

# Focus on BGIA's work

Institut für Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung

Edition 0279 · 4/2008

617.0-BGIA:638.22

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

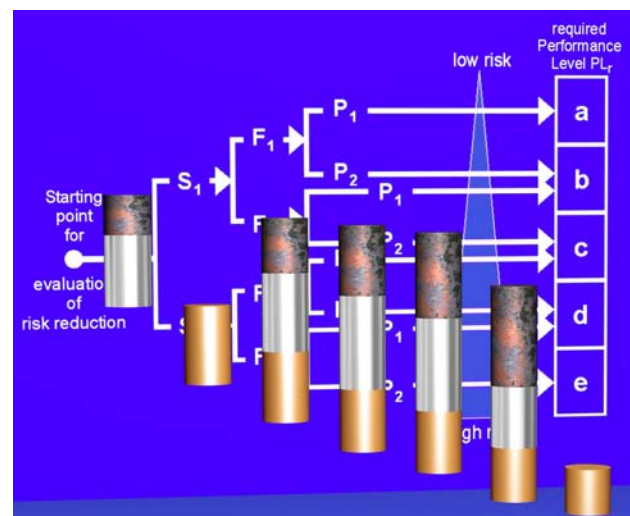
### Problem

Following extensive revision, the former EN 954-1 standard was republished in 2006 as EN ISO 13849-1. Safety-related machine controls are now being designed and evaluated in accordance with this safety standard. 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 concepts, users in industry and test bodies therefore require practical guides to interpretation and use of the standard.

### Activities

The revision of EN ISO 13849-1 was heavily influenced by the BGIA. 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 of the probability of failure were implemented.

During production of the new BGIA Report 2/2008, the focus lay upon practical application of the standard. The contents of the standard were examined in detail, and supplemented by extensions and tools developed in practice beforehand. 37 examples of the most diverse control applications, described in detail and analysed by means of SISTEMA, complete the report.



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

### Results and Application

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

The BGIA Report has been written as a tutorial and reference document. The necessary steps are described systematically:

The Report contains 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 also contains databases which assist the user in selecting and managing the parameters which are important for a control system.

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

All BGIA tools are grouped conveniently on a dedicated Internet portal from where they can be downloaded free of charge. This comprehensive information material will be extended further in the future.

#### **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**

- Functional safety of machine controls – Application of EN ISO 13849. BGIA Report 2/2008e. Ed.: Deutsche Gesetzliche Unfallversicherung, Sankt Augustin 2008  
[www.dguv.de/bgia](http://www.dguv.de/bgia), Webcode [e91335](#)
- SISTEMA download: [www.dguv.de/bgia](http://www.dguv.de/bgia), Webcode [e34183](#)
- BGIA Internet portal: "Safety of machine controls" [www.dguv.de/bgia/13849e](http://www.dguv.de/bgia/13849e)
- PLC disc: [www.dguv.de/bgia](http://www.dguv.de/bgia), Webcode [e20892](#)

#### **Expert Assistance:**

BGIA, Division 5: Accident prevention – Product safety

#### **Literature Requests:**

BGIA, Central division

#### **“Focus on BGIA’s work“**

Published by:

BGIA – Institut für Arbeitsschutz der  
Deutschen Gesetzlichen Unfallversicherung  
Alte Heerstr. 111  
53757 Sankt Augustin  
Germany

Edited by: M. Hauke, Dr M. Huelke,  
Dr M. Schaefer

Phone: +49 2241 231-02/Fax: +49 2241 231-2234

e-mail: [bgia@dguv.de](mailto:bgia@dguv.de)

Internet: [www.dguv.de/bgia](http://www.dguv.de/bgia)