



IEC/TC or SC 27	Secretariat Poland	Date 2007-12-xx
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Title of TC Industrial electroheating equipment
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A. Background**Date of establishment:** 1937**Scope**

To develop and maintain international standards on all types of industrial electroheating equipment and its possible applications. These standards cover safety requirements, test and measurement methods, dimensioning and terminology, taking into account the influence of industrial electroheating equipment on environment, human beings and supply network, with specific aspects of EMC and EMF included.

Note: The scope of interest covers all industrial electroheating and electroheat based surface treatment technologies and eventually their combinations with the possible use of the following electroheating installations with:

- equipment for arc heating, including direct arc furnaces and submerged arc furnaces;
- equipment for electros slag remelting;
- equipment for plasma heating;
- equipment for induction heating;
- equipment using the effect of EM forces on liquid metals;
- equipment for direct and indirect resistance heating;
- equipment for dielectric heating;
- equipment for electron beam heating;
- equipment for infrared radiation heating;
- equipment for microwave heating;
- equipment for laser heating;
- equipment for electric resistance trace heating;
- equipment for electroheat treatment.

The list is intended to present some typical examples of equipment and its applications and is not exhaustive.

Participating countries: 12

CANADA (CA)
CHINA (CN)
FRANCE (FR)
GERMANY (DE)
ITALY (IT)
JAPAN (JP)
POLAND (PL)
RUSSIAN FEDERATION (RU)
SWEDEN (SE)
SWITZERLAND (CH)
UNITED KINGDOM (GB)
UNITED STATES OF AMERICA (US)

Observer countries: 16

AUSTRALIA (AU)
BELGIUM (BE)
BULGARIA (BG)
CZECH REPUBLIC (CZ)
DENMARK (DK)
FINLAND (FI)
HUNGARY (HU)
INDIA (IN)
IRELAND (IE)
KOREA (REPUBLIC OF) (KR)
NORWAY (NO)
ROMANIA (RO)
SERBIA AND MONTENEGRO (CS)
SINGAPORE (SG)
SPAIN (ES)
UKRAINE (UA)

Publications and projects: TC 27 has already developed 28 publications (including IEC 841) and

has 6 active projects and 4 PWIs in its programme of work.

Working groups/Maintenance teams

- MT 17 – Maintenance of IEC 60519-10, IEC 62395-1 and IEC/TS 62395-2
- MT 18 – Maintenance of IEC 60519-1 and IEC 60398
- MT 19 – Maintenance of IEC 60397, IEC 60519-2 and IEC 60519-21
- MT 20 – Maintenance of IEC 60050-841
- MT 21 – Maintenance of IEC 60519-4, IEC 60676 and IEC 60683
- MT 22 – Maintenance of IEC 60239 and IEC/TR 52157
- MT 23 – Maintenance of IEC 60519-6 and IEC 61307
- MT 24 – Maintenance of IEC 60519-3, IEC 60519-11, IEC 61922 and IEC 62076
- MT 25 – Maintenance of IEC 60519-5 and IEC 60680
- MT 26 – Maintenance of IEC 60519-7 and IEC 60703
- MT 27 – Maintenance of IEC 60519-9 and IEC 61308
- MT 28 – Maintenance of IEC 60519-8 and IEC 60779

Liaisons

A: International Union for Electricity Applications (UIE);
 IEC: TC 18 (*to be established*), TC 20, SC 61B, TC 44, TC 64, TC 99 and TC 106;
 Co-operation with other IEC bodies: TC 26, TC 31, TC 34, TC 77, TC 112 and CISPR/SC B;
 interest in the activities of IEC Advisory Committees (ACOS and ACEC).

System Approach

		Subject area
Component committees (TC 27 – customer)	TC 20	Cables
	TC 33	Power capacitors
	SC 34A	Lamps for IR heating
	TC 44	<i>Under consideration</i>
	TC 64	Low-voltage electrical installations
System committees (TC 27 – supplier)	TC 18	Trace and surface heating on offshore units
Other committees	TC 16	Identification of conductors Coding principles for indicators and actuators
	TC 26	Electric welding
	TC 31	Trace and surface heating in potentially explosive atmospheres
	TC 44	Safety of machinery – general requirements
	TC 61 & SC 61B	Safety of household equipment Microwave ovens
	TC 64	Protection against electric shock, thermal effects and overcurrent
	TC 70	IP Code
	TC 99	Power installations exceeding 1 kV a.c.
	TC 104	Environmental testing
	TC 106	EMF
TC 112	EIS	

