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Industrial systems, installations and equipment and industrial products — Structuring principles and reference designations —

Part 10:
Power supply systems

Systèmes industriels, installations et appareils, et produits industriels — Principes de structuration et désignations de référence —

Partie 10: Centrales électriques

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 10, *Technical product documentation*, Subcommittee SC 10, *Process plant documentation*, in cooperation with the Technical Committee IEC/TC 3, *Information structures and elements, identification and marking principles, documentation and graphical symbols*.

This document cancels and replaces ISO/TS 81346-10:2015, which has been technically revised.

The main changes are as follows:

— converted to an International Standard;

— structure adapted to that of IEC 81346-1;

— only requirements constituting a modification or addition to those of IEC 81346-1 have been included;

— reference is made to ISO 81346-12, with which this document is intended to be used, if needed;

— the abbreviation RDS-PS is introduced for reference designation system for power supply systems, providing an identifier to reference designation systems according to this document.

Documents in the 80000 to 89999 range of reference numbers are developed by collaboration between ISO and IEC.

A list of all parts in the ISO 81346 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document considers and supports planning, erection, utilization and operation of power supply systems. The application of a reference designation system for power supply systems (RDS-PS) can lead to restructuring and reorientation of these activities and thereby offers chances and potential of increasing efficiency and economization.

This document has shifted from the focus of the previous technical specification (ISO/TS 81346-10:2015), where fixed syntax and focus on coding mechanism were dominant, towards full flexibility in dividing systems into system elements in a non-fixed manner (i.e. no fixed syntax), using one or more aspects at the same time to designate objects of interest. Locations can also be designated accordingly in order to reference the location of objects. Annex E provides a mapping of letter codes between ISO/TS 81346-10:2015 and this document.

Furthermore, this document is aligned with ISO 81346-12 for construction works (referred to as RDS-CW), in order to support harmonization of methods and principles for forming reference designations across the industry-specific applications of the ISO 81346 series.

The following advantages of designation systems in accordance with this document and the IEC/ISO 81346 series in general will become increasingly important in the future. The following should be noted:

— The reference designation system can be applied in several technical fields in the same way and is not designed for one field only. Therefore, process, mechanical, electrical and structural design, for example, can be treated in the same way, which is a basis for company-wide synergy effects.

— The reference designation system allows for integrating any kind of systems and components without changing the once-defined designations.

— The reference designation is not bound to a fixed structural pattern. Thus, the designation system is vertically and horizontally expansible, which can make the interpretability in some cases quite complex. Therefore, an exact documentation and description of the designation system is important when it is applied.

— The application of different aspects allows for the designation of system elements by function, realizing products or location independently of each other.

— The different aspects used for structuring and the possibility of creating relations between objects represented in these structures offer search and filter criteria and information correlations in a much greater variety than before.

The users of this document will be able to manage objects and related properties in a more efficient and consistent way. When implemented, information across various data processing systems can be handled in an unambiguous way. Other information structures besides those described in this document are:

— organization structures;

— utilization structures;

— cost structures;

— performance structures;

— real estate structures.

This document is applicable for all types of assets used for energy conversion and provision to transmission, distribution or local energy networks, for example:

— large central conventional or renewable power generation systems

  — thermal power plants;

  - hydropower plants;
  - nuclear power plants;
  - onshore and offshore wind farms;
  - photovoltaic and solar power plants;
  - geothermal plants;
- distributed and/or renewable energy resources
  - wind turbine generators;
  - diesel and gas generators;
  - photovoltaic, solar thermal and combined heat and power (CHP) units;
  - generation from combustible renewables;
- storage or a combination of storage technologies
  - thermal storage;
  - electrochemical storage;
  - electrical storage;
  - mechanical storage;
- power to X technologies
  - power to gas;
  - power to liquid;
  - power to heat;
- transmission and distribution systems, including technical equipment provided by such systems.

New technologies with the purpose of reducing CO_2 emissions, such as coal gasification, air separation and amine scrubbing, are also covered by this document. It applies, furthermore, to digital process control systems, operational management systems (e.g. asset management systems and virtual power plants used for demand response or aggregation) and the designation of related application software.

Due to the natural diversification of international energy infrastructures, this document will enable and support the establishment of regional or branch-specific application profiles in order to provide the required level of interoperability of designations among different stakeholder groups.