

IEEE/PES SUBSTATIONS COMMITTEE



The Substations Committee is one of the Technical Committees under the direction of the Technical Council of the IEEE Power and Energy Society. The Substations Committee is the professional home for all engineers involved in the design and operation of generation, transmission and distribution substations. Participating in the activities of the Substations Committee provides individuals with a unique opportunity to expand their knowledge and expertise through the exchange of views, information and practices with fellow engineers both nationwide and internationally. The Substations Committee of the IEEE Power and Energy Society is continually open to new members from all countries who may be interested in the activities of the various Subcommittees and associated Working Groups and Task Forces.

The Substations Committee convenes annually. The annual spring meeting is staged at a North American city and is normally sponsored by the respective regional power utilities. The Substations Committee's activities consist of the development of industry standards and guides, technical paper preparations and presentations, panel discussions, round table discussions and participation in the IEEE/PES General Meeting. Those who do serve are truly rewarded by the enrichment they receive towards their professional background.

A listing of the main Committee, all Subcommittees, Working Groups and Task Forces showing the scope of each group is shown in this brochure. Also included are the names, addresses, telephone numbers and email addresses of the main Committee, Subcommittee, Working Group and Task Force chairpersons. If you are interested in any activity of the Substations Committee, please contact the appropriate Chairperson, call any of the officers, and see our web page at <http://ewh.ieee.org/cmte/substations/>

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IEEE/PES SUBSTATIONS COMMITTEE SCOPE LISTING

SUBSTATIONS COMMITTEE - A0

Scope: Treatment of all matters in which the dominant factors are the electrical and structural design including environmental concerns, construction, installation, operation and control of automatic, partially automatic and manual substations including switching stations, transformer stations and generating station switchyards. Included in the scope of this Committee shall be treatment of the following: Automatic and Supervisory Control Systems; Data Acquired within Substations; Gas-Insulated Substations (GIS), Gas-Insulated Transmission Lines (GIL) and Sulfurhexafluoride (SF₆); and Open-type Bus Design, except those incorporated in switchgear assemblies; Structural Arrangements for Substations; Transmission and Distribution Substations; FACTS and HVDC Converter Stations; Environmental Concerns in Substation Design; Clearances; Substation Safety; Substation Grounding; Substation Capacitor Banks; and Substation Seismic Design. Matters relating to particular application requirements in substations may be treated jointly with appropriate Committees that have responsibility for substation design, performance and standards.

ADMINISTRATIVE SUBCOMMITTEE - B0

Scope: To plan, coordinate and approve the activities of the Committee and its Subcommittees, Working Groups and Task Forces, including consideration of their scopes, program planning assistance in selection of applicable technical papers, and recognition and awards to groups or individuals. The Subcommittee is responsible for scheduling and determining the location of committee meetings, submits all proposed additions, deletions, or changes for the Committee or Subcommittees to the Technical Council, and recommends representatives to other standards making bodies for Technical Council nomination to the IEEE-SA Standards Board. Members of Administrative Subcommittee include the Committee Chair, Vice-chair, Secretary, Standards Coordinator, Technical Editor, and all SC chairs. Does not include SC vice-chairs or secretaries (those need to be identified and placed in the child committee "Activity Leaders"). Does not include any IEEE staff.

WORKING GROUP B2 – LIAISON

Scope: Responsible to report to the Administrative Committee B0 about the activities of related PES Committee. Report of the activities with: Switchgear (K0), T&D (I0), PSRC (C0) and Transformers (D0). The Chairmen of the related Substations Subcommittee are members of B2 Liaison. The report is given at the annual Substations meeting.

WORKING GROUP B4 – FELLOW

Scope: Responsible for the promotion of the Substations Committee for IEEE Fellow members. The purpose is to follow the Substations members for nomination of candidates and for supporting during the IEEE process.

DATA ACQUISITION, PROCESSING, AND CONTROL SYSTEMS SUBCOMMITTEE - C0

Scope: Treatment of all matters relating to data acquired within substations and its processing for monitoring, analysis, and local and/or remote control of substation apparatus and devices connected to the substation. Systems within the purview of this subcommittee include: interfaces to substation apparatus, use of transducers, and all types of communication media. These systems also use high-security communication protocols, computers with associated peripherals, video display units, printing and logging devices, software and/or firmware in order to perform their allocated functions.

