

The intention of these articles is to inspire thought, not provide a solution. All safety design should be conducted by a professional engineer.

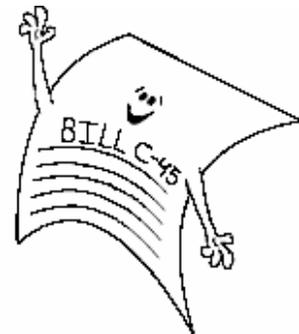
BILL C-45: TAKING RESPONSIBILITY

Due diligence is taking on a lot more significance thanks to Bill C-45. Now "everyone who undertakes, or has the authority, to direct how another person does work or performs a task is under a legal duty to take reasonable steps to prevent bodily harm to that person, or any other person, arising from that work or task". In other words, every person in authority, from the Board of Directors to the working lead hand, can be prosecuted for criminal negligence. Individuals can face 10 years in prison if a worker is injured or life imprisonment if a worker is killed. The organization faces a \$100,000 fine for a summary conviction or unlimited penalties if indicted for criminal negligence. OHS regulatory compliance will not be accepted as a defense in any case. Also, insurance will not cover OHS criminal negligence penalties. Bill C-45 also covers crimes against the environment and fraud, whether executives commit them or

look the other way as employees commit offences.

To sum up, everyone with authority in an organization can be held liable and prosecuted for criminal negligence. Protect yourself and your company by taking steps to ensure the safety of all workers. These steps include getting PHSR's done on all machinery and training staff in proper safety procedures. ⚡

For more information on Bill C-45, go to the "downloads" section of www.phsr.com.



SMALL "PRESS" APPLICATION

As designers become more familiar with the new press code, related inquiries are increasing. The question we've heard on dozens of occasions throughout 2003 was "Is my machine a press?" Inevitably, the answer was yes. CSA 142-02 defines a press as "any machine that transmits force by cutting, punching, forming, or assembling metal or other materials by means of tools or dies..." A simple machine suddenly becomes incredibly complex, especially if the operator is required to put their hands in the point of operation every cycle.

The challenge is to create a design that will meet the control reliability and monitoring requirements of CSA 142-02.

Continued on page 2.

AUTOMATIC SAFETY CHECKS

It's good practice to perform safety checks at the start of each shift or on machine startup. Many operators don't seem to do this. They simply want to meet their required quota, and move along. We propose a strategy of performing PLC initiated safety checks to ensure they are performed on a regular basis.

To accommodate this, all you need is feedback from each safety relay to the PLC. At startup, the PLC instructs the operator to perform a safety check (i.e., open access gate #1), and the PLC watches to ensure the safety relay changes state. If it doesn't, the operator is alerted of the problem.

This concept can be extended to automatic safety checks at regular intervals, such as after each shift. Perhaps resetting the part counter will initiate the next safety check. It only takes a couple minutes, and operators likely won't complain, as it's for their own protection. ✎



SMALL "PRESS" APPLICATION

Continued from page 1.

Consider a simple hydraulic forming application; as there are no hydraulic safety valves available, two single valves are required. Feedback from each valve (i.e., pressure switch) is required. To properly detect a failure of either valve, these pressure switches must be monitored to ensure they change state when required. Otherwise, a pressure switch failure could go undetected, which could eventually lead to an undetected valve failure.

Now we can do that with the PLC, right? Wrong. Section 8.1.2 states that the safety control systems "shall be hardware-based", and include "automatic monitoring at the system level", and that the PLC is not part of the safety control system. To complicate the matter further, it's extremely difficult to dynamically monitor a pressure switch with hardware.

One solution is to use a safety PLC (compliant with section 8.2), allowing us to perform all safety functions on the machine, while also reliably monitoring the hydraulic valves. We recently used a Jokab Pluto safety PLC for the above application, replacing both our safety relays and a "shoebox PLC". In the end, very little cost was added to the project, and the safety circuitry met all code requirements.

For more information on this application, please contact WINTEK Engineering Ltd.

