reliability assessment in smart grids
- Increasing resiliency against low probability high risks extreme events
- Microgrids and local energy communities to provide security of supply beyond the parameters associated with the DSO

Network schemes and design criteria

- Advanced network schemes for the best exploitation of distributed generation, energy storage and electric vehicles
- Design of active networks and smart grids
- Distribution systems for offshore wind farms
- Low-losses design
- Dependence on local environment
- Co-existence and synergy with other infrastructures

- Distribution network design criteria for increasing resiliency
- Distribution network schemes for developing countries
- Assessment of the impact on network architecture and system development of services offered by microgrids and local energy communities (e.g., increasing of hosting capacity, resiliency, flexibility, investment deferment)
- Schemes for the connection of electric vehicles in car parks, public or private buildings, and regulatory/standardisation framework
- DC distribution

Network planning

- Planning techniques in the smart grid era
- Improving efficiency in distribution networks
- Optimal integration of distributed energy resources
- Storage and reactive power compensation systems planning
- Planning criteria for electrification in low load density areas
- Integration of EV fast charging installations in the network
- Models and tools for including microgrids and local energy communities in development studies, including multi-energy hubs
- Impact of Peer-to-peer transactions in planning

Investment strategies

- Least cost investment plans
- Financial planning and cash flow for investment
- Network aging
- Risk analysis and asset management implications
- Non-network solutions for ancillary services
- Obsolescence: shorter lifecycles due to automation and ICT technologies

SESSION 6 DSO BUSINESS ENVIRONMENT ENABLING DIGITALIZATION & ENERGY TRANSITION

Session 6 focuses on the evolving business environment and regulation of the DSO to support active customer's and society's energy transition. This includes the fast paced and disruptive developments around digitalization, collaborative economy, market based flexibility services, integration of microgrids, storage & e-mobility and, not to be forgotten, cyber-security to ensure a sustainable and efficient electricity distribution infrastructure.

At the same time the asset/risk management and regulation optimization is still key for the DSO. To understand impacts, strategic choices, implementation options and limitations is vital. Important sources for knowledge are results from demonstration projects and case studies that are discussed in a transparent and open environment, like in CIREd.

Enabling the future DSO

- Electricity distribution: Towards A New Business Model
- New DSO roles, interaction with market players
- Use of artificial intelligence in DSO business processes
- Implementation of block chain
- LEC setup and integration
- Microgrid roles, regulation and market integration
- "Prosumers" and "off-gridders"
- The benefits of IoT in the DSO business
- How DSO's support smart cities
- Securing necessary (new) skills and competences

Challenges for a legacy DSO

- Strategic asset management
- Balance investment timing vs risk
- Business risk management
- Asset management standards ISO55000/PAS55
- How DSOs support sustainability
- Incentives for reducing losses and improving energy efficiency

DSO enabling flexibility markets and use of network services

- Engaging the customer
- Testing and implementing new business models and roles
- Tariff development to reflect the grid services
- Experience of demand response
- Integrating markets and implementing local markets
- Management of capacity constraints
- Flexibility potential of storage, electrical charging and virtual power plants
- Limitations in existing regulation
- Smart meter requirements and roll-out

Cyber-security, integrity and information management

- Implementing cyber-security
- Incidents and mitigation of cyber-security threats
- Impact of GDPR on DSO business
- Need for new network codes and standardization
- Access to data, exchange/sharing of data and information hubs
- Open data policies and implementation