Also, responsible for the quality of data originating in the substation that is subsequently used for monitoring, analysis, and control of the power system. Sponsor and promote the use of new technologies (e.g., fiber optics, etc.) and new standards for integrating the functions of monitoring, analysis, control, protection, maintenance and operation of substation and feeder apparatus.

Since responsibilities for standards applicable to stand-alone equipment (e.g., protective relays, automatic tap changers, etc.) reside with the respective equipment committee, close coordination shall be accomplished on all standards activities as defined in the applicable Project Authorization Request. Consideration of phenomena typical of substation environments that can adversely affect digital computer-based data acquisition, processing, and control systems; and prepare guidelines or standards as appropriate.

WORKING GROUP C1 – STANDARD FOR SUBSTATION IED CYBER SECURITY

Scope: Responsible for standard P1686 that defines the functions and features to be provided in substation intelligent electronic devices (IEDs) to accommodate critical infrastructure protection programs. The standard addresses security regarding the access, operation, configuration, firmware revision and data retrieval from an IED, including the substation RTU. It does not address communications for the purpose of power system protection (teleprotection). Encryption for the secure transmission of data both within and external to the substation will not be part of this standard as this is being addressed in other efforts.

Standard: 1686

WORKING GROUP C2 - STANDARD ENVIRONMENTAL & TESTING REQUIREMENTS FOR COMMUNICATIONS NETWORKING DEVICES IN ELECTRIC POWER SUBSTATIONS

Scope: Responsible for standard 1613 that specifies standard service conditions, standard ratings, environmental performance requirements and testing requirements for communications networking devices installed in electric power substations. It does not cover such equipment designed for operation in other environments, such as office locations. Other than their communication ports, it does not cover such equipment used in protective relaying applications, for which IEEE Standards C37.90, C37.90.1, C37.90.2, and C37.90.3 apply.

Standard: 1613

WORKING GROUP C3 – STANDARD FOR SCADA AND AUTOMATION SYSTEMS

Scope: Responsible for standard C37.1 that provides the basis for the definition, specification, performance analysis, and application of SCADA and automation systems in electric substations, including those associated with generating stations and power utilization and conversion facilities.

Standard: C37.1

WORKING GROUP C4 - SOE TIME STAMPING REQUIREMENTS FOR SUBSTATION IEDs

Scope: This is a placeholder for a future working group.

Standard: TBD

WORKING GROUP C5 – STANDARD ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS AND CONTACT DESIGNATIONS

Scope: Responsible for the standard C37.2 that applies to the definition and application of function numbers for devices used in electrical substations and generating plants and in installations of power utilization and conversion apparatus.

Standard: C37.2

WORKING GROUP C6 - TRIAL USE STANDARD FOR A CRYPTOGRAPHIC PROTOCOL FOR CYBER SECURITY OF SUBSTATION SERIAL LINKS

Scope: Responsible for the trial use standard P1711 that defines a cryptographic protocol to provide integrity, and optional confidentiality, for cyber security of substation serial links. It does not address specific applications or hardware implementations, and is independent of the underlying communications protocol.

Standard: 1711

WORKING GROUP C7 – STANDARD PROFILE FOR USE OF IEEE STD. 1588 PRECISION TIME PROTOCOL IN POWER SYSTEM APPLICATIONS

Scope: Responsible for standard PC37.238 that specifies a common profile for use of IEEE 1588-2008 Precision Time Protocol (PTP) in power system protection, control, automation and data communication applications utilizing an Ethernet communications architecture. The profile specifies a well-defined subset of IEEE 1588-2008 mechanisms and settings aimed at enabling device interoperability, robust response to network failures, and deterministic control of delivered time quality. It specifies the preferred physical layer (Ethernet), higher level protocol used for PTP message exchange and the PTP protocol configuration parameters. Special attention is given to ensuring consistent and reliable time distribution within substations, between substations, and across wide geographic areas.

