SLOVENSKI STANDARD
oSIST prEN IEC 62061:2019

01-julij-2019

Varnost strojev - Funkcijska varnost nadzornih sistemov, povezanih z varnostjo

Safety of machinery - Functional safety of safety-related control systems

Ta slovenski standard je istoveten z: **prEN IEC 62061**

ICS:

13.110	Varnost strojev	Safety of machinery
25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control

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44/847/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62061 ED2**	
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IEC TC 44 : SAFETY OF MACHINERY - ELECTROTECHNICAL ASPECTS

SECRETARIAT: United Kingdom	SECRETARY: Mrs Nyomee Hla-Shwe Tun
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING ☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Safety of machinery – Functional safety of safety-related control systems

PROPOSED STABILITY DATE: 2024

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SAFETY OF MACHINERY – FUNCTIONAL SAFETY OF SAFETY-RELATED CONTROL SYSTEMS

FOREWORD

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International Standard IEC 62061 has been prepared by IEC technical committee 44: Safety of machinery – Electrotechnical aspects.

This second edition cancels and replaces the previous edition. This edition constitutes a technical revision and it includes the following significant technical changes:

1. structure has been changed and contents have been updated to reflect the design process of the safety function
2. standard extended to non-electrical technologies
3. standard extended to low demand mode for specific applications (Annex D)
4. definitions updated to be aligned with IEC 61508
5. functional safety plan introduced and configuration management updated (Section 4)
6. requirements on parametrization expanded (Section 6)
7. reference to requirements on security added (Section 6.8)
8. requirements on periodic testing added (Section 6.9)
9. various improvements and clarification on architectures and reliability calculations (Sections 6 and 7)
10. shift from SILCL to maximum SIL of a subsystem (Section 7)
11. use cases for software described including requirements (Section 8)

12. requirements on independence for software verification (Section 8) and validation activities (Sections 9) added
13. new informative annex with examples (Annex I)
14. new informative annexes on typical $MTTF_D$ values, diagnostics and calculation methods for the architectures (Annexes C, E and K)

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

FDIS	Report on voting
XX/XX/FDIS	XX/XX/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.

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

74 • reconfirmed,
75 • withdrawn,
76 • replaced by a revised edition, or
77 • amended.

78

79 The National Committees are requested to note that for this publication the stability date
80 is 20XX.

81 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED
82 AT THE PUBLICATION STAGE.

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INTRODUCTION

As a result of automation, demand for increased production and reduced operator physical effort, Safety-related Control Systems (referred to as SCS) of machines play an increasing role in the achievement of overall machine safety. Furthermore, the SCS themselves increasingly employ complex electronic technology.

IEC 62061 and ISO 13849-1 specify requirements for the design and implementation of safety-related control systems of machinery. This standard is machine sector specific within the framework of IEC 61508.

This International Standard is intended for use by machinery designers, control system manufacturers and integrators, and others involved in the specification, design and validation of an SCS. It sets out an approach and provides requirements to achieve the necessary performance.

It is intended to facilitate the specification of the safety functions intended to achieve the risk reduction of machine when it is intended to be achieved by safety-related control systems.

This standard provides a machine sector specific framework for functional safety of a SCS of machines. It only covers those aspects of the safety lifecycle that are related to safety requirements allocation through to safety validation. Requirements are provided for information for safe use of SCS of machines that can also be relevant to later phases of the lifecycle of a SCS.

There are many situations on machines where SCS are employed as part of safety measures that have been provided to achieve risk reduction. A typical case is the use of an interlocking guard that, when it is opened to allow access to the danger zone, signals the machinecontrol system to stop hazardous machine operation. Also in automation, the machine control system that is used to achieve correct operation of the machine process often contributes to safety by mitigating risks associated with hazards arising directly from control system failures. This standard gives a methodology and requirements to:

- assign the required safety integrity for each safety function to be implemented by SCS;
- enable the design of the SCS appropriate to the assigned safety (control) function(s);
- integrate safety-related subsystems designed in accordance with other applicable functional safety-related standards (see 6.2.4);
- validate the SCS.

This standard is intended to be used within the framework of systematic risk reduction, in conjunction with risk assessment described in ISO 12100. Suggested methodologies for a safety integrity assignment are given in informative Annex A.

SAFETY OF MACHINERY – FUNCTIONAL SAFETY OF SAFETY-RELATED CONTROL SYSTEMS

1 Scope

This International Standard specifies requirements and makes recommendations for the design, integration and validation of safety-related control systems (SCS) for machines. It is applicable to control systems used, either singly or in combination, to carry out safety functions on machines that are not portable by hand while working, including a group of machines working together in a co-ordinated manner.

This standard is machinery sector specific standard within the framework of the IEC 61508 series.

The design of complex programmable electronic subsystems or subsystem elements is not in the scope of this standard. This is in the scope of IEC 61508 or standards linked to it, see Figure 1.

The main body of this sector standard specifies general requirements for the design, and verification of a safety-related control system intended to be used in high/continuous demand mode.
Specific requirements for design, and verification of a safety-related control system intended to be used in low demand mode are given in normative Annex D.

NOTE 1 It's recognized that a subsystem can be shared by high and low demand functions.

This standard:

- is concerned only with functional safety requirements intended to reduce the risk of injury or damage to the health of persons in the immediate vicinity of the machine and those directly involved in the use of the machine;
- is restricted to risks arising directly from the hazards of the machine itself or from a group of machines working together in a co-ordinated manner;

NOTE 2 Requirements to mitigate risks arising from other hazards are provided in relevant sector standards. For example, where a machine(s) is part of a process activity, additional information is available in IEC 61511.

This document does not cover

- electrical hazards arising from the electrical control equipment itself (e.g. electric shock – see IEC 60204–1);
- other safety requirements necessary at the machine level such as safeguarding;
- specific measures for security aspects – see IEC TR 63074.

This document is not intended to limit or inhibit technological advancement.

Figure 1 shows the relationship of this standard to other relevant standards.