

BUSINESS PLAN

CENELEC/TC or SC 55	Secretariat IT	Date 2023-1-10
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Please ensure this form is annexed to the TC Report to the CENELEC Technical Board if it has been prepared during a meeting, or sent to CCMC promptly after its contents have been agreed by the Committee by correspondence.

TC or SC title: Winding wires

A Background

Technical Committee N° 55 was created in 2000 and has met regularly to develop and maintain standards for winding wires.

Scope: To follow up IEC activities in the light of European needs for the field of winding wires.

To follow up environmental aspects taking into account the European Directives.

Preparation of new European Standards, if necessary, to cover particular European aspects.

Participating (P) Members: AT, BE, BG, CH, CZ, DE, EC, ES, FI, FR, GB, GR, HR, HU, IE, IT, LT, MT, NO, PL, PT, RO, RS, SE, SI, XS, CCMC and EC (Observers).

Liaisons: No formal liaisons at this time. These will be established when there are specific issues of common interest with other TC's.

B Business Environment

B.1 General

In Europe the winding wire industry is a mature industry, one that continually evolves to meet the demands of expanding applications of its products. Present standards reflect the consensus of the members for the technology and materials represented. Changes are based on new technology as they apply to methods of test and material for products and packaging, new product designs, or in addressing environmental and health considerations. Winding wires are used widely throughout a broad spectrum of electrotechnical industries mainly for creating electromagnetic fields and transforming electrical energy. The range of applications of winding wires extends from the use of extremely fine wires for electronics and telecommunications applications, to the use of large insulated and covered wires for large motor and generators and power transformers industries. Demand and use of winding wires is slowly increasing worldwide as industrialization is proceeding and demand for electricity and more automated solutions grows particularly in less industrialized regions. Electrification of vehicles is by today an increasingly important factor for new properties and testing of winding wires in large volumes.

B.2 Market demand

The Committee continually analyzes and incorporates in its standards, the trends and changes in European market demand for all types of winding wires traded between countries.

Special attention is paid from the committee to older standards with a state-of-the-art fixed some years ago. These standards need to be adjusted in the light of technological developments in the process and product market conditions.

Just because winding wires are often seen as commodities, it is important that special, even now improved, properties of the wires are stipulated in the standards, to make it clear that this is a highly technical product with outstanding characteristics.

EU is requiring much more efficient EuP: Energy using Products, with Eco Design Directives. Winding wires industries are requested to collaborate with machine manufacturers for improving the efficiency of EuP.

The automotive industry is driving additional technological trends due to compact, efficient traction motors, some of which are required to operate at higher voltages.

B.3 Trends in technology

The winding wire industry is a very mature one, because winding wires are commodities. This is because

in the present day market, the industry is present and well developed virtually everywhere in the world. Winding wires are not end products, but components used by customers as materials in electrical equipment for creating electromagnetic fields and transforming electrical energy.

TC 55 expects the development of new specifications for higher thermal class winding wires due to manufacturing technology advancements as well as wires that are resistant to high voltage pulses. In the coming years, the industry hopes to introduce new generation winding wires having nanotechnology-enabled dielectrics with increased functionality for high-stress electrical environments and special winding wires for automotive.

B.4 Market trends

Since the winding wire industry is strongly connected with the trends of end user markets (automotive, domestic appliances, electrical rotating machinery, transformers, other electrical equipment), the particular technical demands of the end users are very influential on the market. One recent trend was the growing demand for aluminium winding wires and winding wires for automotive purposes. New specifications for rectangular aluminium wires has been developed to respond to this demand while attention to the market for the development of small rectangular wires for automotive. As such, CLC TC 55 strives to maintain a cooperative relationship with main end user representatives on the Committee and with other relevant CLC and IEC TC's, in order to open new scenarios in the future of the industry, to:

- 1) Maintain an awareness of new trends in relevant technology to the winding wires industry; and
- 2) Support the use of environmentally sound materials and processes in the production and use of winding wires.

Ongoing participation in the work of the Technical Committee by producers, suppliers and users is highly encouraged.

B.5 Ecological environment

TC 55 endeavours to give due consideration to the effects that any standard it publishes and maintains may have on the environment. Particular attention and decisions have been taken in the preparation of test methods involving possible dangers to the test equipment operators, including the use of lead in soldering tests, and of refrigerants and oils in chemical tests. These methods provide precautions relating to exhaust fumes and hot temperatures.

In recent years, with the increased cost of copper, customers have attempted to limit their costs by reducing conductor sizes to those below established wire cross-sectional area tolerances. TC 55 strongly recommends the manufacture of energy efficient equipment, and for manufacturers of electrical and electronic equipment to maintain technically correct designs in order to avoid excessive heat dissipation over the life of the equipment, to sustain protection of the environment and energy savings.

Examples of this support through standardization include:

- 1) Standardization of special alloys (for soldering the enameled wires) not containing lead or other potentially hazardous metals, as specified in the IEC 60851-4;
- 2) the recognition of environmentally friendly refrigerants in the EN 60851-4 Resistance to refrigerants test procedure;
- 3) increased activity toward environmental protection led to lower exposition limits of the solvent NMP (N-Methylpyrrolidone) (in the EU), but compliance can be achieved by existing winding wire manufacturers.