Standard: PC37.238

WORKING GROUP C8 - RECOMMENDED PRACTICE FOR NETWORK COMMUNICATIONS IN SUBSTATIONS

Scope: Responsible for the standard 1615 that provides recommended practices for communication and interoperation of devices connected on an electric power substation Internet protocol (IP) network. It does not establish a new underlying communications standard. Instead, the document prescribes a specific set of existing conventions and definitions..

Standard: 1615

WORKING GROUP C9 - STANDARD COMMUNICATION DELIVERY TIME PERFORMANCE REQUIREMENTS FOR ELECTRIC POWER SUBSTATION AUTOMATION

Scope: This standard defines communication delivery times of information to be exchanged within and external to substation integrated protection, control, and data acquisition systems.

Standard: 1646

WORKING GROUP C10 - JOINT WITH PSRC H13 WG ON REQUIREMENT AND APPLICATION OF THE SUBSTATION CYBER SECURITY

Scope: Responsible for standard PC37.240 that provides technical requirements for substation cyber security. It presents sound engineering practices that can be applied to achieve high levels of cyber security of automation, protection and control systems independent of voltage level or criticality of cyber assets. Cyber security includes trust and assurance of data in motion, data at rest and incident response.

Standard: PC37.240

WORKING GROUP C11 - RECOMMENDED PRACTICE FOR DATA COMMUNICATIONS BETWEEN RTUs & IEDs IN A SUBSTATION

Scope: Responsible for standard 1379, that presents a uniform set of guidelines for communications and interoperation of IEDs and remote terminal units (RTUs) in an electric utility substation. This recommended practice does not establish an underlying communication standard. Instead, it provides a specific limited subset of two existing communication protocols, to encourage understanding and timely application.

Standard: 1379

WORKING GROUP C12 - STANDARD FOR ELECTRIC POWER SYSTEMS COMMUNICATIONS – DISTRIBUTED NETWORK PROTOCOL (DNP3)

Scope: Responsible for standard 1815 that specifies the DNP3 protocol structure, functions, and application alternatives. In addition to defining the structure and operation of DNP3, the standard defines three application levels that are interoperable. The simplest application is for low-cost distribution feeder devices, and the most complex is for full-featured master stations. The intermediate application level is for substation and other intermediate devices. The protocol is suitable for operation on a variety of communication media consistent with the makeup of most electric power communication systems. The standard consists of several clauses each related to an application or function..

Standard: 1815

WORKING GROUP C13 - STANDARD TEST METHOD OF FOR USE IN THE EVALUATION OF MESSAGE COMMUNICATIONS BETWEEN INTELLIGENT ELECTRONIC DEVICES IN AN INTEGRATED SUBSTATION PROTECTION CONTROL, AND DATA ACQUISITION SYSTEM

Scope: Responsible for standard C37.115 that defines standard communication modeling, terminology, evaluation criteria, and performance measures for communication test scenarios, which specify messages to be exchanged between electrical power substation intelligent electronic devices (IEDs). These scenarios define message transactions between applications within the substation, and between substation IEDs and remotely located applications. The scenarios do not specify the communication protocol required to implement the transactions.

Standard: C37.115

WORKING GROUP C14 - Draft Standard for Exchanging Information between networks Implementing IEC 61850 and IEEEStd 1815TM (Distributed Network Protocol - DNP3)

Scope: This document specifies the standard approach for mapping between IEEE Std 1815 (Distributed Network Protocol - DNP3) and IEC 61850 (Communications Networks and Systems for Power Utility Automation). Two primary use cases are addressed; A) Mapping between an IEEE Std 1815 based master and an IEC 61850 based remote site and B) Mapping between an IEC 61850 based master and an IEEE Std 1815 based remote site. Mapping aspects included in the standard are: conceptual architecture; general mapping requirements; the mapping of Common Data Classes, Constructed Attribute Classes and Abstract Communication Service Interface (ASCI); cyber security requirements, the architecture of a gateway used for translation and requirements for embedding

mapping configuration information into IEC 61850 System Configuration Language (SCL) and DNP3 Device Profile. This specification addresses a selection of features, data classes and services of the two standards.

