



IEC/TC or SC TC 57	Secretariat Germany	Date 2008-10
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Title of TC Power system management and associated information exchange
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<p><b>A. Background</b></p> <p>TC 57 was established in 1964 because of the urgent need to produce international standards in the field of communications between the equipment and systems for the electric power process, including telecontrol, teleprotection and all other telecommunications to control the electric power system.</p> <p>Having to take into consideration not only equipment aspects, but more and more system aspects, TC 57 changed its title and scope in 1994 and again in 2003.</p> <p>Today TC 57 standards are a critical subset of standards needed to realize the Smart Grid.</p> <p>Scope of TC 57: To prepare international standards for power systems control equipment and systems including EMS (Energy Management Systems), SCADA (Supervisory Control And Data Acquisition), distribution automation, teleprotection, and associated information exchange for real-time and non-real-time information, used in the planning, operation and maintenance of power systems. Power systems management comprises control within control centers, substations and individual pieces of primary equipment including telecontrol and interfaces to equipment, systems and databases, which may be outside the scope of TC 57.</p> <p>The special conditions in a high voltage environment have to be taken into consideration.</p> <p>Note 1: Standards prepared by other technical committees of the IEC and organizations such as ITU and ISO shall be used where applicable.</p> <p>Note 2: Although the work of TC 57 is chiefly concerned with standards for electric power systems, these standards may also be useful for application by the relevant bodies to other geographical widespread processes.</p> <p>Note 3: Whereas standards related to measuring and protection relays and to the control and monitoring equipment used with these systems are treated by TC 95, TC 57 deals with the interface to the control systems and the transmission aspects for teleprotection systems. Whereas standards related to equipment for electrical measurement and load control are treated by TC 13, TC 57 deals with the interface of equipment for interconnection lines and industrial consumers and producers requiring energy management type interfaces to the control system.</p> <p>Presently, TC 57 has the following working groups:</p> <ul style="list-style-type: none"><li>• WG 03 Telecontrol protocols</li><li>• WG 10 Power system IED communication and associated data models</li><li>• WG 13 Energy management system application program interface (EMS - API)</li><li>• WG 14 System interfaces for distribution management (SIDM)</li><li>• WG 15 Data and communication security</li><li>• WG 16 Deregulated energy market communications</li><li>• WG 17 Communications systems for distributed energy resources (DER)</li><li>• WG 18 Hydroelectric power plants – Communication for monitoring and control</li></ul>
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- WG 19 Interoperability within TC 57 on long term
- WG 20 Planning of (single-sideband) power line carrier systems

TC 57 has issued 104 publications and has 20 projects in development.

TC 57 has a broad base of technical expertise coming from 26 participating countries: Argentina, Australia, Austria, Canada, China, Czech Republic, Denmark, Egypt, Finland, France, Germany, Hungary, Italy, Japan, Korea, Netherlands, Norway, Portugal, Russian Federation, Serbia, South Africa, Spain, Sweden, Switzerland, United Kingdom and United States of America.

System approach aspects: TC 57 has internal liaisons with the component committees TC 4, TC 13, TC 17C, TC 38, TC 88 and TC 95, as well as with the system committees TC 8 and TC 65, and has external liaisons with CIGRE, UCAIug, ebIX, IEEE PES PSCC and UCTE (SMB approval still outstanding).

## **B. Environment**

### **B.1 Business environment**

The increasing competition among electric utilities due to e.g. the deregulation of the energy markets asks more and more for the integration of equipment and systems for controlling the electric power process into integrated system solutions for supporting the utilities' core processes. Former closed energy management systems will be opened to be able to exchange information with external systems not only for the planning, operation and maintenance of power systems but as well with business systems of system operators to optimize the use of the power system in the energy market. Equipment and systems have to be interoperable, and interfaces, protocols and data models must be compatible to reach this goal. Well-proven, international standards in the utility business are the basis.

### **B.2 Market demand**

The customers of the standards developed by TC 57 are the power industry and the vendors of power systems control solutions. Both parties are actively represented in TC 57.

The standards developed by TC 57 are widely used worldwide (e.g. IEC 60870-5 and IEC 60870-6 TASE.2) and there is an increasing demand for recently issued standards (e.g. IEC 61850).

### **B.3 Trends in technology and trade**

The fast development of information technology (IT) and communication technology has impact on the work of TC 57. TC 57 needs to carefully observe this development in order to early pick up possible solutions and to strive for short implementation times for the standards.

