

The new Machinery Directive 2006/42/EC

Risk analysis – your obligation!

Is your power safe??



New Machinery Directive – what is the difference for you?

On 29.12.2009 the old Machinery Directive 98/37/EC will cease to be valid and the requirements of the new Machinery Directive 2006/42/EC must then be implemented across Europe. Instead of the old hazard analyses, there are now so-called risk assessments. What does this mean for you?

Risk assessment as basis for design

As a planner and manufacturer of a machine you have the obligation to undertake a risk assessment to determine the health and safety requirements necessary for your machine.

The machine must be designed and built taking into account the results of this risk assessment. In this way possible hazards can be prevented or excluded in advance and expensive, subsequent modifications avoided.

Consequences for installer and operating organisation

On the purchase of a machine, installers and operating organisations must ensure the required risk analysis has been undertaken and that the necessary safety measures have been taken. Possible hazards found later will require major effort to rectify or reduce.

All life cycles must be considered

During design and planning, and also during the risk analysis, as a minimum consideration must be given to

- The installation
- The setting up
- The normal operation
- The maintenance
- The repair of the machine
- Taking out of service
- Disassembly



Machines are not allowed to endanger the health and safety of persons or property!

The possible hazards in relation to a machine are numerous. An essential element to be considered is the utilisation of electrical power. Particularly in this area the risks are widely spread. In the following there are just a few issues that must be taken into consideration, depending on the version and utilisation of the machine.

- Are brief power failures a problem?
- Is the mains voltage allowed to vary up or down and where are the limits?
- Is the revolving field important for the machine?
- Is it necessary to monitor the frequency?
- Is it necessary to continuously check the fault/leakage current of the individual parts of the machine?
- Is the total leakage current to be defined as a set value and checked continuously?
- Is it to be checked if the current consumption is too high or too low?
- Is the insulation resistance sufficiently high in relation to the components used?
- Is there a continuous PE conductor?
- Are slip, rotary, moving power transmission systems used that must be monitored for continuity?
- Are insulation faults / fault currents to be located as quickly as possible in larger machines?

The “electrical power” risk analysis results in a requirement for a very wide range of monitoring devices. The basis for the monitoring tasks is the harmonised standard DIN EN 60204-1 (VDE 0113-1):2007-06 or IEC 60204-1:2005 “Electrical equipment of machines”. Here it is important that the components and monitoring devices used comply with the applicable standards and are not a risk in themselves.

Bender monitoring devices and systems provide extensive ways of continuously monitoring the important electrical parameters on a machine and to signal critical states at an early stage, or even to shut down in an emergency.

Bender monitoring devices and systems provide comprehensive information, clear messages to get the necessary information edge, to increase the safety of machinery several times over, to prevent expensive breakdowns and to prevent life-threatening injuries to the operators.



Possible solutions

A-ISOMETER® IR425 – Insulation monitoring for unearthed AC/DC control circuits



Your benefit

- Optimum operational safety for all control circuits
- Protection against controlling errors / production downtimes
- Significantly extended maintenance-free periods

Technical features

- Control circuits Un AC/DC 0...300 V 0, 15...460 Hz
- Two separately adjustable response values / alarm relay
- Automatic assignment of basic parameters
- Self monitoring with automatic alarm
- Multi-functional LC display
- Connection monitoring system / earth

A-ISOMETER® IRDH275 – Insulation monitoring for unearthed AC/DC main circuits up to 7.2 kV



Your benefit

- Enhanced operational safety and higher productivity
- Less time and man power for maintenance
- Easy-to-use in interconnected IT systems

Technical features

- For main circuits Un AC, 3(N)AC 0...793 V
- For IT systems with high system leakage capacitances
- Self monitoring with automatic alarm
- Info key for the indication of parameters / settings
- Device version for medium-voltage drives available

RCMA420 – AC/DC sensitive residual current monitor for earthed power supplies



Your benefit

- Avoidance of cost-intensive shutdowns by preventive monitoring
- Precise measurement, even in case of variable-speed drives
- Effective maintenance support by prewarning/alarm stages

Technical features

- AC/DC sensitive residual current monitor Type B acc. to IEC 60755
- r.m.s. value measurement (AC+DC)
- Two separately adjustable response values 10...500 mA
- Digital measured value indication
- CT connection monitoring

VMD420 – Multi-functional voltage monitor for 3(N)AC systems



Your benefit

- Increased operational safety by precise monitoring of essential system parameters
- Digital measured value indication eliminates the need for measuring instrument
- A PreSet function allows immediate commissioning

Technical features

- Undervoltage, overvoltage and frequency monitoring in 3(N)AC systems
- Asymmetry, phase failure, phase sequence monitoring
- r.m.s. value measurement (AC)
- Automatic assignment of basic parameters
- Indication of the rated frequency



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