

Australia and New Zealand to heed safety standard deadline

The European Commission has extended the deadline for the transition from standard EN 954-1 to standards EN ISO 13849-1 and EN/IEC 62061. Rockwell Automation Area Manager – Safety, Gary Milburn, explores the implications to the Australian and New Zealand industrial communities.

In recent times, the functionality of industrial machinery has advanced considerably. Industrial processes are being continually enhanced with more sophisticated PLC-based technologies capable of driving throughputs and product quality to levels never thought to be possible. As a result, the functional safety standards that govern the manufacture and safety-rating of such machinery and their components are evolving to accommodate the latest technological advancements. Machine builders and component manufacturers must be vigilant, and remain up to speed with changes to performance requirements, and the standards that specify them.

For Australian and New Zealand companies—especially those with export activities—of particular interest, is the impending transition from EN 954-1: 1996 ‘*Safety of Machinery, Safety related parts of control systems*’, to the newer EN/ISO 13849-1: 2008 ‘*Safety of Machinery – Safety related parts of control systems*’, and EN/IEC 62061: 2008 ‘*Safety of machinery – Functional safety of electrical, electronic and programmable electric control systems*’. Recently, the European Commission extended the three-year transition period to five years, revising the deadline to conform to EN/ISO 13849-1 to 31 December 2011.

With the complete withdrawal of EN 954-1 now inevitable, its continued use alone is destined to become problematic in Europe and closer to home. The soon-to-be-superseded standard is not suitable for some of the more advanced technologies commonly used in



modern machine-control applications and safety products. In fact, the impact of the impending switchover is now being felt, with many machine-specific (C type) standards already calling for compliance with EN/ISO 13849-1 and EN/IEC 62061, with no reference to EN 954-1. Importantly, this transition has implications reaching farther than in Europe alone—Australian and New Zealand machine builders and component manufacturers must also prepare.

Setting the standard

In order to plan a logical course through the transition to these new standards, it is important to

realise that the change affects two fundamentally different user types: the designer of safety-related subsystems, such as controller and component manufacturers; and the designers of safety related systems, such as machine builders. Soon—if not already—working to EN 954-1 will be considered unacceptable by both groups.

In contrast to EN 954-1, EN/ISO 13849-1 and EN/IEC 62061 have been structured to accommodate the design of more sophisticated safety control system applications. In fact, EN/ISO 13849-1 is fated to become the most commonly used standard for all machine safety control systems, including complete systems, subsystems or individual components.

Both EN/ISO 13849-1 and EN/IEC 62061 incorporate a 'probability of failure' assessment calculation—a feature lacking in EN 954-1. Here, a performance level (PL) is assigned once a range of requirements are satisfied. These include: reliability data for all system components; Diagnostic Coverage (DC) of the system; software requirements; and protection against common-cause failure and systematic faults. It's important to note that the Category rating system will be retained.

The new standards require control system designers to calculate the performance level of their safety circuits so that the safety rated control systems provide adequate integrity. Product-specific functional data from component suppliers may then be used in conjunction with tools such as the SISTEMA Performance Level calculation tool from IFA (formerly BGIA) (*Institute for Occupational Safety and Health of the German Social Accident Insurance*) to confirm that the PL rating has been achieved. For Australian and New Zealand machine builders and component providers, the early adoption of these newer functional safety standards is likely to yield long-term benefits.

Attention exporters

Even though compliance with EN 954-1 is technically acceptable until the end of 2011, overseas purchasers of New Zealand- and Australia-made machinery are more likely to demand compliance with EN/ISO 13849-1 in order to future-proof their investments. If local machine builders and component manufacturers haven't already implemented internal systems to comply with EN/ISO 13849-1, or begun this process, then international purchase orders may be lost.

Interestingly, ISO 13849-1 was published in 2006, which means machine builders and component manufacturers have already had four years to bring their systems up to speed. The recent time-extension to comply with the new standards indicates that a significant number of



industrial businesses and machine type C standards were not yet in a position to comply by the original 31 December 2009 deadline.

Anecdotal evidence has suggested that complying with the new standard comprised more work on its initial implementation than first anticipated—especially for small- and medium-sized machine builders with limited resources. Here, machine builders are potentially required to change their processes and designs to satisfy the new requirements. As a result, it would be prudent of New Zealand- and Australia-based businesses to learn from the oversight of some of their European colleagues and begin the process of complying with EN/ISO 13849-1 sooner rather than later.

Global opportunities

There is real potential for the requirements outlined in standard EN/ISO 13849-1 to become those specified in the Australian and New Zealand marketplace. Furthermore, with electro-mechanical and electronic control systems converging at a rapid rate, and the adoption of a quantifiable methodology, it makes sense for such a global harmonisation of functional safety standards to take place.

However, in the ever-changing field of functional safety standards, many businesses don't have the resources to keep abreast of new requirements, let alone execute them in a systematic way. While the adoption of EN/ISO 13849-1 and EN/IEC 62061 will throw up some challenges, it will also present a number of opportunities for enterprising Australian New Zealand companies.

As it becomes more difficult and time-consuming for end-users to comply, it is likely that they will look to outside contractors and experts. This presents a business opportunity for system integrators in particular. By skilling-up and positioning themselves as experts in EN/ISO 13849-1 and EN/IEC 62061, system integrators can relieve the work load from machine builders and end-users.

Additionally, enterprising solution providers will develop tools to enable Australian and New Zealand machine builders to comply with these newer standards as soon as possible. Early adopters will not only move ahead of the competition and gain a competitive advantage, but also help better protect workers and machinery. **AT**

ROCKWELL AUTOMATION STREAMLINES SAFETY CALCULATIONS

Rockwell Automation has created a library of its safety products and their associated functional safety data. Users can simply drag the product model number into the SISTEMA Performance Level calculation tool and verify PL ratings automatically—a real time- and labour-saving innovation. Additionally, documentation produced by this calculation tool provides proof of due diligence of the safety rated control system design.

To access this library of functional safety data, as well as other safety standard information and tools visit Rockwell Automation Safety Solutions Portal at :
http://discover.rockwellautomation.com/EN_Safety_Solutions.aspx