TRANSLATION OF THE TERMINOLOGY BULGARIAN STATE STANDARDS IN BULGARIAN LANGUAGE - NECESSARY CONDITION TO IMPROVE THE QUALITY OF EDUCATION PROCESS AND BULGARIAN TECHNICAL LITERATURE

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Abstract: *This report examined some existing differences between the established traditional graphic symbols and terms in Bulgarian technical literature and harmonized with European standards, Bulgarian state standards. This examination is done to clarify the problems that arise in translating the standards of Bulgarian language and to specify which standards are most important for improving the quality of technical education and technical literature in Bulgarian in the field of electrical engineering. For this purpose analyzed the activities of key organizations (International Organization for Standardization, ISO), (International Electrotechnical Commission, IEC), (traditionally French - Bureau International des Poids et Mesures, BIPM), (International Telecommunication Union, ITU), dealing with standardization, their relationships and organization of the standardization process. As a result of the examination are given Bulgarian state standards, the Bulgarian translation of which is essential. After analyzing the structure and operation of the Bulgarian Institute for Standardization (BDS, Български институт за стандартизация, БИС) is proposed to establish a working group to organize the translation of terminology standards. At the end of the report indicated that the implementation of this activity in deadlines of priority it is necessary to search for an external funding for BDS.*

Keywords: *standards, technical education, technical literature.*

1. INTRODUCTION

International Standards bring technological, economic and societal benefits. They help to harmonize technical specifications of products and services, making industry more efficient and breaking down barriers to international trade. International Standards also contribute effectively to sustainability, by providing good practices on the use of technologies and the management of processes affecting economic, social and environmental aspects.

Educational institutions are increasingly recognizing these benefits and international standardization features in many curricula. They have a vital contribution to raising awareness about standardization and the desire to support the work of standardization bodies.

Globalization of science and technology requires constant updating of standardized terms and definitions in order to easier, clearer and of course uniquely identify the relevant information.

2. PROBLEM STATEMENT

Currently in Europe, but also worldwide run harmonization of standards. In Bulgaria introduces harmonized European standards as the standard text in English, of a Bulgarian language is translated only the title of the standard.

The International Organization for Standardization (ISO) [1] is an international standard-setting body composed of representatives from various national standards organizations. Founded on 23 February 1947, the organization promotes worldwide proprietary, industrial and commercial standards. It is headquartered in Geneva, Switzerland, and as of 2013 works in 164 countries. It was one of the first organizations granted general consultative status with the United Nations Economic and Social Council.

The International Electrotechnical Commission (IEC; Commission électrotechnique internationale (CEI), in French) is a non-profit, non-governmental international standards organization that prepares and publishes International Standards for all electrical, electronic and related technologies – collectively known as "electrotechnology" [2]. The IEC standards cover a vast range of technologies from power generation, transmission and distribution to home appliances and office equipment, semiconductors, fibre optics, batteries, solar energy, nanotechnology and marine energy as well as many others. The IEC also manages three global conformity assessment systems that certify whether equipment, system or components conform to its International Standards. The IEC is founded in 1906.

The ITU coordinates the shared global use of the radio spectrum, promotes international cooperation in assigning satellite orbits, works to improve telecommunication infrastructure in the developing world, and assists in the development and coordination of worldwide technical standards [3] . The ITU is active in areas including broadband Internet, latest-generation wireless technologies, aeronautical and maritime navigation, radio astronomy, satellite-based meteorology, convergence in fixed-mobile phone, Internet access, data, voice, TV broadcasting, and next-generation networks. ITU was formed in 1865 at the International Telegraph Convention. ITU became a United Nations specialized agency in 1947. Its membership includes 193 Member States and around 700 public and private sector companies as well as international and regional telecommunication entities, known as Sector Members and Associates, which undertake most of the work of each Sector.

The International Bureau of Weights and Measures (French: Bureau international des poids et mesures), is an international standards organisation, one of three such organisations established to maintain the International System of Units (SI) under the terms of the Metre Convention (Convention du Mètre). The organisation is usually referred to by its French initialism, BIPM [4].

The other organisations that maintain the SI system, also known by their French initialisms are the General Conference on Weights and Measures (French: Conférence générale des poids et mesures) (CGPM) [5] and the International Committee for Weights and Measures (French: Comité international des poids et mesures) (CIPM) [6].

The above organizations organize standardization at world level (Fig. 1 – W.L.).

