

Active Distribution Systems and Distributed Energy Resources

SC C6 facilitates and promotes the progress of engineering and the international exchange of information and knowledge in the field of active distribution systems and distributed energy resources [DER]. The experts contribute to the international exchange of information and knowledge, among others by means of technical brochures and tutorials synthesizing state of the art practices and developing recommendations.

PRINCIPAL AREAS OF INTEREST

Assessment of the technical impacts resulting from a more widespread adoption of DER on planning and operation and on approaches, and of enabling technologies and innovative solutions for DER integration in active distribution systems.

CURRENT ACTIVITIES

The current working groups develop technical recommendations and best practices for above topics with focus on technologies and solutions for DER, impact of the new types of loads such as electric vehicles and energy storage systems on the distribution system, demand side integration and customer empowerment, multi-energy deployment in urban infrastructures including electric vehicles, MVDC (Medium Voltage DC) systems, electric railway distribution systems and rural electrification.

MEMBERSHIP PROFILE

Distribution system operators, specialists in asset management, system planning and operation

Power and system consultants

Technology providers

Rural electrification experts

Information and communication technology experts

Academia with relevant expertise



▶ MAIN AREA OF ATTENTION

Enabling technologies for renewable and distributed energy resource integration and application: active network management, microgrids, virtual power plants, distribution management systems [DMS, ADMS, DERMS], DER monitoring and control, aggregation systems and platforms, block chain applications.

Innovative solutions for DER and distribution technology deployment: smart inverters and power electronic interfaces, interconnection and integration requirements, MV/LV DC supply systems, distribution system modernization.

Storage technologies: deployment of various storage technologies such as electrochemical electric battery energy storage systems, flywheels, flow batteries, and new storage technologies, hydropower, hydrogen, multi-energy solutions (including thermal storage), power2X applications (including power to heat, power to gas), electric vehicles.

New approaches to configure new distribution systems for enhanced reliability and resilience: islandable grid connected microgrids, power exchange between microgrids.

New approaches to determine the impact and plan and operate distribution systems in the context of a wide deployment of DER, including the analysis of hosting capacity and protection.

-Consumer integration and empowerment: demand side integration and participation, demand response, load management, smart load, new customer sectors such as electric vehicles, smart home and smart meter applications with impact on distribution systems.

Smart cities: integrated distribution system technologies, power, control, and information and communication technology deployment for flexibility, integration of multi-energy systems.

Rural Electrification: islanded power systems and individual customer off-grid systems, new solutions, weak grid connected systems.

TOPICS OF WORKING GROUPS

WG C6/C1.33	MULTI ENERGY SYSTEM INTERACTIONS IN DISTRIBUTION GRIDS
WG C6/C2.34	FLEXIBILITY PROVISION FROM DER
WG C6.35	DER AGGREGATION PLATFORMS FOR THE PROVISION OF FLEXIBILITY SERVICES
WG C6.36	DER MODELS FOR IMPACT ASSESSMENT
JWG C6/B4.37	MEDIUM VOLTAGE DC DISTRIBUTION SYSTEMS
WG C6.38	RURAL ELECTRIFICATION
WG C6.39	DER CUSTOMER EMPOWERMENT
WG C6.40	ELECTRIC VEHICLES
WG C6.41	TECHNOLOGIES FOR ELECTRICAL RAILWAY DISTRIBUTION SUPPLY SYSTEMS
WG C6.42	ELECTRIC TRANSPORTATION ENERGY SUPPLY SYSTEMS
WG C6.43	AGGREGATION OF BATTERY ENERGY STORAGE AND DISTRIBUTED RENEWABLE GENERATION

LATEST PUBLICATIONS

TB 721	THE IMPACT OF BATTERY ENERGY STORAGE SYSTEMS ON DISTRIBUTION NETWORKS
TB 726	ASSET MANAGEMENT FOR DISTRIBUTION NETWORKS WITH HIGH PENETRATION OF DER
TB 727	MODELLING OF INVERTER BASED GENERATION FOR POWER SYSTEM DYNAMIC STUDIES
TB 782	UTILIZATION OF DATA FROM SMART METER SYSTEM
TB 793	MVDC FEASIBILITY STUDY
TB 8XX	HYBRID SYSTEMS FOR OFFGRID-SUPPLY
TB 8XX	RURAL ELECTRIFICATION

The Technical Brochures listed above are available for download from www.e-cigre.org

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