Title of TC
Lightning protection

A Background

A.1 Brief information on TC 81 activity since his establishment

TC 81 was established in Stockholm in June 1980. First publication IEC 61024-1 (1990) covered design and installation of Lightning Protection System (LPS) against strokes to buildings.

After publication of IEC 61024-1, the following publications were released:

- IEC 61024-1-1 (1993) relevant to lightning current parameters
- IEC 61024-1-2 (1998) as installation guide for LPS
- IEC 61312 series (4 publications 1995 - 1999) relevant to protection against electromagnetic effect of lightning current
- IEC 61662, a TR on risk of damage due to lightning
- IEC 61663 series (2 publications 1999 - 2001) dealing with the protection of telecommunication lines.

A complete reorganization of the TC 81 documents was begun in 2001. The documents were improved and reorganized into a single standard with 4 parts addressing the system aspects of lightning protection of structures as follows:

- IEC 62305 - 1 dealing with general principles
- IEC 62305 - 2 dealing with risk management including selection of protection measures
- IEC 62305 - 3 giving requirements for the design and installation of LPS
- IEC 62305 - 4 dealing with protection of electrical and electronic systems in a structure

New series (IEC 62561) of 7 publications from 8 foreseen dealing with product standard for LPS Components is currently under development.

IEC 61663 series (2 publications 1999 - 2001) dealing with the protection of telecommunication lines were withdrawn without replacement due also to its overlapping with ITU-T works.

A.2 Scope

To prepare international standards and guides for lightning protection for structures and buildings, as well for persons, installations, services and contents.

The objective of the standards will be:

- To develop requirements for design and installation of Lightning Protection Systems for structures,
- To develop requirements for protection against lightning of services entering the buildings, especially electrical and telecommunication lines,
• To develop basic requirements for protection against electromagnetic effects due to lightning,
• To give general guidance to IEC member countries that may have need of such requirements and
• To facilitate international exchanges that may be hampered by differences in national regulations.

B Business Environment

B.1 General

The international trade in lightning protection measures integrated in plants or buildings is of increasing importance: more than 600 million USD (2/3 of them in SPD), worldwide are estimated today. Consequential losses, where suitable protection measures are not provided, is some order of magnitude higher.

The business environment is affected by the worldwide economy as well as the availability of the worldwide market to the industry which is directly influenced by the acceptance of international standards developed by TC 81.

B.2 Market demand

The market of LPS system and components is moving from a national & regional market to a global market having three dominant segments - North America, Europe, and Asia-Pacific. This globalization creates a greater demand for harmonized national standards on components with quality conformance assessment and has supported the trend towards international standards.

The customers include, but are not limited to consumers, engineering companies, manufacturers, consultants, academia, and other Technical Committees (TCs and SCs) in IEC. There is a demand from other TCs such as SC 37A, TC 64, TC 82, SC 86A, TC 88, TC 100 for a guide on the best way to include the requirements of the TC 81 standards into other standards.

Many of the standards produced by the TC 81 become European (EN) standards and are referenced from other EN standards that are harmonized with European directives.

Designers, installers and manufacturers of components and devices are represented in the TC81 but their active participation is affected by the limited amount of available resources.

The IEC standards are used by several extra-European countries while the European countries prefer to adopt the IEC standards only once approved as CENELEC standards.

B.3 Trends in technology

It is not foreseen that there will be an important impact of technological innovation on the near future work of TC 81.

External lightning protection systems are validated by empirical experience. Improvement of knowledge on some matters such as protection models and influence of the new statistics coming from lightning location systems is desirable.

Trends in technology are resulting in more sensitive electronic equipment in structures. Embedded computers are also being installed in more and more electrotechnical equipment. This trend demands that TC 81 develop standards that address this increased sensitivity to lightning effects.

With the increase in cellular communications and wireless technologies, an increasing number of tall structures are installing towers on the roof and renting roof space for transmitters. This trend is increasing the demand for improved lightning protection methods to be considered such as the use of isolating materials.
Information technology is continuing to evolve to where insurance companies and authorities having jurisdictions are developing data bases that can be accessed to track lightning vulnerabilities. Such technologies can assist in future evolutions of lightning risk assessments in the Risk Management standard.

TC 81 encourages the International Scientific Community as well as the Industry, to continue investigating and innovating in the lightning protection field.

