



SLOVENSKI STANDARD

SIST EN 62765-1:2018

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Jedrske elektrarne - Instrumenti in krmilje, pomembni za varnost - Upravljanje staranja senzorjev in oddajnikov - 1. del: Dajalniki tlaka (IEC 62765-1:2015)

Nuclear power plants - Instrumentation and control important to safety - Management of ageing of sensors and transmitters - Part 1: Pressure transmitters (IEC 62765-1:2015)

Kernkraftwerke - Leittechnik mit sicherheitstechnischer Bedeutung - Alterungsmanagement von Sensoren und Transmittern - Teil 1: Drucktransmitter (IEC 62765-1:2015)

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Centrales nucléaires de puissance - Instrumentation et contrôle-commande importants pour la sûreté - Gestion du vieillissement des capteurs et des transmetteurs - Partie 1: Transmetteurs de pression (IEC 62765-1:2015)

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EUROPEAN STANDARD

EN 62765-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2017

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English Version

**Nuclear powers plants - Instrumentation and control important
to safety - Management of ageing of sensors and transmitters -
Part 1: Pressure transmitters
(IEC 62765-1:2015)**

Centrales nucléaires de puissance - Instrumentation et
contrôle-commande importants pour la sûreté - Gestion du
vieillissement des capteurs et des transmetteurs - Partie 1:
Transmetteurs de pression
(IEC 62765-1:2015)

Kernkraftwerke - Leittechnik mit sicherheitstechnischer
Bedeutung - Alterungsmanagement von Sensoren und
Transmittern - Teil 1: Drucktransmitter
(IEC 62765-1:2015)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

EN 62765-1:2017**European foreword**

This document (EN 62765-1:2017) consists of the text of IEC 62765-1:2015 prepared by SC 45A "Instrumentation, control and electrical systems of nuclear facilities" of IEC/TC 45 "Nuclear instrumentation".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-09-11
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-09-11

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Endorsement notice

The text of the International Standard IEC 62765-1:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61508-1	NOTE	Harmonized as EN 61508-1.
IEC 61508-2	NOTE	Harmonized as EN 61508-2.
IEC 61508-3	NOTE	Harmonized as EN 61508-3.
IEC 61508-4	NOTE	Harmonized as EN 61508-4.
IEC 61513	NOTE	Harmonized as EN 61513.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60671	-	Nuclear power plants - Instrumentation and control systems important to safety - Surveillance testing	EN 60671	-
IEC 60780	-	Nuclear power plants - Electrical equipment of the safety system - Qualification	-	-
IEC 61226	-	Nuclear power plants - Instrumentation and control important to safety - Classification of instrumentation and control functions	EN 61226	-
IEC 62138	-	Nuclear power plants - Instrumentation and control important for safety - Software aspects for computer-based systems performing category B or C functions	EN 62138	-
IEC 62342	-	Nuclear power plants - Instrumentation and control systems important to safety - Management of ageing	-	-
IEC 62385	2007	Nuclear power plants - Instrumentation and control important to safety - Methods for assessing the performance of safety system instrument channels	-	-
IEC 62465	2010	Nuclear power plants - Instrumentation and control important to safety - Management of ageing of electrical cabling systems	-	-

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INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Nuclear power plants – Instrumentation and control important to safety –
Management of ageing of sensors and transmitters –
Part 1: Pressure transmitters**

**Centrales nucléaires de puissance – Instrumentation et contrôle-commande
importants pour la sûreté – Gestion du vieillissement des capteurs et des
transmetteurs –
Partie 1: Transmetteurs de pression**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**NUCLEAR POWERS PLANTS –
INSTRUMENTATION AND CONTROL
IMPORTANT TO SAFETY – MANAGEMENT
OF AGEING OF SENSORS AND TRANSMITTERS –**

Part 1: Pressure transmitters

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62765-1 has been prepared by subcommittee 45A: Instrumentation, control and electrical systems of nuclear facilities, of IEC technical committee 45: Nuclear instrumentation.

The text of this standard is based on the following documents:

FDIS	Report on voting
45A/1001/FDIS	45A/1015/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

a) Technical background, main issues and organisation of the standard

With the majority of NPPs over 20 years old, the management of ageing of transmitters (pressure, level, flow) is currently a relevant topic, especially for those plants that have extended their operating licenses or are considering this option. This standard is intended to be used by operators of NPPs (utilities), systems evaluators, and by licensors.

b) Situation of the current standard in the structure of the IEC SC 45A standard series

IEC 62765 is the third level IEC SC 45A document comprising several parts to tackle the specific issue of management of ageing of sensors and transmitters in nuclear power plants (NPPs) for I&C systems important to safety. Part 1 of IEC 62765 is dedicated to pressure transmitters.

IEC 62342 is the second level standard of SC 45A covering the domain of the management of ageing of nuclear instrumentation systems used in NPPs to perform functions important to safety. IEC 62342 is the introduction to a series of standards to be developed by IEC SC 45A covering the management of ageing of specific I&C systems or components such as electrical cabling systems (IEC 62465), and sensors and transmitters (IEC 62765).

IEC 62765 is to be read in association with IEC 62342 and IEC/TR 62096, which is the appropriate IEC SC 45A Technical Report that provides guidance on the decision for modernisation when management of ageing techniques are no longer successful.

For more details on the structure of the IEC SC 45A standard series, see item d) of this introduction.

c) Recommendations and limitations regarding the application of this standard

It is important to note that this standard establishes no additional functional requirements for safety systems. Ageing mechanisms have to be prevented and thus detected by performance measurements. Aspects for which special recommendations and limitations are provided in this standard are:

- criteria for evaluation of ageing of pressure transmitters in NPPs;
- steps to be followed to establish pressure transmitter testing requirements for an ageing management program for NPP instrumentation systems; and
- relationship between on-going qualification analysis and ageing management program with regards to pressure transmitters.

It is recognised that testing and monitoring techniques used to evaluate the ageing condition of NPPs transmitters are continuing to develop at a rapid pace and that it is not possible for a standard such as this to include references to all modern technologies and techniques.

This standard identifies minimum requirements aimed at ensuring that any potential impacts on NPP safety due to ageing of pressure transmitters of NPP can be identified and that suitable actions are undertaken to demonstrate that the safety of the plant will not be impaired.

To ensure that this standard will continue to be relevant in future years, the emphasis has been placed on issues of principle, rather than specific technologies.

d) Description of the structure of the IEC SC 45A standard series and relationships with other IEC documents and other bodies documents (IAEA, ISO)

The top-level document of the IEC SC 45A standard series is IEC 61513. It provides general requirements for I&C systems and equipment that are used to perform functions important to safety in NPPs. IEC 61513 structures the IEC SC 45A standard series.

IEC 61513 refers directly to other IEC SC 45A standards for general topics related to categorization of functions and classification of systems, qualification, separation of systems, defence against common cause failure, software aspects of computer-based systems, hardware aspects of computer-based systems, and control room design. The standards referenced directly at this second level should be considered together with IEC 61513 as a consistent document set.