

# Functional Safety in Mobile Industrial Machines



# Functional Safety – Implementation of New Norms

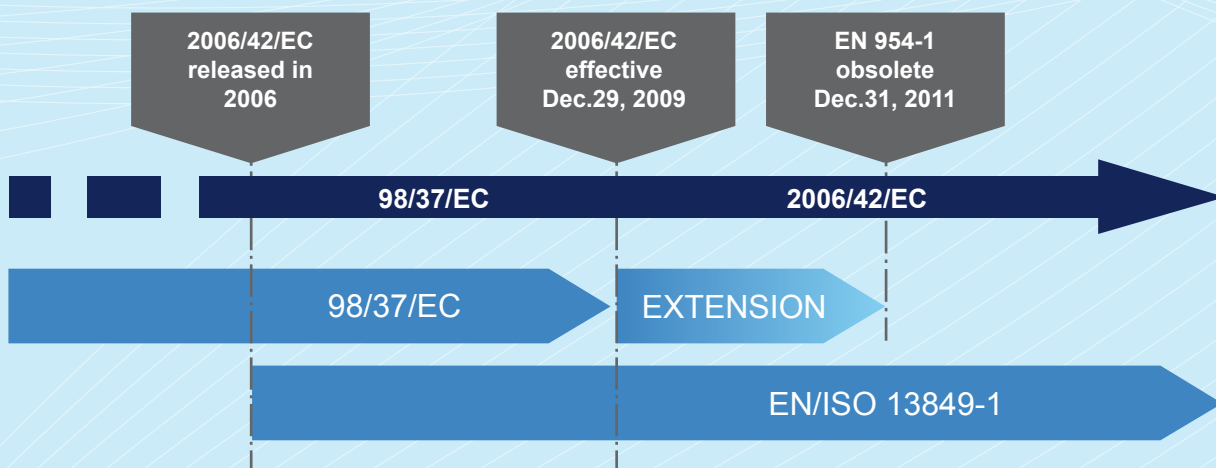
On **29 December 2009**, the new machinery directive 2006/42/EC came into effect. This norm is binding for all manufacturers of mobile industrial machinery, as well as machine-like subsystems that are marketed in Europe. The directive also conforms to the valid, harmonized European norms (EN).

Regarding the safety of machinery and safety-related parts, the EN ISO 13849 will fully replace as of **31 December 2011** the harmonized norm EN 954-1. EN ISO 13849-1 was defined in the ISO committee in order to make sure that this standard is world-wide rather than only European.

## OBLIGATORY RISK ANALYSIS:

The machinery directive 2006/42/EC obligates the machinery manufacturer and/or their legal representatives to carry out a so-called **risk analysis**.

Risk analysis is used to determine potential risk that results from the operation and maintenance of the machine, making it possible to classify the individual functions of the machinery in a risk class. This results in a performance level (PL) from a to d that must be guaranteed for the controls. When constructing the machinery, the determined risk class must be taken into account. For example, the classification in a high risk class could make necessary the redundant implementation of parts of the control electronics.



## Functional Safety in Your Project

**We support you in fulfilling the requirements of the new machinery directive:**

- in our seminars, we comprehensively train your employees on the topic of functional safety in electronic controls
- our products fulfill the necessary prerequisites in order to comply with the directive
- we provide data such as „mean time to dangerous failure“ (MTTFd) for our products
- we support our customers in the design of vehicle controls from risk analysis to programming of the application software

### HOW WILL WE SUPPORT YOU IN YOUR PROJECT?

**Step 1:** In the 1-day seminar „Functional Safety – Basic Knowledge for Users“, get an overview of the requirements of the valid norms and possible solutions for them

**Step 2:** In cooperation with you, we determine the risk class of your machinery using risk analysis (the result of the risk analysis is a required performance level of the control electronics that will be deployed).

**Step 3:** Using the results of the risk analysis and the determined performance level, the system architecture can be designed.

**Step 4:** With the help of our starter kit (control unit + programming software + cabling) you can quickly and simply start programming the application software.

**Our certified control units** come with a safety manual that describes in detail what you need to be aware of when programming safety-critical functions.

**A special team** consisting of developers and application engineers supports you during implementation.



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## Seminar „Functional Safety – Basic Knowledge for Users“

This seminar is aimed at all manufacturers who need to provide safety-related functions for mobile machinery.

### GOAL:

- Understanding the requirements in the current norms (EN ISO 13849-1)
- Competence in the practical application of the norms during the development of machinery controls

### CONTENTS:

- Legal basis for functional safety
- Norms: EN ISO 13849-1, IEC 61508 (PL, SIL, ...)
- Risk analysis using a practical example
- Implementation of functional safety in practice
- Requirements for hardware and software
- Verification and validation of safety-critical controls

### LOCATION:

You can choose the location according to your needs:

- your company
- one of the TTControl locations (Vienna, Brixen) or Hydac

### DURATION:

- 1.5 days

### FEES:

- € 2,900.- (including starter kit, unlimited number of participants)
- If the seminar is held at your company, you will also be charged for the travel expenses and accommodation of the instructor

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