<p>B. Environment</p> <p>B.1 Business environment</p> <p>Due to the increasing demand for energy savings, product quality and environmental protection electroheating methods are becoming more and more challenging and essential for industry. A growing number of modern technologies are based on electroheating rather than on fossil fuel processes.</p> <p>B.2 Market demand</p> <p>Electroheating equipment offers an extremely wide scope of heating methods with ranges of power and frequencies that are unusual in other electrical equipment and there are numerous technological operations in which electroheating can be applied.</p> <p>Industrial electroheating with its various techniques is of increasing importance and makes indispensable the preparation of international standards dealing with safety rules, test and measurement methods of relevant equipment. Industrial electroheating equipment is manufactured in a limited number of countries however used in all countries having developed industry.</p> <p>B.3 Trends in technology and trade</p> <p>The main technical, economic and environmental advantages of electroheating methods are as follows:</p> <ul style="list-style-type: none"> - high quality of final products; - high production capacity and cut in production cost; - high efficiency and reliability in comparison with classical methods of heating; - possible full automatization of electroheating process; - high speed of heating due to high concentration of energy; - excellent environment protection; - good condition of work and safety for personnel. <p>New methods of heating, e.g. laser, microwave heating are in many cases the only answer to the requirements of many industrial technologies. Development of new materials for construction and advances in CAD enable new generation of electroheating equipment to be manufactured. Great impact on such devices have also new semiconductor sources of supply and microprocessor based methods of control. The introduction of equipment for voltage band 3 (not covered by existing standards) into industry creates a new severe challenge for TC 27. Another important mainspring for the development of industrial electroheating equipment is the search for special methods of precise heating in growing technologies, e.g. biotechnology and re-processing of waste and dangerous products.</p> <p>B.4 Ecological environment</p> <p>TC 27 is not directly concerned with the environmental aspects of manufacturing products. However, it pays attention to EM safety and potential hazards, which may be created by electroheating equipment and have a harmful impact on the environment.</p>
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<p>C. Work programme</p> <p>C.1 Current work</p> <p>TC 27 has 6 projects in its programme of work :</p> <p>New project:</p> <ul style="list-style-type: none"> - TS 62395-2/Ed. 1 - APUB (2008-01-31). <p>Revision projects:</p> <ul style="list-style-type: none"> - TS 60519-5/Ed. 1 - APUB (2008-01-31); - 60519-7/Ed. 2 - APUB (2008-01-31); - 60519-21/Ed. 2 - ACDV (2008-01-31); - TS 60680/Ed. 1 - APUB (2008-01-31); - 60703/Ed. 2 - ACDV (2008-01-31). <p>4 PWIs were registered according to discussions at the Braunschweig (Nov. 2006) and Padova (Nov. 2007) meetings:</p> <ul style="list-style-type: none"> - <i>Characteristics of electric infrared emitters for industrial electroheating equipment - Middle wave infrared emitters;</i>

- *Characteristics of electric infrared emitters for industrial electroheating equipment – Far infrared emitters;*
- *Electric infrared emitters for industrial electroheating equipment - Methods of measurement of infrared radiation on the wavelength range of 0,76 μm – 10 μm ;*
- Project IEC 60519-1/Ed. 4 (revision to be started in 2008).

C.2 Resources/infrastructure needed

Maintenance Teams, in particular MT 19, MT 25 and MT 26, require more active experts' support from P members and UIE to guarantee adequate maintenance and high quality of existing standards.

The Secretariat provides support for MTs as regards electronic communication between members.

The Secretariat run by the Polish NC receives very good administrative and technical support.

Co-operation of TC 27 with the UIE and other international and regional industrial societies broadens the potential resources of specialists involved in the preparation of standards from various areas of electroheating.

D. Future work

Under consideration is the preparation of new standards concerning:

- test methods and characteristics for electric infrared emitters;
- EMC issues related to electroheating equipment (via liaison with IEC TC 77 and CISPR);
- safety in different electroheating installations;
- direct current arc furnaces;
- high frequency heating installations (test methods);
- microwave heating installations (test methods);
- plasma torches;
- safety and reliability aspects of combining heavy current electroheating equipment with sophisticated methods of microprocessor methods of control.

Taking into account the predicted long-term evolution of the electroheating methods the following projects should be undertaken:

- electric surface heating systems;
- plasma arc furnace installations;
- laser heating installations;
- new electroslog remelting installations;
- new induction heating installations;
- stabilization of long arcs;
- environmental aspects of electroheating installations (e.g., electromagnetic radiation, noise, air pollution, toxicity);
- new casting systems (thixocasting, thixoforming) exploiting electromagnetic field.

E. Maintenance cycle

Publication no.	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
IEC 60050-841 Ed. 2.0	2004	2009	2013	TC 1 – TC 27/MT 20
IEC 60239 Ed. 4.0	2005	2009	2012	MT 22
IEC 60397 Ed. 2.0	1994	2009	2012	MT 19
IEC 60398 Ed. 2.0	1999	2008	2011	MT 18
IEC 60519-1 Ed. 3.0	2003	2007	2010	MT 18
IEC 60519-2 Ed. 3.0	2006	2008	2011	MT 19
IEC 60519-3 Ed. 3.0	2005	2007	2010	MT 24
IEC 60519-4 Ed. 3.0	2006	2009	2012	MT 21
IEC 60519-5 Ed. 1.0	1980	under revision	2008	MT 25
IEC 60519-6 Ed. 2.0	2002	2007	2010	MT 23
IEC 60519-7 Ed. 1.0	1983	under revision	2007	MT 26
IEC 60519-8 Ed. 2.0	2005	2008	2011	MT 28
IEC 60519-9 Ed. 2.0	2005	2008	2011	MT 27
IEC 60519-10 Ed. 1.0	2005	2008	2011	MT 17
IEC 60519-11 Ed. 2.0	2007	2009	2012	MT 24
IEC 60519-21 Ed. 1.0	1998	under revision	2008	MT 19
IEC 60676 Ed. 2.0	2002	2007	2010	MT 21

Publication no.	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
IEC 60680 Ed. 1.0	1980	under revision	2008	MT 25
IEC 60683 Ed. 1.0	1980	2007	2010	MT 21
IEC 60703 Ed. 1.0	1981	under revision	2007	MT 26
IEC 60779 Ed. 2.0	2005	2008	2011	MT 28
IEC 61307 Ed. 2.0	2006	2008	2011	MT 23
IEC 61308 Ed. 2.0	2005	2008	2011	MT 27
IEC 61922 Ed. 1.0	2002	2008	2011	MT 24
IEC 62076 Ed. 1.0	2006	2008	2011	MT 24
IEC/TR 62157 Ed. 1.0	2001	2009	2012	MT 22
IEC 62395-1 Ed. 1.0	2006	2008	2010	MT 17

Name or signature of the secretary

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