Standard: P1815.1

WORKING GROUP C15 - Draft Trial-Use Recommended Practice for Implementing an IEC-61850 Based Substation Communications, Protection, Monitoring and Control System

Scope: This recommended practice outlines the necessary steps and procedures a utility should undertake to implement an IEC 61850 substation in a multi-vendor equipment environment. The document addresses equipment configuration, equipment procurement specification, documentation procedures and general design philosophy that will condense the IEC61850 standard into a practical working implementation guide. The recommended practice also defines baseline information sets and functionality for IEC 61850 devices to allow users to implement similar design philosophies between vendors of IEC 61850 equipment.

Standard: P2030.100

TRANSMISSION AND DISTRIBUTION SUBSTATIONS DESIGN SUBCOMMITTEE - D0

Scope: Responsible for treatment of all matters pertaining to the design, and construction of Transmission and Distribution Substations, and the application of switching devices and other equipment, instrumentation and protective and control equipment in Transmission and Distribution Substations.

WORKING GROUP D1 - GUIDE FOR RECOMMENDED ELECT CLEARANCES & INSUL LEVELS IN AIR INSULATED ELECTRIC POWER SUBSTATIONS

Scope: To develop guidelines on minimum clearances and insulation coordination of substations. Treat the minimum clearances both from the insulation and safety aspects.

Standard: 1427

WORKING GROUP D2 (F2) – GUIDE FOR DESIGN & INSTALLATION IN CABLE SYSTEMS IN SUBSTATIONS

Scope: Within the scope of the Main Committee, provide guidelines relating to cable systems design criteria in substations.

Standard: 525

WORKING GROUP D3 - GUIDE FOR THE DESIGN OF SUBSTATIONS BUS STRUCTURES

Scope: Determine basis of design for thermal loading effect of thermal expansions, corona, or radio influence voltage on the design; determine basis of calculating short circuit forces and loading effects of ice and wind on the bus design; design considerations of aeolian vibration force; design considerations for insulators and insulator supporting structures.

Standard: 605a

WORKING GROUP D4 (F1) - RECOMMENDED PRACTICES FOR SEISMIC DESIGN OF SUBSTATIONS

Scope: Within the scope of the Main Committee, provide guidelines relating to seismic design criteria in substations.

Standard: 693

WORKING GROUP D5 - GUIDE FOR DIRECT LIGHTNING STROKE SHIELDING OF SUBSTATIONS

Scope: To investigate methods being used to prevent direct lightning strokes to bus and equipment within a substation and to prepare a guide for application of these methods to substations.

Standard: 998

WORKING GROUP D6 (F0b) – RECOMMENDED PRACTICE FOR THE DESIGN OF FLEXIBLE BUSWORK LOCATED IN SEISMICALLY ACTIVE AREAS

Scope: Produce an IEEE paper and a recommended practice on how to design flexible interconnections for substation bus-to-bus, bus-to-equipment and equipment-to-equipment electrical connections to account for seismic movement.

Standard: 1527

WORKING GROUP D7 - GUIDE FOR SAFETY IN AC SUBSTATION GROUNDING

Scope: To review IEEE 80 on a continuing basis and to direct the reaffirmation or review of the guide every five years. To guide contributions to the field of grounding and provide liaison with other IEEE committees interested in grounding.

Standard: 80

WORKING GROUP D8 - GUIDE FOR DEVELOPMENT OF SPECIFICATIONS FOR TURNKEY SUBSTATION PROJECTS

Scope: To investigate and publish a guide on the methods and procedures for a systematic approach toward the development of a guide for turnkey substation projects.

Standard: 1267

WORKING GROUP D9 - GUIDE FOR THE DESIGN OF LOW VOLTAGE AUXILIARY

SYSTEMS FOR ELECTRIC POWER SUBSTATIONS

Scope: This guide will consider the components of both the AC and DC systems and provide guidelines and recommendation for designing the appropriate systems for the substation under consideration. This guide includes the low voltage auxiliary systems from the source(s) to the distribution point(s). Reliability requirements and load characteristics are discussed and distribution methods are recommended.