WARNING: Safety PLC programs should be designed and/or validated by a professional engineer. This is necessary to ensure algorithms are implemented in a control reliable manner. ✎

ASK THE EXPERTS

You sent in questions and we're giving you the answers! Due to the large volume of requests we've received so far, we've extended this edition to address more of your questions and concerns.

**Q. Do I need to perform a PHSR?
What about the exemption clauses?**

A. Under certain conditions, it is possible for a company to exempt an apparatus (piece of equipment) from a Pre-Start Health and Safety Review. As a general rule, this should only be done if the manufacturer certifies the apparatus as meeting all requirements of the Regulations for Industrial Establishments and applicable safety standards, and no modifications are made after installation. Manufacturers are often reluctant to provide this certification, or will provide "partial certification", limiting their responsibility.

For those companies rebuilding equipment, certification is required stating that the apparatus meets current applicable standards.

It should also be noted that in order to be exempt, the protective element needs to be installed according to manufacturer's directions and current applicable standards. There are literally hundreds of "current applicable standards" (see the "standards" section on www.phsr.com). Should you not meet any single criterion described in these standards, then your company is liable.

By having a PHSR conducted by a professional engineer, you are utilizing someone who already has full knowledge of applicable standards and codes. For the cost of this certification, one could likely hire an engineer to perform a full PHSR. ✓

Q. Can I use one of our company engineers to perform a PHSR?

A. Any professional engineer registered in the Province of Ontario can perform a PHSR.

Therefore, an employee engineer can be used, but the following should be considered:

- a) An employee engineer may be subject to undue pressure from management to approve an installation.
- b) The employee engineer doesn't usually have a means of acquiring professional liability insurance.
- c) A third party evaluation will be more readily accepted by regulatory bodies and indicates a higher level of "due diligence".

In engaging an outside engineer to perform a PHSR, it should be remembered that only companies holding a Certificate of Authorization from the PEO can legally offer engineering services and performing a PHSR is an engineering service. P.Eng and Certificate of Authorization status can be verified by calling the PEO at **(416) 224-1100**.



Q. Section 54(1)(K) Order – What is it and how does it affect me?

A. In the course of their travels, an MOL inspector may identify a piece of machinery or equipment which appears to be unsafe. The machinery may not have had a PHSR review because it was in place prior to October 2000.

In cases where there is a significant potential hazard to a worker, the inspector will issue a 54(1)(K) order. This order requires the employer to engage a professional engineer to verify that the machine or equipment is “not likely to endanger a worker”. This triggers a situation where the professional engineer must go beyond what is required in a PHSR. This may result in higher audit costs and higher costs for remedial measures.

In acute cases, the MOL inspector may issue a 54(1)(L) order. This order prohibits operation of the machine until the 54(1)(K) order has been satisfied. This obviously has significant production downtime implications.

Therefore, if you suspect that there is a safety issue on a machine in your facility, a PHSR or even an informal audit will go a long way towards avoiding a 54(1)(K) or 54(1)(L) order and the substantial subsequent costs. ✎

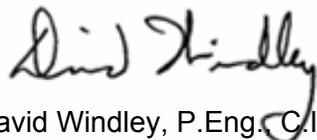
If you have a question you would like to see answered in a future “Ask the Experts” column, email us at wintek@wintek-eng.com. We can’t wait to hear from you!

WINTEK ENGINEERING LTD. IS 10 YEARS OLD!

Thanks to the support of our loyal clients and our dedicated employees, WINTEK celebrates our 10th Anniversary on February 17, 2004.

Our Success is based on professionalism, timely response, and quality of service.

We pledge to continue to earn your trust in helping you address your safety concerns.

A handwritten signature in black ink that reads "David Windley".

David Windley, P.Eng., C.I.M.
President, WINTEK Engineering Ltd.

Visit WINTEK at www.phsr.com for more helpful hints and informative articles about PHSR’s. You will also find links to various standards and other safety related downloads. We can also answer your specific questions regarding PHSR’s in individual situations.

Our main website, www.wintek-eng.com, gives more detailed information regarding WINTEK’s services and various accomplishments.