TECHNICAL REPORT

ISO/TR 22053

First edition
2021-01

Safety of machinery — Safeguarding supportive system

Sécurité des machines — Système de protection complémentaire

Reference number
ISO/TR 22053:2021(E)

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Published in Switzerland

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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).

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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 199, *Safety of machinery*.

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.

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Introduction

This document was developed to provide information about systems incorporating measures that can be introduced into machinery, especially in IMS for reducing risks based on human factors.

Due to lack of human attentiveness during any task performed in a hazard zone (for example, inspections, maintenance or set-up), safeguarding supportive systems can be used as a technical measure to minimize the probability of dangerous human errors occurring.

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Safety of machinery — Safeguarding supportive system

1 Scope

This document provides guidance for the design and integration of a safeguarding supportive system (SSS) which is intended to include a mode selection as part of an SRP/CS or to add a layer of personnel authentication and authorization to an IMS designed according to ISO 11161.

This document is meant to be used in conjunction with ISO 11161.

This document is applicable to the SSS but does not address personnel qualification and competency.

2 Normative references

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.

ISO 11161:2007, *Safety of machinery — Integrated manufacturing systems — Basic requirements*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11161, ISO 12100 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
safeguarding supportive system
SSS
complementary risk reduction/protective measure to enable mode selection by the use of *authentication* (3.5) means

3.2
identification element
device used in the *safeguarding supportive system* (3.1), referring to all logic units and their peripheral equipment, but excluding the credential database

Note 1 to entry: Examples include readers, key switches, cameras, HMI's, industrial PLCs.

3.3
control zone
identified portion of an IMS coordinated by the control system

[SOURCE: ANSI B11.20-2017, 3.39.1]

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3.4
qualified personnel
individual(s) who, as a result of training and experience, understands and demonstrates competence with the design, construction, operation or maintenance of the machine and the associated hazards

[SOURCE: ANSI B11.0-2020, 3.68]

3.5
authentication
verification of the identity of a user, process, or device, often as a prerequisite to allowing access to resources in an information system

[SOURCE: ISO/TR 22100-4:2018, 3.3, modified — In the definition, "verifying" has been changed to "verification of".]

3.6
authorization
right or permission that is granted to a system entity to access a system resource

[SOURCE: ISO/TR 22100-4:2018, 3.4]

3.7
authorized personnel
qualified personnel identified by the user (employer) or supplier to perform a specific task

[SOURCE: ANSI B11.0-2020, 3.7]

4 Symbols and abbreviated terms

HMI	human–machine interface
ID	identification
IMS	integrated manufacturing system
PLC	programmable logic controller
RF	radio frequency
RFID	radio frequency identification
SPE	sensitive protective equipment
SRP/CS	safety-related parts of a control system

5 Safeguarding supportive system

5.1 General

A safeguarding supportive system is used in conjunction with, and not in place of, guards and protective devices.

A safeguarding supportive system enables a requested mode when the authorization matches the requirements for the task to be performed.

The safeguarding supportive system affects all modes of operation requiring tasks in hazard zones including, for example, adjusting, set-up, teaching and troubleshooting. Accordingly, the safeguarding supportive system functions are based on modes of operation of the IMS described in ISO 11161:2007, 5.1.3, 8.2.2, and 8.4, and ISO 12100:2010, 6.2.11.9.

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