Standard: xxxx

TRANSMISSION AND DISTRIBUTION SUBSTATIONS OPERATIONS SUBCOMMITTEE - E0

Scope: Responsible for treatment of all matters relating to safety, operations and location of transmission and distribution substations as to their effect on personnel and the environment of the adjacent community. Special emphasis shall be made to the factors that must be considered in design safety, fire protection (other?) such as aesthetic treatment, overall visual appearance, erosion control, security, and oil spill containment. Audible noise, electromagnetic interference, and electrical interference shall be considered as far as the zoning acceptance is concerned. The intent of all design considerations is to influence the ultimate acceptance of the substation by the community.

WORKING GROUP E1 - GUIDE FOR THE DESIGN, CONSTRUCTION & OPERATION OF ELECTRIC POWER SUBSTATIONS FOR COMMUNITY ACCEPTANCE AND ENVIRONMENTAL COMPATIBILITY

Scope: To study the conditions required for acceptance of transmission and distribution substations by: determining the factors that must be considered such as appearance, noise, zoning, etc.; investigating the factors that determine the need for sound control walls or other sound control materials; studying the use of modular concepts for substations that will improve the substation environment and influence community acceptance; encouraging the preparation of technical papers in the area of design and location of substations.

Standard: 1127

WORKING GROUP E2 – GUIDE FOR CONTAINMENT AND CONTROL OF OIL SPILLS IN SUBSTATIONS

Scope: To study the conditions required for acceptance of transmission and distribution substations by: determining the factors that must be considered such as appearance, noise, zoning, etc.; investigating the factors that determine the need for sound control walls or other sound control materials; studying the use of modular concepts for substations that will improve the substation

environment and influence community acceptance; encouraging the preparation of technical papers in the area of design and location of substations.

Standard: 980

WORKING GROUP E3 - GUIDE FOR SUBSTATION FIRE PROTECTION

Scope: Investigate and review current fire protection philosophy, regulations, and practices in use within substations and incorporate this information into a document suitable for use by the industry.

Standard: 979

WORKING GROUP E4 - SAFETY - GUIDE FOR TEMPORARY PROTECTIVE GROUNDING SYSTEMS USED IN SUBSTATIONS

Scope: Determine what criteria are presently used as a safety basis for substation design and operation. Review IEEE 1246 and IEEE 1268 on a continuing basis and direct the reaffirmation or review of these guides every five years. Provide leadership in the writing, interpretation, and implementation of new safety standards or codes applicable to Electric Utility Substations. Maintain liaison with other groups working on safety, e.g., NEC, NESC, etc.

Standards: 1246

WORKING GROUP E4 – SAFETY - GUIDE FOR THE SAFE INSTALLATION OF MOBILE SUBSTATION EQUIPMENT

Scope: Determine what criteria are presently used as a safety basis for substation design and operation. Review IEEE 1246 and IEEE 1268 on a continuing basis and direct the reaffirmation or review of these guides every five years. Provide leadership in the writing, interpretation, and implementation of new safety standards or codes applicable to Electric Utility Substations. Maintain liaison with other groups working on safety, e.g., NEC, NESC, etc.

Standard: 1268

WORKING GROUP E5 - GUIDE FOR ANIMAL DETERRENTS FOR ELECTRIC POWER SUPPLY STATIONS

Scope: Responsible for treatment of all matters pertaining to the secure operation of electrical substations with respect to outside incursions into the substation.

Standard: 1264

WORKING GROUP E6 - GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUNDING SYSTEM

Scope: To review IEEE 81 on a continuing basis and to direct the reaffirmation or review

of the guide every five years. To guide contributions to the field of grounding testing and provide liaison with other IEEE committees interested in grounding testing.

Standard: 81

WORKING GROUP E7 - GUIDE FOR ELECTRIC POWER SUBSTATION PHYSICAL AND ELECTRONIC SECURITY

Scope: Responsible for treatment of all matters pertaining to the secure operation of electrical substations with respect to outside incursions into the substation.

