

HYDAC INTERNATIONAL



Functional Safety in Mobile Machines



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Functional Safety – Implementation of the New Standards

On 29th December 2009 the new Machinery Directive 2006/42/EC came into force. This standard is binding for all manufacturers of mobile machines, including partly-completed machinery/sub-systems, brought onto the market in Europe. The Directive also implies conformity with the current harmonised European standards (EN).

As far as the safety of machines and safety-related parts of controls is concerned, the EN ISO 13849 finally replaces the harmonised EN 954-1 standard **as of 31st December 2011**. The EN ISO 13849-1 has been defined in the ISO committees to ensure that this constitutes a worldwide and not just a European standard.

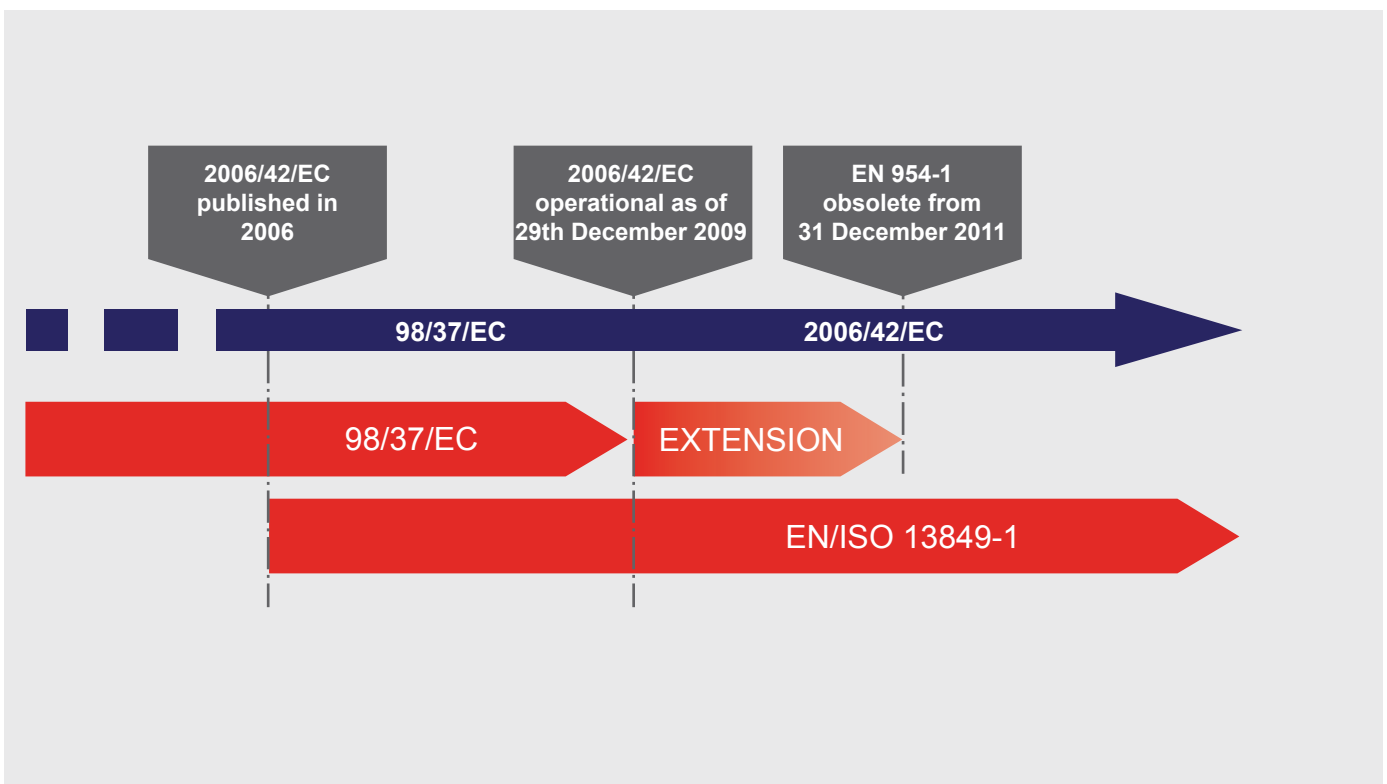
BINDING RISK ANALYSES:

The Machinery Directive 2006/42/EC obliges the machinery manufacturer or his legal representative to carry out a so-called **risk analysis**.

In carrying out the risk analysis, potential risks which arise from operating and maintaining the machine can be identified, and after this, the individual machinery functions are classified in a risk class. This results in a Performance Level (PL) a to d which must be guaranteed by the controller.

When designing the machine, the risk classes identified must be taken into account.

So, for example, classification in a high risk class can necessitate redundant design of parts of the control electronics.



Functional Safety in Your Project

We will support you in implementing the requirements of the new Machinery Directive:

- in seminars we will train your staff in all aspects of functional safety in electronic controls
- our products have the necessary prerequisites to comply with the Directive
- we provide data such as "Mean Time To dangerous Failure" (MTTFd) for our products
- we support our customers during the design of the vehicle control, from the risk analysis right through to the application software

HOW DO WE SUPPORT YOUR PROJECT?

Step 1: In the one-day seminar "Functional Safety – Basic Knowledge for Users" you will be given an overview of the requirements of the current standards and the solutions for implementation.

Step 2: By working with you, we will identify the risk class of your machine by means of the risk analysis (the result of the risk analysis is a Performance Level required for the control electronics to be installed).

Step 3: With the results of the risk analysis and the identified Performance Level, the system architecture can be defined.

Step 4: With the help of our Starter Kit (controller + programming software + cabling) you can begin to program the application software quickly and easily.

Our certified controllers are supplied with a safety manual which describes precisely what to look out for when programming safety critical functions.

A special team consisting of development and application engineers will support you during implementation.



HY-TTC 90

Seminar "Functional Safety – Basic Knowledge for Users"

The seminar is intended for all manufacturers who have to guarantee safety-relevant functions in all aspects of mobile machinery.

OBJECTIVES:

- Understanding the requirements of the current standards (EN ISO 13849-1)
- Competence in the practical application of the standards in developing machine controls

CONTENTS:

- Legal principles of functional safety
- Standards: EN ISO 13849-1, IEC 61508 (PL, SIL, ...)
- Risk analysis using a practical example
- Implementing functional safety in practice
- Hardware and software requirements
- Verification and validation of safety critical controls

SEMINAR VENUE:

We can organise the seminar for you in the following locations:

- at your company headquarters
- at the TTControl offices (Vienna, Brixen) or at HYDAC

DURATION:

- 1.5 days

PRICE:

- € 2,900.- (including Starter Kit, unlimited number of participants)
- If the seminar is held at your company offices, the costs of the trainer's travel and accommodation will be chargeable

CONTACT:

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