B.4 Market trends

Along with a trend toward an increasing need for improved product testing requirements for the LPS components manufacturers, a recent trend in many markets, (notably North America and Europe) is looking to storm detection devices as an effective tool to reduce risk due to lightning.

B.5 Ecological environment

A very little impact on environment is estimated.

C System approach aspects

TC 81 will actively continue to promote the establishment of liaisons to other committees; cooperation with system committees is still in our focus.

<table>
<thead>
<tr>
<th>TC 81 as a customer of standards</th>
<th>SC 37A</th>
<th>Low-voltage surge protective devices</th>
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<tbody>
<tr>
<td>TC 81 as a customer/supplier of standards</td>
<td>TC 64</td>
<td>Electrical installations and protection against electric shock</td>
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<tr>
<td>TC 81 as a supplier of standards</td>
<td>TC 82</td>
<td>Solar photovoltaic energy systems</td>
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<td>TC 86A</td>
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<td>TC 88</td>
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<td></td>
<td>TC 100</td>
<td>Audio, video and multimedia systems and equipment</td>
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Cooperation established:
- Exchange documents, e.g. AJWG/SC 37A, TC 64, SC 86A, IEEE/SPDC MT3
- Liaison officers, experts participating in product/system committees, e.g. TC 64, SC 37A.
- Experts working in other organisation and reporting to TC 81 for information, e.g. ITU-T, CENELEC

D Objectives and strategies (3 to 5 years)

D.1 Objectives

1. To expand the use and knowledge of TC 81’s publications in those countries not having conflicting or no standards in this area of activity.

2. Keep TC 81 standards up to date to reflect user requirements both in the marketplace and customer IEC and ISO Technical committees.

3. Develop a complete "System standards" by preparing an updated Edition of IEC 62305 series covering system aspects of lightning protection of structures.

4. Develop a set of "Product standards" by preparing the first Edition of IEC 62561 series covering the requirements for components of lightning protection systems (LPS) for structures.

D.2 Strategies

1. Identify & review standards developed by sister committees to incorporate their best practices into TC 81 documents.
2. Solve in AJWG SC37A, TC 64, TC 81 problems relevant overlapping matters and conflicting requirements.

3. Identify additional guidance documents that would be useful to project leaders.

4. Increase the knowledge of TC 81’s publications – by means of presentations at seminars, trade shows, writing articles etc.

**E Action plan**

Detailed action plan with milestones to address objective and strategies is reported in the table below.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Action</th>
<th>Target date</th>
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<tbody>
<tr>
<td>1. To expand the use and knowledge of TC 81’s publications in those countries not having conflicting or no standards in this area of activity.</td>
<td>To consider ways to promoting TC 81 standards to NCs and industry through workshops, presentation at international conferences and trade shows under the IEC logo.</td>
<td>Ongoing, starting from issue of IEC 62305, Ed.2.</td>
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<tr>
<td>2. Keep TC 81 standards up to date to reflect user requirements both in the marketplace and customer IEC and ISO Technical committees.</td>
<td>Identify &amp; review standards developed by sister committees to incorporate their best practices into TC 81 documents.</td>
<td>Ongoing taking in consideration the stability date of standards..</td>
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<tr>
<td>3. Develop a complete &quot;System standards&quot; by preparing an updated Edition of IEC 62305 series covering system aspects of lightning protection of structures.</td>
<td>MT 3, MT 8 and MT 9 are charged with the development of IEC 62305, Ed.2. To continue to attract more expert from lightning protection to increase to pool of knowledge.</td>
<td>Spring 2011. Time frame indicated by the Maintenance Cycle.</td>
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<tr>
<td>4. Develop a set of &quot;Product standards&quot; by preparing the first Edition of IEC 62561 series covering the requirements for components of lightning protection systems (LPS) for structures.</td>
<td>WG 11 is charged with the development of IEC 62561, Ed.1. A greater participation of extra EU experts will be encouraged.</td>
<td>Spring 2011 – Summer 2012. Time frame indicated by the Programme of Work.</td>
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**F Useful links to IEC web site**

IEC/TC 81 dashboard giving access to Membership, TC/SC Officers, Scope, Liaisons, WG/MT/PT structure, Publications issued along with their stability dates, Work Programme and similar information for SCs, if any.

Name or signature of the secretary

_G.B. Lo Piparo_