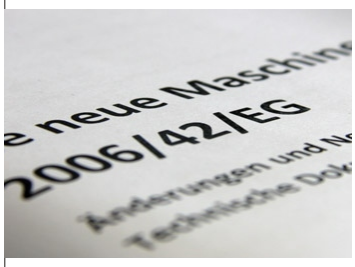
WERMA
SIGNALTECHNIK

EU Machinery Directive 2006/42/EC




Safe signalling with WERMA signal devices

Machinery Directive 2006/42/EG - Background

The European Machinery Directive 2006/42/EC

The new Machinery Directive 2006/42/EC demands **increased safety analysis** by machine engineers **for machines and systems**.
The guideline refers to standards intended to regulate risk analysis. Following a transition period from the old to the new safety standards this becomes **obligatory** for all machine manufacturers **from the end of 2011** (see the diagram below). Design engineers must then integrate the calculation of key data into the planning phase for safety-relevant machine components.

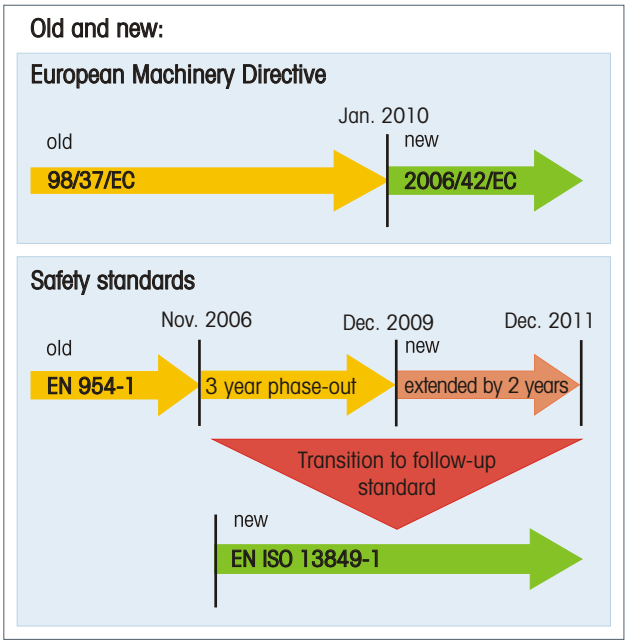
The new EN ISO 13849-1 safety standard

The new European standard EN ISO 13849-1, 'Machine Safety - Safety-Relevant Control Components - Section 1 General Design Principles' relates to control systems and machines of all types. In accordance with the Machinery Directive it **regulates** a part of the **risk analysis for machines**.

According to this standard, all **components and devices** which have an influence on machine safety are evaluated and calculated with **key data** in order to determine the expected safety level of machines.
The **MTTFd value** is a part of this key safety data for the components.
The **'Performance Level' (PL)** is defined at the end of this analysis.

The EN ISO 13849-1 safety standard **is valid for**:

- European Union
- Iceland
- Norway
- Switzerland



An intensified safety analysis becomes obligatory at the end of 2011. The period of transition from the old to the new safety standards ends at this time..

Conventional signal and warning devices - all WERMA signal devices are suitable!

When a signal device does not fulfil a safety function on the machine then it is classified as a normal signal facility. All WERMA signal devices are suitable for this.

Generally the following applies: all WERMA signal devices are suitable for machine signalling according to the new European 2006/42/EC Machinery Directive (valid since 29.12.2009). A differentiation must however be made between safety-relevant and non safety-relevant applications, because:

Many informative signal applications are **not safety-relevant.** For example a signal device may merely notify a person whether a process is running or is completed. It may often serve to signal machine downtimes and to improve cost efficiency.

All WERMA signal devices are suitable to be used for such non safety-relevant signal and warning systems according to the Machinery Directive. They **fulfill** all **regulations** with regard to **safety colours and designations**.