Standard: 1402

WORKING GROUP E9 - STD FOR QUALIFYING PERMANENT CONNECTIONS USED IN ELECTRICAL POWER SUBSTATION GROUNDING

Scope: Investigate the necessary tests or test procedures to evaluate connections for thermal capacity, conductivity, mechanical strength and corrosion resistance, for development of industry standards and guides for use in substations.

Standard: 837

RECOGNITION & AWARDS SUBCOMMITTEE - H0

Scope: To annually review the performance of individuals within the Substations Committee and to review the quality of technical papers sponsored by the Substations Committee to determine if recognition or awards are justified.

HIGH VOLTAGE POWER ELECTRONICS STATIONS SUBCOMMITTEE - I0

Scope: Treatment of all matters relating to design, construction, and operation of AC substations using HV power electronics as part of the electrical power system, including FACTS and HVDC converter stations. This includes the application of HV power semiconductor equipment and all other components insofar as they affect the design, construction, and operation of such substations. Interest in such components is limited to their effects on overall station parameters and does not include the detailed design of the equipment itself.

Standard:

857-1996 Withdrawn IEEE Recommended Practice for Test Procedures for High-Voltage Direct- Current Thyristor Valves

Std 1240-2006 IEEE Guide for the Evaluation of the Reliability of HVDC Converter Stations

Std 1378-2008 IEEE Guide for Commissioning High-Voltage Direct-Current (HVDC) Converter Stations and Associated Transmission Systems

WORKING GROUP I1 – POWER ELECTRONIC EQUIPMENT

Scope: To study the application of power electronic equipment in substations to improve power quality. Identify the need for, and sponsor the preparation and review of guides, recommended practices, and standards for power electronic equipment used in substations to improve power quality. Coordinate the work with other committees and organizations involved in the subject matter.

Standard:

Std1585-2007 IEEE Guide for the Functional Specification of Medium Voltage (1- 35kV) Electronic Series Devices for Compensation of Voltage Fluctuations

Std1623-2005 IEEE Guide for the Functional Specification of Medium Voltage (1 kV - 35 kV) Electronic Shunt Devices for Dynamic Voltage Compensation

WORKING GROUP I2 - THYRISTOR CONTROLLED SERIES CAPS

Scope: Review Thyristor Controlled Series Capacitor (TCSC) applications and coordinate with other committees and organizations involved in the subject matter to identify the need for and sponsor the preparation of a functional guide for specifying TCSC stations. Included in the scope are issues which consider ratings for TCSC thyristor valve assemblies, capacitors, and reactors, as well as TCSC control characteristics, protective features, cooling systems, testing, commissioning, safety, operation and maintenance.

Standard:

Std 1534-2009 IEEE Recommended Practice for Specifying Thyristor-Controlled Series Capacitors

WORKING GROUP I4 - STATIC VAR COMPENSATORS

Scope: Investigate substation design for, and operation of, Static VAr Compensators (SVCs), including valve cooling and enclosures, layouts, auxiliaries, protection, and controls.

Standard:

Std 1031-2000 Guide for the Functional Specification of Transmission Static Var Compensators

Std 1303-2000 Guide for Static Var Compensator Field Tests

WORKING GROUP I5 - VOLTAGE SOURCED CONVERTERS (VSC)

Scope: Review the applications of voltage sourced converters (VSC), such as STATCOM, UPFC, SSSC, and VSC for DC transmission. Coordinate with other committees and organizations involved in the subject matter. Identify the need for, and produce a related document.

Standard:

WORKING GROUP I8 - POWER ELECTRONIC BUILDING BLOCK

Scope: Power Electronics Building Block is a broad concept that incorporates individually or collectively progressive integration of power devices, gate drives, snubbers and other components to functional blocks, resulting in reduced cost, losses, weight and size, and engineering effort for the application of power electronics. Looking at other means of integration, such as layout of Building Blocks, bus work connecting the Building Blocks and, standardization in order to derive the maximum benefits from integration concepts.