Ongoing participation in the work of the Technical Committee and its Working Groups by producers, suppliers and users is highly encouraged. TC 55 actions to take place:

- 1) Support test methods respecting environmental protection and human health.
- 2) Collaborate with the chemical industry in order to find alternative solvents and components not containing NMP or other environmentally hazardous solvents.

TC 55 will also consider future amendments to standards for winding wire spools to encourage recycling. Since the main work of the Committee is to develop specifications that define the performance properties of winding wires, users are provided with the information needed to select a type of wire that both meets the appropriate functional requirements and has the least impact on the environment during processing or end use. In the broader sense, the Committee takes into consideration, the consequences of its decisions upon human health and well being, energy efficiency and renewable energies.

B.6 Involvement of societal stakeholders

TC 55 identifies workers and environmental stakeholders as societal stakeholders. Since the winding wires are components of final products, consumers are not directly involved in TC 55 standards management. We encourage the use of Guide 20 to manage participation to standard development.

B.7 Involvement of SMEs

SMEs use winding wires mainly for maintenance of motors, transformers and other appliances. They are also involved in production of special appliances in small industrial scale. SMEs need simple standards, easy for consultation. CLC TC 55 is operating inside IEC to perform and modify standards for the use of everybody. NC are requested to encourage SMEs to be involved at national level in developing standards.

C System approach aspects

In general, the winding wire industry serves the role of material supplier to end product manufacturing industries represented in the following TC's:

TC 02, Rotating machinery

TC 14, Power transformers

IEC SC 61C, Safety of refrigeration appliances for household and commercial use

TC 96, Transformers, reactors, power supply units, and similar products for low voltage up to 1100 V

The winding wire industry is a supplier to, but also the customer of sectors represented in the following TC's:

TC 15, Solid electrical insulating materials

TC 112, Evaluation and Qualification of Electrical Insulating Materials and Systems

TC 113, Nanotechnology standardization for electrical and electronic products and systems

Cooperation with these TC's is demonstrated through the exchange of documents and liaisons.

D Objectives and strategies (3 to 5 years)

Consideration will be given for new technologies, user requirements and environmental or economic influences. In an effort to improve the application and ease of use of the standards developed by the Committee, the structure of these standards is subject to review.

Another concentration of work is in harmonization of the requirements of regional standards development bodies and International Standardization bodies like IEC, NEMA and JIS, to incorporate new or modify existing winding wire test methods, which will better satisfy more market areas so that the EN 60851 series of standards is more broadly accepted and used.

Even if a special focus is on new developments - as described below - so special attention should be paid to the adjustment of applicable standards to technological developments and improvements. Furthermore, the established quality levels must necessarily be adapted to the current state of the art. It's reported goal of CLC / TC 55 to take care that the customer gets - with reference to the applicable standards - a generally acceptable level of winding wire standards and must not rely on customized standards.

Standardization of aluminium wires (round and rectangular), covered by papers, is also required by the European market. Endurance tests for wires resistant to high frequency voltage impulses and requirements for very small rectangular wires for the automotive market, as required by the Market, are considered for the future standardization.

Finally, TC 55 will continually examine its Programme of Work to withdraw specifications that are either no longer market relevant, or are outdated due to manufacturing capabilities and technology. In 2002 TC 55 withdrew ten EN Standards and suggested in 2007 to withdraw seven IEC specifications. European TC's actions brought in 2012 to the withdrawal from IEC of two standards designated with temperature classes (L) over than their numerical designations. The position of TC 55 is that these specifications, adopted in the 1990's for use in developing countries, have outlived their usefulness and the widespread export of winding wires made to these specifications has led to equipment reliability problems. New withdrawals will be suggested to IEC.

Published standards during 2019-2022:

- new Standard of wire for high temperature.
- new Standard for paper covered round and rectangular, copper and aluminium wires
- modified standards for winding wires regarding state of the art specifications.
- maintenance of existing standards
- new standards for enamelled rectangular copper wires, with a bonding layer

E Action plan

Permanent action: to work inside IEC to harmonize International Standards like NEMA and JIS.

To be developed and published before 2025 (in addition to ordinary maintenance):

- Publish new electrical endurance tests under high frequency voltage impulses, after conducting round robin tests to verify reproducibility and repeatability of procedure - 2024
- Fill standardization gaps in existing specifications, through the advance of current approval process steps - 2024

F Useful links to CENELEC web site

TC home page giving access to Membership, TC/SC Officers, Scope, Publications, Work programme [password-protected area].

www.cencenelec.eu and link to My Expert Area - Cenelec Expert Area, giving access to different tools like Projex-Online, Expert Management System, Electronic Voting, QuickSearch and Collaboration Platform (password-protected area)

Antonio Martinengo - TC 55 Secretary

Result of voting

Vote Information

Vote reference	TC55/Sec0062/DV
Vote type	CENELEC CIV
English title	TC 55 Business Plan
Opening date	2023-01-10
Closing date	2023-02-10
	In the Hyperlink please find the following documents: TC55/Sec0062/DV - Business plan of CLC/TC55 civ_template TC 55 BP - form for CIV (Committee internal voting) document. In this form you will find the explanation of how to vote for the CLC/TC 55 Business plan. If you never used the CIV please read the user guide before.

Note

Answer to Q.1:

**Do you approve business plan circulated as TC55/Sec0062/DV?
(Yes / No / Abstain)**

8	Y	Austria; Croatia; France; Germany; Hungary; Italy; Romania; Spain
4	A	Czech Republic; Finland; Lithuania; Türkiye