The meter is increasingly becoming the source of data required for power systems control, e.g. for distribution automation (Advanced Metering Infrastructure- AMI, smart grid, etc.). Therefore, the communication aspects of metering are of strategic importance for TC 57.

### **B.4 Ecological environment**

Not applicable to the current work programme of TC 57.

## **C. Work programme**

### **C.1 Current work**

Reference is made to the current work programme of TC 57, which is available on-line at the IEC website.

### **C.2 Resources/infrastructure needed**

Due to the increasing cost pressure especially on the deregulated power industry the required resources/infrastructure within TC 57 are not always available in the desirable quantity. Furthermore, frequent changes in the companies originate uncertainties. An increased participation of utilities – the end users of the standards – would be welcome.

Cooperation with other TCs is required, in particular to help identifying the requirements at the HV equipment level.

**C.3 Safety aspects (only for committees which do not have a reference to safety in their scope)**

**D. Future work**

The strategy for the future work of TC 57 is derived from the following 3 major aspects of the business environment:

- The competitive environment of the power industry asking for optimization of core processes across IT system boundaries as well as for reduction of costs
- The fast progress in information and communication technologies
- Security

TC 57 strives for a state of the art communication architecture, which provides full interoperability, avoids superfluous intermediate data model conversions and eliminates multiple data management. This communication architecture must be backward compatible and include migration strategies and paths for legacy protocols. This task is supported by TC 57's Chairman's Advisory Group (CAG), which provides the platform for the coordination among the different working groups. Furthermore, WG 19 was established with focus on the interoperability within TC 57 in the long term and as a way to bring together the expertise required to address technical issues of TC 57-wide scope. WG 19 in effect serves as the technical architecture board for TC 57. All technical decisions that impact multiple working groups should be reviewed and commented on by WG 19.

TC 57 concentrates on the speedy completion of the projects on the energy management system application program interface and the system interfaces for distribution management.

TC 57 propagates the new communication standard IEC 61850 for power system applications outside of substations (e.g. for distributed energy resources, monitoring & control in hydroelectric power plants, and wind turbines).

TC 57 aims to provide standardized communication means for system operators and other market participants to interface to the liberalized energy market, by allowing the multiple technologies to hide from the applications and by extending the Common Information Model (CIM) for the market needs.

TC 57 gives high priority to the horizontal task of data and communication security.

All TC 57 work takes into consideration the long-term goals on interoperability.

TC 57 bases its work on state of the art standard information and communication technology platforms wherever available.

Whereas TC 57 opens proprietary structures by standardization of data exchange interfaces among IT systems and software applications, it is not the intent of TC 57 to standardize the software applications themselves: Power systems control vendors shall not be hindered in tailoring their solutions to the particular requirements of their customers.

**E. Maintenance cycle**

Publication no.	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
IEC 60050(371) IEV	1984	2009	2010	
IEC 60050(371) IEV A1	1997-09	2009	2010	
IEC 60353 Ed. 2.0	1993-09	2009	2010	
IEC 60353 Amd. 1 Ed. 2.0	2002-04	2009	2010	
IEC 60481	1974-01	2009	2010	
IEC 60495 Ed. 2.0	1993-09	AMW		WG 20
IEC 60663	1980-01	AMW		WG 20

