B5 - Protection and automation



Mission

To facilitate and promote international advancements in engineering, exchange of information, and expansion of knowledge in the field of protection and automation, focused on protection, control, monitoring, metering and fault locating, and aims to cover the whole power system, from transmission, to distribution systems, including generation. To add value to this information and knowledge by means of synthesizing state-of-the-art practices, identifying and evaluating technological and functional evolutions and developing recommendations.

Technological field of activity

Power system protection, substation control and automation, remote control systems and equipment, metering systems and equipment.

Vision

- Be recognized as the leading global reference on protection, control, monitoring, metering, and fault locating
- Be the provider of a global perspective on the issues and challenges related to protection, control, monitoring, metering, and fault locating
- Be an independent expert on emerging technologies and provider of high-quality unbiased publications about protection, control, monitoring, metering, and fault locating

Scope

Within its technical field of activity, Study Committee B5 addresses topics throughout the protection, control, monitoring, metering, and fault locating devices and systems management life-cycle phases; from conception, through research, development, design, engineering, configuration, production, deployment, operation, and end-of life. At all stages, technical, safety interactions with, and integration into, the evolving power system and the operating environment are addressed. All aspects of performance, specification, testing and the application of testing techniques are within scope, with a specific focus on the impact of changing interactions and demands due to technology evolution and changing the power systems. Life cycle assessment techniques, risk management techniques, education and training are also included.

Within this framework specific areas of attention include:

- Theory, principles and concepts, functionality, technological development, design, performance and application of materials, efficiency.

- Application guidance, planning, installation, service conditions.
- Reliability, availability, dependability, maintainability and maintenance, service, condition monitoring, diagnostics, restoration, repair, loading, upgrading, uprating.
- Refurbishment, re-use/re-deployment, deterioration, dismantling, disposal.

The following areas are of principal interest for SC B5:

- Power system protection, automation and control principles, methods and applications, including protection of networks connected to renewable energy resources
- Functional integration and virtualization of protection systems and substation automation systems
- Protection, automation and control system architectures including process interfaces, digital signaling, communication architecture, time synchronization, and related issues.
- New Network Requirements covering the design and application of digital technology and modern communication system for the benefit of modern and future networks featuring embedded generation and smart grid techniques
- IEC 61850 based data modelling, protection, automation and control configuration and engineering
- Metering
- Process Data acquisition, modelling and publication for protection, fault recording, metering, monitoring and asset management applications (interface to HV equipment monitoring, and HV equipment monitoring)
- Monitoring of protection, control, metering, fault locating devices and systems including associated communication equipment
- System-wide protection and control schemes.
- Exploring and evaluating emerging technology for protection, automation, and control across power system
- Design, engineering, monitoring and performance assessment of System Integrity Protection Schemes (SIPS)
- Design, engineering, monitoring and performance of protective relay based power system security and stability enhancing schemes like Automatic Under Frequency Load Shedding (AUFLS), Automatic Under Voltage Load Shedding (AUVLS), Anti-Islanding, Fault Ride Through, Auto-Reclosure Scheme etc.

Working groups
View a list of CIGRE's current working groups including for B5 here.

Publications

View all publications for Study Committee B5 on eCIGRE

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