Standard: P1676 Guide for Control Architecture for High Power Electronics (1 MW and Greater) used in Electric Power Transmission and Distribution Systems

WORKING GROUP I9 - Modern Protection System for Static VAR Compensators

Scope: The control and protection system plays an essential role in the overall performance of Static Var Compensator (SVC) applications to enhance the reliability of transmission systems. SVC systems are custom designed according to one of several topologies intended for specific applications. An extensive protection system is ultimately intended to make use of the maximum operational limits of the equipment. Modern protection systems are increasingly fully integrated with the development of communication protocol and multifunctional IEDs. The Working Group shall investigate design and recommend modern practices for transmission Static Var Compensator (SVC) protection to enhance reliable operation of SVCs.

Standard: Std 1032-xxxx Draft Guide for Protecting Transmission Static Var Compensators

GAS INSULATED SUBSTATIONS SUBCOMMITTEE - K0

Scope: Review, study, and document the design, application, installation, testing, operating and maintenance practices for gas insulated substations (GIS) 1 kV and above, gas insulated transmission lines (GIL) 72.5 kV and above and sulfurhexafluoride (SF6) gas. Work with Switchgear Committee on ratings of breakers for gas-insulated substations. Align the gas-insulated substation standards and guides with international norms and standards. Identify the need for, and sponsor the preparation of criteria, guides, tutorial and standards as related to gas insulated substations and transmission lines. Develop SF6 gas handling guide in line with international guide. Organize regional users' group meetings for exchange of experience information. Reaffirm existing standards and guides and update/ revise on on-going basis.

WORKING GROUP K1 - STANDARD FOR HIGH VOLTAGE GAS-INSULATED SUBSTATIONS, RATED ABOVE 52 KV

Scope: This standard establishes ratings and requirements for planning, design, testing, installation, and operation of gas-insulated substations (GIS) for alternating-current applications using equipment rated above 52 kV. Typical installations are assemblies of specialized gas-insulated devices such as circuit-breakers, switches, bushings, buses, instrumentation, and gas-insulating system. It does not include certain items that may be directly connected to gas-insulated substations, such as power transformers and protective relaying.

Standard: C37.122

WORKING GROUP K2- TUTORIALS AND PANEL SESSIONS GIS/GIL/SF6

Scope: Conduct tutorials and panel sessions, revise and update, as required. The purpose of this tutorial is to educate potential users of GIS/GIL/SF6 equipment on general aspects of this technology and its advantages. The tutorial is focused on engineering staff of users and consultants. The tutorial will give help in finding the right decision for the best suiting technology in the solving of substations tasks.

Standards: Tutorial Text and Presentation on CD

WORKING GROUP K3 – PC37.122.2 GUIDE FOR APPLICATION OF GAS-INSULATED SUBSTATIONS (GIS) 1 KV UP TO 52 KV

Scope: The guideline will describes engineering criteria including equipment selection, arrangement, ratings, controls, and construction considerations including installation, testing, and operation & maintenance factors.

Standard: C37.122.2

WORKING GROUP K4 – PC37.122.3 GUIDE FOR SULPHUR HEXAFLUORIDE (SF6) GAS HANDLING FOR HIGH VOLTAGE EQUIPMENT

Scope: This guide describes significant aspects of handling SF6 gas used in electric power equipment such as gas recovery, reclamation, recycling in order to keep the gas permanently in a closed cycle and avoiding any deliberate release in environment.

Standard: C37.122.3 (formerly 1712)

WORKING GROUP K5 – PC37.112.4 GIL APPLICATION GUIDE

Scope: GIL application guide for planning, permitting, design, equipment specification, installation, commissioning, operation, and maintenance of as-insulated transmission lines. This guide will address technical aspects only. Commercial and legal issues associated with gas-insulated transmission lines are not considered. This guide applies to AC transmission lines rated for maximum operating voltage of 72.5 kV and above.

Standard: C37.112.4 (formerly 1677)

WORKING GROUP K6 – GIS USER GROUP

Scope: The working group organizes regional meetings to bring together the users of gas-insulated substations and transmission lines to exchange their experiences and to collect information on engineering, procurement, installation, testing, commissioning, operation and maintenance of GIS and GIL. Brings life cycle experience from users of GIS and GIL into the standardization process of K0.