Safety-relevant Signal Devices and Risk Analysis

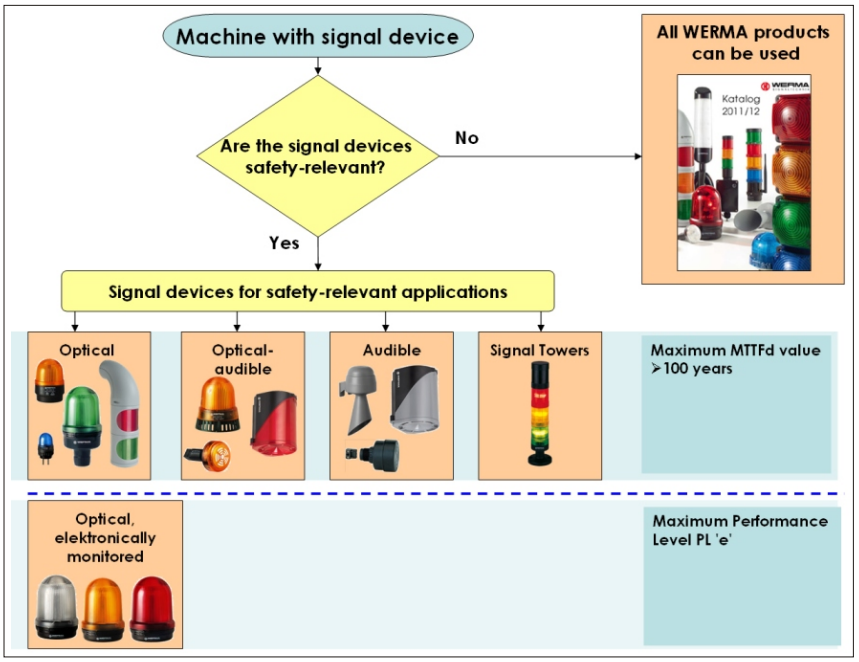
WaWhen are signal devices safety-relevant? - Risk analysis

As part of a **risk analysis**, design engineers must determine whether safety risks exist with the machine by way of an **iterative process**. If such **risks** exist then they have to **take precautions** to render these ineffective.

Signal devices can be a **part of such precautionary measures.** An audible signal device can for example **warn** a machine operator in good time before a weight falls due to vacuum failure. In such cases the signal device is safety-relevant.

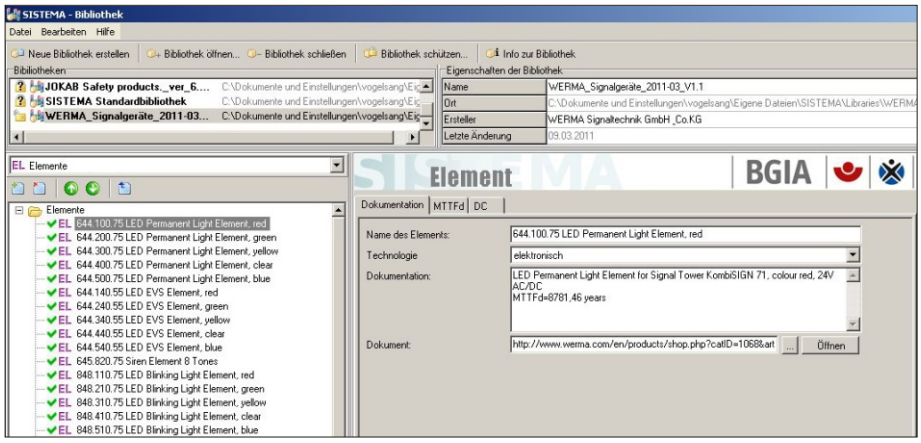
These **safety-relevant signal device**s must be integrated into the machine risk analysis calculation of machines via a **key figure**.

The **German TÜV Institute** has **determined** and confirmed **MTTFd** and **PL values** for selected WERMA signal devices. You can see the results **on page 4**.