At the European level (Figure 1. - E.L.) standardization involved the following organizations:

The European Committee for Standardization (CEN, French: Comité Européen de Normalisation) is a non-profit organisation whose mission is to foster the European economy in global trading, the welfare of European citizens and the environment by providing an efficient infrastructure to interested parties for the development, maintenance and distribution of coherent sets of standards and specifications [7].

The CEN was founded in 1961. Its thirty three national members work together to develop European Standards (ENs) in various sectors to build a European internal market for goods and services and to position Europe in the global economy. CEN is officially recognised as a European standards body by the European Union; the other official European standards bodies are the European Committee for Electrotechnical Standardization (CENELEC) [8] and the European Telecommunications Standards Institute (ETSI) [9]. The ETSI is a non-profit organization that establishes telecommunications standards for Europe. The CENELEC was founded in 1973 and is responsible for European standardization in the area of electrical engineering.

At the national Bulgarian level (Figure 1. - N.L.). standardization involved the following organizations:

The Bulgarian Institute for Standardization (BDS) is the national executive body for standardization in the Republic of Bulgaria [10]. BDS develops, accepts and approves Bulgarian standards, participates in the work of international and European organizations for standardization, as its main target is to defend the Bulgarian interests in that sphere.

Bulgarian Institute of Metrology (BIM) is a state independent body to the Council of Ministers according to the Law on Measurements and the Rules of Procedure of BIM (Decree No 109 of the Council of Ministers dated 8 May 2006, published in the State Gazette No 40 of 16 May, 2006) [11].

All organizations under the leadership of ISO use the same common symbols, terms, graphics, script symbols, etc.

Basic terminology standards are:

БДС EN ISO 80000-(1-14) Quantities and units

БДС EN ISO 80000-1:2013 Quantities and units - Part 1: General

БДС EN ISO 80000-13:2008 Quantities and units - Part 13: Information science and technology.

БДС EN 80000-6:2008 Quantities and units - Part 6: Electromagnetism

Series of standards БДС EN 60027-1 to 7 refers to letter symbols used in electrical engineering.

These standards here are only available in English not in Bulgarian.

Due to repeated changes in standardization policy in Bulgaria in the period since 1990 to 2006. In the technical literature are most different terms mean the same thing.

In two previous publications the author has specified the differently in Bulgarian literature and newly introduced technical standards [12], [13].

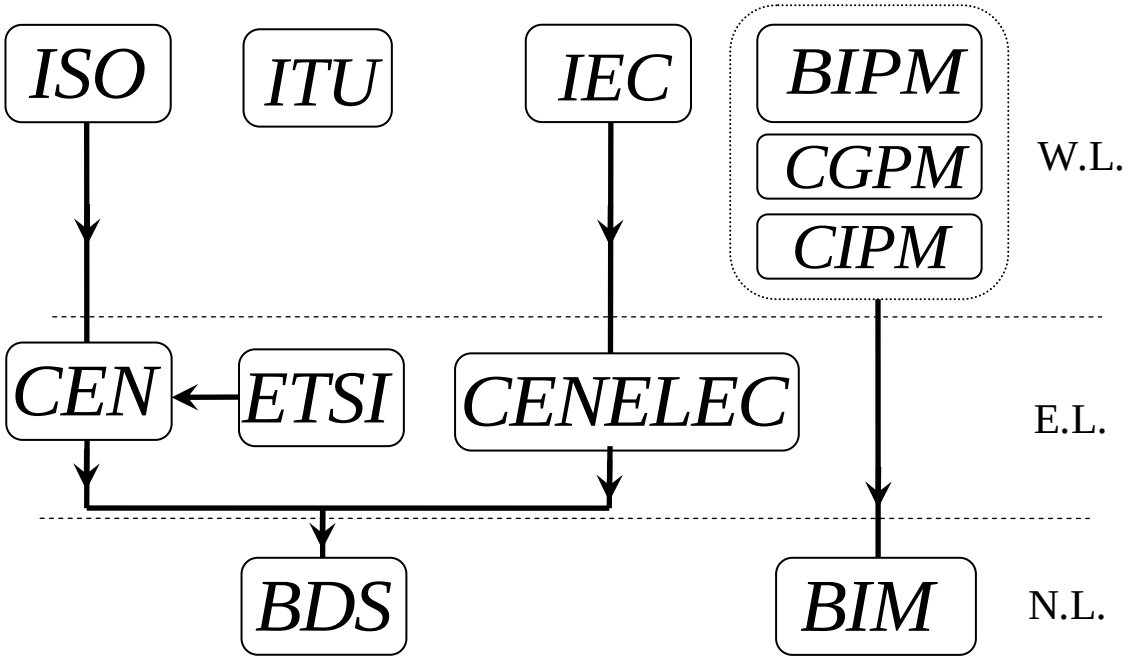

Figure1.

