TECHNICAL REPORT

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English version

Guidance on the application of ISO 13849-1 and IEC 62061 in the design of safety-related control systems for machinery

(IEC/TR 62061-1:2010)

Directives relatives à l'application de l'ISO 13849-1 et de la CEI 62061 dans la conception des systèmes de commande des machines relatifs à la sécurité
(CEI/TR 62061-1:2010)

Anleitung zur Anwendung von ISO 13849-1 und IEC 62061 bei der Gestaltung von sicherheitsbezogenen Steuerungen von Maschinen
(IEC/TR 62061-1:2010)

This Technical Report was approved by CENELEC on 2010-07-26.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

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Foreword

The text of document 44/598/DTR, future edition 1 of IEC/TR 62061-1, prepared by IEC TC 44, Safety of machinery - Electrotechnical aspects, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as CLC/TR 62061-1 on 2010-07-26.

Endorsement notice

The text of the Technical Report IEC/TR 62061-1:2010 was approved by CENELEC as a Technical Report without any modification.

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

IEC 62061	NOTE	Harmonized as EN 62061.
IEC 60947-5-1:2003	NOTE	Harmonized as EN 60947-5-1:2004 ([not] modified).
IEC 61511-1	NOTE	Harmonized as EN 61511-1.
IEC 61508 series	NOTE	Harmonized in EN 61508 series (not modified).
IEC 61800-5-2	NOTE	Harmonized as EN 61800-5-2.
ISO 13849-1	NOTE	Harmonized as EN ISO 13849-1.
ISO 13849-2	NOTE	Harmonized as EN ISO 13849-2.
ISO 14121-1	NOTE	Harmonized as EN ISO 14121-1.

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INTRODUCTION

This Technical Report has been prepared by experts from both IEC/TC 44/WG 7 and ISO/TC 199/WG 8 in response to requests from their Technical Committees to explain the relationship between IEC 62061 and ISO 13849-1. In particular, it is intended to assist users of these International Standards in terms of the interaction(s) that can exist between the standards to ensure that confidence can be given to the design of safety-related systems made in accordance with either standard.

It is intended that this Technical Report be incorporated into both IEC 62061 and ISO 13849-1 by means of corrigenda that reference the published version of this document. These corrigenda will also remove the information given in Table 1, *Recommended application of IEC 62061 and ISO 13849-1*, provided in the common introduction to both standards, which is now recognized as being out of date. Subsequently, it is intended to merge ISO 13849-1 and IEC 62061 by means of a JWG of ISO/TC 199 and IEC/TC 44.

GUIDANCE ON THE APPLICATION OF ISO 13849-1 AND IEC 62061 IN THE DESIGN OF SAFETY-RELATED CONTROL SYSTEMS FOR MACHINERY

1 Scope

This Technical Report is intended to explain the application of IEC 62061 and ISO 13849-1[2)] in the design of safety-related control systems for machinery.

2 General

2.1 Both IEC 62061 and ISO 13849-1 specify requirements for the design and implementation of safety-related control systems of machinery[3)]. The methods developed in both of these standards are different but, when correctly applied, can achieve a comparable level of risk reduction.

2.2 These standards classify safety-related control systems that implement safety functions into levels that are defined in terms of their probability of dangerous failure per hour. ISO 13849-1 has five Performance Levels (PLs), a, b, c, d and e, while IEC 62061 has three safety integrity levels (SILs), 1, 2 and 3.

2.3 Product standards (type-C) committees specify the safety requirements for safety-related control systems and it is recommended that these committees classify the levels of confidence required for them in terms of PLs and SILs.

2.4 Machinery designers may choose to use either IEC 62061 or ISO 13849-1 depending on the specific features of the application.

2.5 The selection and use of either standard is likely to be determined by, for example:

– previous knowledge and experience in the design of machinery safety-related control systems based upon the concept of categories described in ISO 13849-1:1999 can mean that the use of ISO 13849-1:2006 is more appropriate;

– safety-related control systems based upon media other than electrical can mean that the use of ISO 13849-1 is more appropriate;

– customer requirements to demonstrate the safety integrity of a machine safety-related control system in terms of a SIL can mean that the use of IEC 62061 is more appropriate;

– safety-related control systems of machinery used in, for example, the process industries, where other safety-related systems (such as safety instrumented systems in accordance with IEC 61511) are characterized in terms of SILs, can mean that the use of IEC 62061 is more appropriate.

3 Comparison of standards

3.1 A comparison of the technical requirements in ISO 13849-1 and IEC 62061 has been carried out in respect of the following aspects:

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2) This Technical Report considers ISO 13849-1:2006 rather than ISO 13849-1:1999, which has been withdrawn.

3) These standards have been adopted by the European standardization bodies CEN and CENELEC as ISO 13849-1 and EN 62061, respectively, where they are published with the status of transposed harmonized standards under the Machinery Directive (98/37/EC and 2006/42/EC). Under the conditions of their publication, the correct use of either of these standards is presumed to conform to the relevant essential safety requirements of the Machinery Directive (98/37/EC and 2006/42/EC).