IEC 60834-1 Ed. 2.0	1999-10	2009	2010	
IEC 60834-2	1993-06	2009	2010	
IEC 60870-1-1	1988-12	2009	2010	WG 03
IEC 60870-1-2	1989-11	2009	2010	WG 03
IEC 60870-1-3 Ed. 2.0	1997-04	2009	2010	WG 03
IEC 60870-1-4	1994-07	2009	2010	WG 03
IEC 60870-1-5	2000-09	2009	2010	WG 03
IEC 60870-2-1 Ed. 2.0	1995-12	2009	2010	WG 03
IEC 60870-2-2	1996-08	2009	2010	WG 03
IEC 60870-3	1989-05	2009	2010	WG 03
IEC 60870-4	1990-04	2009	2010	WG 03
IEC 60870-5 series				WG 03
1	1990-02	2009	2010	WG 03
2	1992-04	2009	2010	WG 03
3	1992-09	2009	2010	WG 03
4	1993-08	2009	2010	WG 03
5	1995-06	2009	2010	WG 03
6	2006-03	2009	2010	WG 03
101 Ed. 2.0	2003-02	2009	2010	WG 03
102	1996-06	2009	2010	WG 03
103	1997-12	2009	2010	WG 03
104 Ed. 2	2006-06	2009	2010	WG 03
601	2006-06	2009	2010	WG 03
604	2007-10	2009	2010	WG 03
IEC 60870-6-series				
1	1995-05	2009	2010	TC 57
2	1995-10	2009	2010	TC 57
501	1995-12	2009	2010	TC 57
502	1995-12	2009	2010	TC 57
503 Ed. 2.0	2002-04	2009	2010	TC 57
504	1998-12	2009	2010	TC 57
505	2002-08	2009	2010	TC 57
505 am 1	2005-09	2009	2010	TC 57
601	1994-12	2009	2010	TC 57
602	2001-04	2009	2010	TC 57
701	1998-08	2009	2010	TC 57
702	1998-10	2009	2010	TC 57
802 Ed. 2.0	2002-04	2009	2010	MCR being elaborated
802 Amd. 1	2005-03	2009	2010	MCR being elaborated
IEC 61085	1992-04	2009	2010	
IEC 61334-series				
1-1	1995-11	2009	2010	TC 57 (TC 13)
1-2	1997-12	2009	2010	TC 57 (TC 13)
1-4	1995-11	2009	2010	TC 57 (TC 13)
3-1	1998-11	2009	2010	TC 57 (TC 13)
3-21	1996-03	2009	2010	TC 57 (TC 13)
3-22	2001-01	2009	2010	TC 57 (TC 13)
4-1	1996-07	2009	2010	TC 57 (TC 13)
4-32	1996-09	2009	2010	TC 57 (TC 13)
4-33	1998-07	2009	2010	TC 57 (TC 13)
4-41	1996-08	2009	2010	TC 57 (TC 13)
4-42	1996-10	2009	2010	TC 57 (TC 13)
4-61	1998-07	2009	2010	TC 57 (TC 13)
4-511	2000-04	2009	2010	TC 57 (TC 13)
4-512	2001-10	2009	2010	TC 57 (TC 13)

5-1 Ed. 2.0	2001-05	2009	2010	TC 57 (TC 13)
5-2	1998-05	2009	2010	TC 57 (TC 13)
5-3	2001-01	2009	2010	TC 57 (TC 13)
5-4	2001-06	2009	2010	TC 57 (TC 13)
5-5	2001-09	2009	2010	TC 57 (TC 13)
6	2000-06	2009	2010	TC 57 (TC 13)
IEC 61850-series				
1	2003-04	Ed. 2.0 planned	2009	WG 10
2	2003-08	Ed. 2.0 planned	2009	WG 10
3	2002-01	Ed. 2.0 planned	2009	WG 10
4	2002-01	Ed. 2.0 planned	2009	WG 10
5	2003-07	Ed. 2.0 planned	2009	WG 10
6	2004-03	AMW		WG 10
7-1	2003-07	AMW		WG 10
7-2	2003-05	AMW		WG 10
7-3	2003-05	AMW		WG 10
7-4	2003-05	AMW		WG 10
7-410	2007-08	2009	2010	WG 18
8-1	2004-05	AMW		WG 10
9-1	2003-05	2009	2010	WG 10
9-2	2004-04	AMW		WG 10
10	2005-05	2009	2010	WG 10
IEC 61968-series				
1	2003-10	2008	2009	WG 14
2	2003-11	2008	2009	WG 14
3	2004-03	2009	2010	WG 14
4	2007-07	2009	2010	WG 14
13	2008-06	2009	2010	WG 14
IEC 61970-series				
1	2005-12	2009	2010	WG 13
2	2004-07	2009	2010	WG 13
301	2005-03	AMW		WG 13
401	2005-08	2009	2010	WG 13
402	2008-06	2010	2011	WG 13
403	2008-08	2010	2011	WG 13
404	2007-08	2009	2010	WG 13
405	2007-08	2009	2010	WG 13
407	2007-08	2009	2010	WG 13
453	2008-06	2009	2010	WG 13
501	2006-03	2009	2010	WG 13
IEC TR 62210	2003-05	2009	2010	WG 15
IEC 62325-series				
TR 101	2005-02	2009	2010	WG 16
TR 102	2005-02	2009	2010	WG 16
TR 501	2005-02	2009	2010	WG 16
TS 502	2005-02	2009	2010	WG 16
IEC TR 62357	2003-07	AMW		WG 19
IEC 62351-series				
1	2007-05	2009	2010	WG 15
2	2007-06	2009	2010	WG 15
3	2007-06	2009	2010	WG 15
4	2007-06	2009	2010	WG 15

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