

# Focus on IFA's work

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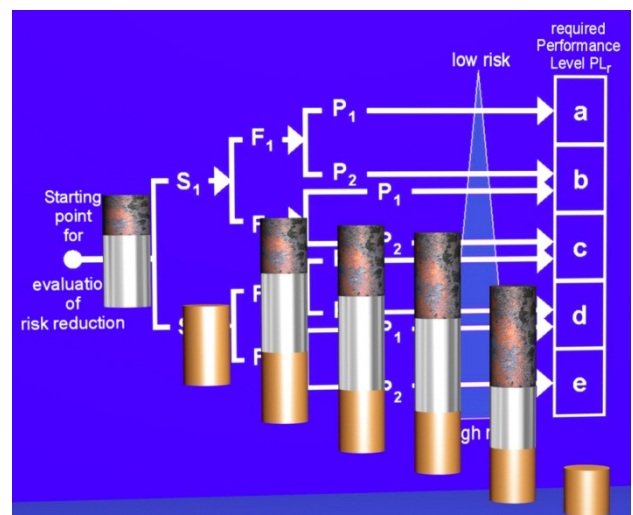
## Practical support in the development of safe machine control systems

### Problem

Safety-related parts of machine controls are designed and assessed in accordance with the EN ISO 13849-1 safety standard. First issued in 1996 as EN 954-1, the standard is now in its third edition, following comprehensive revision in 2006 and amendments in 2015. The proven requirements (Categories of controls) and an assessment of the probability of failure have been integrated into the new concept of the Performance Level (PL). The update of the content also takes account of new technologies such as electronics and software. In order to implement the new rules, users in industry and test bodies require practical guides to interpretation and use of the standard.

### Activities

The revision of EN ISO 13849-1 was heavily influenced and supported by the IFA. The principal changes were published at an early stage, for example in the form of the PLC disc for determining of the PL. During development of the SISTEMA PC program for the safety of machine controls, all aspects of the normative analysis procedure described in the standard for determining the probability of failure were implemented.



Risk graph and bar chart for determining the required and attained PL

Several IFA Reports focus upon practical application of the standard. The content of the standard is being comprehensively edited and supplemented with information and guides already produced in the field.

This includes over 50 examples of diverse control applications, which are described in detail and computed by means of SISTEMA. All guidance information is being continually updated in line with the standard; examples are IFA Report 2/2017 and SISTEMA Version 2.

## Results and Application

The free IFA tools provide users of the standard with comprehensive information material.

The IFA Reports have been written as tutorials and reference documents. The necessary steps are described systematically: The Reports contain everything needed, from risk evaluation of the control system, to detailed verification of its safety – supported by numerous applied examples. The analysis methods can be implemented in full by means of SISTEMA.

SISTEMA features an intuitive user interface. Wizard, help and report functions simplify operation and documentation of the inputs.

SISTEMA also contains databases which assist the user in selecting and managing the parameters which are important for a control system. The loosely structured series of SISTEMA cookbooks launched in 2010 addresses special topics relating to practical application of the standard and the SISTEMA software.

All IFA tools are grouped conveniently on a dedicated Internet portal from where they can be downloaded free of charge. This comprehensive information material is continually being extended.

## Area of Application

Small and medium-sized enterprises, manufacturers and operators of safety components and machines, test bodies, prevention departments of the accident insurance institutions

## Additional Information

- IFA Internet portal: "Safety of machine controls" [www.dguv.de/ifa/13849e](http://www.dguv.de/ifa/13849e)
- Functional safety of machine controls – Application of EN ISO 13849. BGIA Report 2/2008e. Ed.: Deutsche Gesetzliche Unfallversicherung, Sankt Augustin 2008 (soon to be updated as IFA report 2/2017e) [www.dguv.de/ifa](http://www.dguv.de/ifa), Webcode [e91335](#)
- SISTEMA download: [www.dguv.de/ifa](http://www.dguv.de/ifa), Webcode [e34183](#)
- SISTEMA Cookbooks: [www.dguv.de/ifa](http://www.dguv.de/ifa), Webcode [e109249](#)
- PLC disc: [www.dguv.de/ifa](http://www.dguv.de/ifa), Webcode [e20892](#)

## Expert Assistance

IFA, Division 5: Accident prevention, Product safety

## Literature Requests

IFA, Central Division