Standards: GIS Workshops

WORKING GROUP K7 - PC37.017 REVISION OF STANDARD FOR BUSHING FOR HIGH VOLTAGE (OVER 1000 V AC) CIRCUIT BREAKERS AND GAS INSULATED SWITCHGEAR

Scope: This standard is applicable to bushings intended for use in high voltage circuit breakers and gas insulated switchgear.

These bushings are intended for indoor and outdoor use, operating on alternating current with a rated voltage greater than 1000 V and a frequency of 50 or 60 Hz. These bushings are usually a part of an apparatus and tested according to the apparatus of which they form part. Insulators or bushings used as an element of metal-enclosed switchgear assemblies, or in reclosers, sectionalizers, or similar equipment, are not included in the scope of this document.

This standard does not apply to the following: 1. High-voltage cable terminations 2. Bushings for instrument transformers 3. Bushings for test transformers 4. Bushings for power transformers 5. Bushings for oil filled circuit breakers 6. Oil filled bushings in general.

Standard: C37.017

**WORKING GROUP K8 – PC37.122.5
REVISION OF GUIDE FOR MOISTURE
MEASUREMENT AND CONTROL IN SF6
GAS INSULATED EQUIPMENT**

Scope: The existing guide will be updated in view of current user requirements, recent investigations and research in moisture evacuation and available moisture measurement technologies, and where feasible, in alignment with international norms, standards and units, recognizing international practices outside North America

Standard: C37.122.5 (formerly 1125)

**WORKING GROUP K9 – PC37.122.6
Recommended Practice the Interface of
New Gas-Insulated Equipment in
Existing Gas-Insulated Substations**

Scope: This document gives the recommended practices for designing and installing the interfaces between an existing Gas-Insulated Substations (GIS) equipment and a new GIS equipment that is added at a later date, and may be of different design and of different manufacturer. The recommended practices apply for GIS rated above 52kV. They also include the interfaces between Gas-Insulated Line (GIL) equipment and Gas-Insulated Substations (GIS) equipment rated above 52kV.

Standard: C37.122.6 (formerly 1416)

**WORKING GROUP K10 - GIS/GIL
Handbook**

This is a new activity. Reserved for the GIS/GIL Handbook but a PAR has not officially been started.

**WORKING GROUP K11 – PC37.122.1
GUIDE FOR GIS ABOVE 52 KV**

Scope: The revision of this guide will update the information. This guide provides information of special relevance to the planning, design, testing, installation, operation and maintenance of gas-insulated substations (GIS) and equipment. This guide is intended to supplement IEEE Std. C37.122. In general this guide is applicable to all GIS above 52 kV.

However, the importance of the topics covered varies with application category. For example, issues related to advanced field test techniques and very fast transients (VFT) are of particular interest for extra-high voltage (EHV) GIS (345 kV and above) and are of lesser importance at lower levels.

Standard: C37.122.1

**WORKING GROUP K12 – PC37.123
GUIDE TO SPECIFICATION FOR GIS
ELECTRIC POWER SUBSTATION
EQUIPMENT ABOVE 52 KV**

Scope: The revision of this guide will update the information. This guide covers the technical requirements for design, fabrication, testing, installation, and in-service performance of gas-insulated substations (GIS). The user's requirements covering all the necessary GIS components for a functional system, ready to operate the GIS equipment, are addressed in this guide. Guidance to users is provided for specifying the equipment.

Standards: C37.123

**MEETINGS
SUBCOMMITTEE - M0**

Scope: Coordinate the advance planning and event logistics of the annual Substations Committee meeting with the local Host Committee. Particularly the registration posting and documents within 123Signup, and the schedule of working group meetings and tutorials.

**STANDARDS
SUBCOMMITTEE - S0**

Scope: Coordination of standards activities. Responsible for new, revised, reaffirmed and withdrawn standards and PARs for the IEEE PES Substation Committee. Also responsible for seeing that proper liaison is established, where necessary, with other Committees on standards activities and with IEEE-SA Standards Board.

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