In education and technical literature in order to avoid this ambiguity needs to be translated into Bulgarian language basic terminology standards in the field of electrical engineering. For electrical engineering with the general standard terminology glossary of Electrical Engineering IEC 60050 (Elektropediya). This standard is very high. For the needs of the fundamental disciplines is sufficient to translate only the initial sections, from 101 to 314

101 Mathematics
102 Mathematics - General concepts and linear algebra
103 Mathematics - Functions
112 Quantities and units
113 Physics for electrotechnology
114 Electrochemistry
121 Electromagnetism
131 Circuit theory
141 Polyphase systems and circuits
151 Electrical and magnetic devices
161 Electromagnetic compatibility
191 Dependability and quality of service
195 Earthing and protection against electric shock
212 Electrical insulating solids, liquids and gases
221 Magnetic materials and components
311 Electrical and electronic measurements - General terms relating to measurements

312 Electrical and electronic measurements - General terms relating to electrical measurements
313 Electrical and electronic measurements - Types of electrical measuring instruments
314 Electrical and electronic measurements - Specific terms according to the type of instrument

For electrical engineering it is important to be translated especially chapters 101 to 151 and from 311 to 314.

Some of the sections of the standard have been translated into Bulgarian language. These are

БДС IEC 60050-161:2001 Electromagnetic compatibility
БДС IEC 60050-321:2003 Instrument transformers
БДС IEC 60050-411:1999 Rotating machinery
БДС IEC 60050-441:2007 Switchgear, controlgear and fuses
БДС IEC 60050-446:2010 Elementary relays
БДС IEC 60050-481:1999 Primary cells and batteries.
БДС IEC 60050-486:1997 secondary cells and batteries
IEC 60050-482: Primary and secondary cells and batteries
БДС IEC 60050-601:2003 Generation, transmission and distribution of electricity – General; -602:2006 …– Generation; -603:2004…- Power systems planning and management.
БДС IEC 60050-826:2002 Electrical installations.

In the translated standards meet inaccurate translations of terms that will be seen in the translation of the other sections that are in the beginning. There are translated standards and the original standard of then has been changed.

Important for theoretical electrical engineering is to be translated the standard БДС EN 60375:2006 Conventions concerning electric and magnetic circuits. (IEC 60375:2003), where defined terms and definitions differ significantly from the established in the technical literature until now.

Development (translation) of standards is carried out by branch technical committees at the request of interested users. Membership in these committees is voluntary. Members of the technical committees can be persons nominated by companies and organizations interested in the work of relevant technical committee. The membership fee is paid by the enterprise (organization), offered the member. The text of the standards adopt by a vote of the members of the relevant Technical Committee. The terms that are used in a number of standards shall be described in the terminology standards. At present the main terminological standards are not maintained in Bulgarian.

From the preliminary studies in BDS, for the possibility of translation of terminology standards, concludes that it is possible if make special ad hoc working group, but the financing of this group at the moment can only be done with funds external to the BDS.

3. RESULTS

The report is a survey of translated in Bulgarian terminological standards in electrical engineering. As a result of the study made by the author are indicated the most important Bulgarian standards, which must be translated into Bulgarian language. In making this translation will determine many of the terms that currently have modified definitions. This will lead to a significant improvement of the educational process in electrical fields and improve the quality of the electrical literature. The translation of the terminology of the standards can be done by a specially created working group. Funding for this group must be with funds outside the BDS.

References

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[2] IEC International Electrotechnical Commission. Web: www.iec.ch
[3] ITU International Telecommunication Union. Web: www.itu.int/
[4] BIPM Bureau International des Poids et Mesures. Web: www.bipm.org
[5] CGPM General Conference on Weights and Measures Web: www.bipm.org/en/convention/cgpm/
[6] CIPM International Committee for Weights and Measures. Web: www.bipm.org/en/committees/cipm/
[7] CEN European Committee for Standardization. Web: https://www.cen.eu/
[8] CENELEC European Committee for Standardization. Web: https://www.cenelec.eu/
[9] ETSI European Telecommunications Standards Institute. Web: www.etsi.org/
[10] BDS Bulgarian institute for standardization. Web: www.bds-bg.org/
[11] BIM Bulgarian Institute of Metrology. Web: www.bim.government.bg/
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