

Press Message

27.04.2023

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Important functional safety standard re-drafted - Revised version of ISO 13849-1 published

Ostfildern, 27.04.2023 - **The International Organization for Standardization (ISO) published the new edition of ISO 13849-1 on 27. April 2023. The standard is one of the main safety standards for the design of safety-related control systems for machinery. The revised version specifies a range of guidelines, for determining the performance level for example, and thus provides better support with implementation. It also takes account of the greater significance of software and validation. Standards experts at the automation company Pilz recommend that design engineers and operators in mechanical engineering familiarise themselves with the upcoming new features at the earliest opportunity.**

Alongside IEC 62061, [ISO 13849-1](#) "Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design", is the most important functional safety standard in engineering. In comparison with the previous version, there are now more precise specifications for the risk parameters used to determine the required performance level (PLr), which can be used to divide the level of risk reduction into stages.

The standard now uses five factors to explain the options that exist for avoiding hazards, and how to determine the probability of those hazards occurring. For example, these factors include the speed at which the hazard occurs (e.g. fast or slow) or the possibility of avoiding the hazard (e.g. by escaping). Machine manufacturers and operators must consider the amendments when classifying the risk of their safety concepts.

Machine manufacturers will also have greater flexibility. Each safety function can be implemented by combining multiple subsystems. These are available either as subsystems that are pre-validated by the manufacturer or are designed as new subsystems by the machine builder or integrator.

New requirements of the application software

One important aspect concerns the requirements regarding software and management of functional safety, particularly with regard to safety-related application software (SRASW). The standard contains precise specifications for how the software design and validation process are to be formulated, depending on the performance level.

Support with implementation

The next step is now harmonisation to the EU standard EN ISO 13849-1. It is far from clear whether there will then be a transition period for mandatory application and if so, how long this might be. "Although ISO 13849-1 is not an entirely new standard, design engineers and operators should still familiarise themselves with the upcoming new features at the earliest opportunity", says Jürgen Bukowski, from Pilz International Service Group. "They have a significant impact on the design of safe machinery. With a little help and practice, many of the specifications can be re-used."

The automation company Pilz collaborated in the preparation of the draft standard. Experts from Pilz will help you implement the new legal requirements successfully. The safe automation expert offers a tailor-made range of services for each phase of a machine's lifecycle and also shares its knowledge as part of a comprehensive, certified training offer for functional safety.

Our training offer:

[Design of Safety Control Systems according to ISO 13849 and IEC 62061](#)

[CEFS – Certified Expert in Functional Safety](#)



Caption: The International Organization for Standardization (ISO) published the new edition of ISO 13849-1 on 27. April 2023. Standards experts at the automation company Pilz recommend that design engineers and operators in mechanical engineering familiarise themselves with the upcoming new features at the earliest opportunity. (Photo © Pilz GmbH + Co. KG)

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