The diagram shows when signal devices with safety values must be used.
Further information: See page 4.

SISTEMA - an important tool for risk calculation



SISTEMA aids in the calculation of machine risks and is a **free software** from the German Institute for Occupational Safety.
SISTEMA **can be downloaded** without registration from the website of the Institute for Occupational Safety (www.dguv.de).

This software enables anyone to evaluate and **define the safety of machines**. The program also helps with the **calculation of the performance level (PL)**.

Available for download: SISTEMA database with over 100 WERMA signal devices

WERMA has created a **database** for SISTEMA that contains all WERMA signal devices with TÜV-inspected safety values.
Design engineers can download the database with the signal devices and corresponding safety values **quickly, easily** and **without need for registration**.

The database download is available without charge at werma.com, key word 'SISTEMA'. **It contains over 100 signal devices from WERMA with safety values inspected by the TÜV Institute.**

Safety Tested: WERMA signal devices

Safety values save time for design engineers

WERMA commissioned the **TÜV Institute** to define **safety values for selected signal devices**, and machine engineers are able to directly integrate these values into their risk analysis calculations. This significantly **simplifies their planning** and also **saves valuable time**.

Signal devices with excellent MTTFd values - confirmed by the TÜV

MTTFd value >100 years

The **MTTFd value** specifies the **statistical nominal operating time up until dangerous failure** (in compliance with the EN ISO 13849-1 standard). These signal devices all achieve the **maximum MTTFd safety value** of in excess of 100 years.

Design engineers can **select** from a **wide spectrum** of signal devices:

Signal towers

KombiSIGN 50+ 71
The signal towers from the KombiSIGN 71+ 50 series can in addition to a light signal emit up to eight warning tones. All light elements use long-life LEDs. Permanent light, flickering light (EVS) and blinking elements are available.

Audible signal devices

Horns, sirens and buzzers
Loud signalisation from 80 to 114 decibels, from compact to large, from installation mounting to wall mounting, with continuous tone, pulse tone or up to 32 signal tones...
... users can select:

Optical signal devices

LED beacons
... from compact to large, for installation or surface mounting, in up to five colours (red, green, yellow, clear, blue) with light effects such as continuous, double flash, blinking, EVS or rotating light, each with 24 volts...
... design engineers can choose from:

Optical-audible signal devices

Combinations with LED
... from installation to surface mounting and wall mounting, compact to large, continuous or flashing light, one continuous tone to 32 tones, 80 to 114 decibels, each with 24 volts...
... machine engineers will find what they need here:

Signal devices with maximum performance levels - tested by the TÜV

Performance Level PL "e"

The Performance Level specifies **how safe a control unit is** likely to be, and is the result of safety calculations in accordance with the EN ISO 13849-1 safety standard.

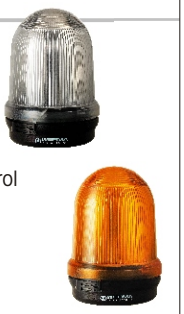
On a **scale** of **'a' to 'e'**, PL 'a' is the minimum required safety level and **PL 'e' the maximum**.

WERMA offers two optical signal devices that achieve the maximum possible performance level 'e' (in accordance with the EN ISO 13849-1 safety standard):

Monitored beacons

Monitored (LED) Permanent Beacon 826/829
The beacons appear the same. The only difference: 826 operates with bulbs and 829 with LEDs.
Both beacons are equipped with integrated monitoring electronics. These electronics monitor the beacons and in case of device failure communicate this directly to the control unit, via two potential-free safety outputs.

The advantage: machine engineers do not need to additionally monitor the beacons externally.



You can access a **list** of signal device article numbers for **safety applications** at **werma.com** via the key word 'Machinery Directive'. **Order** conveniently **online via our E Shop, per e-mail** or **fax.**

Any questions? Our team would be pleased to help with **any technical questions**! Contact our **hotline** on +49 (0)7424/9557-0.

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