Abstract

This document considers the requirements of the safe operation of an industrial automation. It analyzes the detecting and reducing procedures of dangerous situations. It also describes the European legislations which need to be followed for designing, procurement, purchase or use of the industrial equipment in the European Union, but also in several other countries outside the European Union, to have an effective safe operation.

References

1. EN ISO 12100 (Safety of machinery - General principles for design - Risk assessment and Risk reduction).
2. IEC 61508-3 (Functional Safety of Electrical/ Electronic/Programmable Electronic Safety – Related Systems).
3. https://www.tuv-sud.co.uk/uploads/images/1397220180236544250395/sil-or-pl.pdf.
4. IEC 61511 (Safety instrumented systems for the process industry sector).
5. EN ISO 13849-1 (Safety of machinery - Safety-related parts of control systems).
6. IEC 62061 (Safety of machinery).
7. https://www.itk.ntnu.no/sil/OLF-070-Rev2.pdf.
8. https://www.festo.com/rep/en-us_us/asset/pdf/FESTO_eGuide_final2.pdf.
9. https://www.mts.com/cs/groups/public/documents/library/mts_4036317.pdf.
10. https://www.industry.siemens.com/topics/global/en/safety-integrated/machine-safety/safety-evaluation-tool/Pages/Default.aspx.
11. https://www.dguv.de/ifa/praxishilfen/practical-solutions-machine-safety/software-sistema/index.jsp
12. Tham M.T., Warwick K. “Fail-Safe Control Systems" ISBN 9789401066778.
13. D. Smith, K. Simpson, "Safety Critical Systems Handbook – A Straightforward Guide to Functional Safety, IEC 61508 (2010 Edition) and Related Standards", 3rd Edition, ISBN 9780080967813.
14. M. Punch, "Functional Safety for the Mining Industry – An Integrated Approach Using AS(IEC)61508, AS(IEC)62061 and AS4024.1." (1st Edition, ISBN 9780980766004.
15. H. Hartmann, H. Thomas, E. Scharpf, "Practical SIL Target Selection - Risk Analysis per the IEC 61511 Safety Lifecycle", ISBN 9781934977033.
16. M. Medoff, R. Faller, "Functional Safety - An IEC 61508 SIL 3 Compliant Development Process, (Third Edition)" ISBN 9781934977088.
17. Dave Macdonald “Practical Industrial Safety, Risk Assessment and Shutdown Systems”, ISBN 99780750658041.
18. ALLEN-BRADLEY, SAFEBK-RM002C-EN-P, Safety related control systems for machinery.
19. 2006/42/EC (Machinery Directive).
20. IEC 61508 (Functional safety of electrical/electronic/programmable electronic safety related systems).
21. https://search-ext.abb.com/library/Download.aspx?DocumentID=2TLC172003M0204&LanguageCode=en&DocumentPartId=&Action=Launch.
22. https://www.industry.siemens.com/topics/global/en/safety-integrated/machine-safety/why-safety/Pages/default.aspx.
23. Bowman, M., Debray, S. K., and Peterson, L. L. 1993. Reasoning about naming systems.

Index Terms

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Keywords

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