

# Breathing space for machinery safety?

By Paul Laidler, Laidler Associates



Paul Laidler, Managing Director of Laidler Associates

For well over a decade, EN 954-1 'Safety of Machinery, Safety related parts of control systems' has been the main European standard relating to the design and performance of machine control systems. This standard is, however, widely recognised as having shortcomings. It doesn't cover programmable electronic safety devices, for example, and there are many who would argue that the relationship between risk levels and the categories defined in EN 954-1 are not always logical.

For these reasons a new standard, EN ISO 13849-1, has been developed and in 2006 it was officially adopted as the successor standard to EN 954-1. Because the new standard makes big changes to the safety philosophy for control systems, the maximum permissible transition period of three years was allowed for its adoption.

This period is set to expire on 28 December 2009, but there is a problem. EN ISO 13849-1 replaces the familiar safety categories of EN 954-1 with Performance Levels (PLs) designated PLa to PLe. These PLs relate to the probability of a system failing to danger. For example, to achieve PLa the average probability of a failure to danger per hour must be between  $3 \times 10^{-5}$  and  $< 10^{-4}$ , while for PLe it must be between  $3 \times 10^{-8}$  and  $< 10^{-7}$ .

These probabilities are most usually calculated from Mean-Time-to-Failure (MTTF) data for the components used in the control system. Unfortunately, in many cases the necessary MTTF data simply isn't available, not least because producing this data often means that the components have to be tested over long periods of time. Unfortunately, without MTTF data for the

components, machine builders can't show that their products meet the requirements of EN ISO 13849-1.

Another problem is that EN 954-1 is still referenced by more than 500 other harmonised standards and it will not be possible to update all of these in time to meet the December 2009 deadline.

Unfortunately, for all who have concerns over the imminent transition to EN ISO 13849-1, it seemed that the Machinery Directive Working Group was going to take a pragmatic approach to the issues this raises. The Group recently announced that it was receptive to the idea that EN 954-1 can continue to be accepted "for a certain time" while it is still referenced by harmonised standards.

However, in a move likely to cause confusion (and still liable to be reversed) the European Committee for Standardisation has subsequently announced that the

situation regarding EN 954-1 will remain unchanged until further notice: hence it will cease to give presumption of conformity to the Machinery Directive at the end of 2009 as originally planned. While the continued acceptance of EN 954-1 would undoubtedly provide a useful breathing space for all concerned it is no justification for complacency.



EN 954-1 is most certainly due for replacement, and EN ISO 13840-1 promises to be a worthy successor.

This, as I intimated above, may not be the end of the matter, as EN 954-1 was a topic for discussion at a recent EC Machinery Working Group meeting, following which a final decision should be taken. My advice for all interested parties is to watch this space as we will, no doubt, cover the final decision when it is taken.

Undoubtedly, this confusion will mean that some companies will instead try to ignore their obligations in relation to safety standards, but this is not a good idea. While it is sometimes possible to get away with ignoring safety standards for a while, if this leads to a situation that results in injury or death, the possible penalties not only include large fines, but also substantial terms of imprisonment. Speaking plainly, ignoring safety requirements is never a risk worth taking.

Making appropriate preparations is undeniably a complex task, however, as EN ISO 13840-1 adopts an entirely new approach and is much more reliant on probabilistic considerations than was its predecessor. Its implementation therefore involves the interpretation of data that may well be unfamiliar. I believe that whichever way the events turn out as regards transition periods that EN 954-1 is most certainly due for replacement, and EN ISO 13840-1 promises to be a worthy successor.

**Remember that EN 954-1 is being replaced because of its shortcomings and those who continue to use it cannot ignore these.**

## Contact Point

T 08700 111375  
E paul.laidler@laidler.eu

**Look out for an update in Issue 14!**

## Free machinery safety guide

Available free to download is the newly rewritten A practical guide to machinery safety sponsored by Laidler Associates. The easy to read guide covers legislation including the EMC and Low Voltage Directives, the ATEX Directive and the very latest information on the new Machinery Directive. It also covers risk assessment and hazard analysis, includes step-by-step advice on CE marking and the Provision and Use of Work Equipment Regulations (PUWER).

Commenting on the new guide Paul Laidler, of Laidler Associates said: "The guide is written to benefit both machine builders and end users. Both sides need a good understanding of the legislation and processes surrounding machinery safety and this guide will help bridge the gap in understanding between the two."

As well as featuring information about what to look for in a pre-purchase audit and a section on different types of electrical safety products the guide also features forms, charts and checklists that can be used to conduct a machinery safety inspection. An EN (ISO) 954-1 chart appears alongside an EN (ISO) 13849-1 equivalent as well as an EN (ISO) 14121-1 check list and CE and PUWER check lists.

The guide is free to download and available on request as a hard copy via [www.laidler.co.uk](http://www.laidler.co.uk)



**LAILDLER**  
ASSOCIATES

## Back by popular demand...

### The New Machinery Directive Seminar



21 January 2010 - 4 February 2010 - 11 February 2010  
at the Marriott Hotel, Northampton

**! DON'T GET CAUGHT OUT!  
The new Directive affects you NOW!**

Is your company ready for the changeovers that the New Machinery Directive will require?

This essential one-day seminar provides an overview of the actual and proposed changes.

Subjects covered include:-

- Partially complete machines
- Application to modified machinery
- Application to assemblies of machines
- Changes to Health & Safety requirements
- Changes to ISO and European standards linked to the Machinery Directive
- New conformity assessment procedures
- Technical file compositions
- New declarations of Conformity and Incorporation



To book a place, contact [christine.jordan@ppma.co.uk](mailto:christine.jordan@ppma.co.uk) or fax back the booking form to +44(0)20 8773 0022. For a booking form and more information go to: [www.ppma.co.uk/educ/info.htm](http://www.ppma.co.uk/educ/info.htm)

### BS EN ISO 12100...

This provides designers with an overall framework and guidance to enable them to produce machines that are safe for their intended use. It also provides a strategy for standard makers. Part 1 looks at Basic Terminology and Methodology, Part 2 covers Technical Principles. Together, they are 2 of the 4 A-Type Standards, harmonised for the Machinery Directive and as such, are key standards for machine builders. Both parts were updated in October 2009 so machine builders should check that they are working to their latest versions.

### BS EN 614-1:2006+A1:2009 Safety of Machinery...

A directive which establishes the ergonomic principles that should be used during the process of designing machinery. Terminology and general principles of the directive were published in October 2009, replacing the original 2006 standard.



### BS EN 415 Series...

The BS EN 415 series of standards are key standards for the packaging industry. Part 1, Terminology and Classification of Packaging Machines and Associated Equipment was amended in September 2009 (replacing the original published in 2000). Its full reference number is now  
BS EN 415-1:2000 + A1: 2009.

### BS EN 415-9:2009...

This was published in September 2009. Its full title is 'Safety of Packaging Machines - Noise measurement methods for packaging machines, packaging lines and associated equipment, grade of accuracy 2 and 3'. The Scope states: "This standard specifies all the information necessary to carry out efficiently and under defined conditions the determination, information and verification of airborne noise emission from packaging machines covered by EN 415-1. This measurement method specifies procedures for: the determination of emission sound pressure levels at work stations, at other specified positions, and the sound power level (on the basis of both the sound pressure level method and the sound intensity method). It also specifies installation and operating conditions."