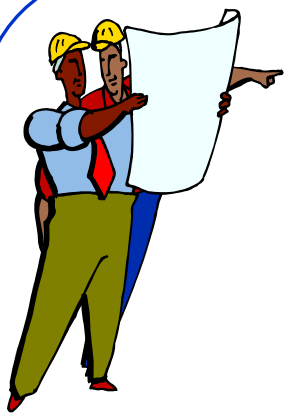
The Blue Bolt

WINTEK **Engineering Ltd.**
Fall 2005 Edition

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



ALLEN BRADLEY DRIVEGUARD

Allen Bradley now offers a DriveGuard option module for their Powerflex 70 VFDs. When properly integrated, this module can allow a safety relay to perform a category 3 stop (according to EN 954-1). The DriveGuard module costs around $100, depending on your AB discount. The board removes power from the IGBTs, the large semiconductors, which actually perform the power switching.

Is the DriveGuard module control reliable? Mostly. We still recommend using an isolation contactor in addition to the DriveGuard for high-risk applications.

The DriveGuard modules can either be ordered with the drive, or they can be added afterwards. Powerflex 70 drives are currently available up to 20HP at 600V. Allen Bradley plans to offer DriveGuard modules for their other model lines in the future.

ASI SAFETY @ WORK

AS-interface is gaining popularity. This “bit bus” is perhaps the newest major field bus on the market. Wiring is straight forward – you have a single cable with two conductors which carry both the power and the data. You need an ASi monitor (they’re available for all major PLC’s) and ASi compatible devices, or a standard device with an ASi I/O block.

ASi Safety @Work is an extension of the standard AS-Interface. You use the same ASi cable, and you still need an ASi monitor; you simply add ASi safety devices, and an ASi monitor. The ASi monitor is the “safety relay” of the system, and you need an ASi monitor in order to provide safety outputs. However, the monitor is comparable to a small safety PLC in terms of its capabilities. The whole system is approved up to Category 4 per EN 954-1.
Continued on Page 3.

90 Rankin St., Unit 28, Waterloo Ontario N2V 2B3
Phone (519) 884-7999 ● Fax: (519) 884-5333
wintek@wintek-eng.com

RISE IN MOL INSPECTIONS

Since the last issue of The Blue Bolt, Wintek Engineering has seen a rise in the number of Ministry of Labour Inspections. The ministry has also made plans to increase their number of inspectors and have posted this announcement on their website www.labour.gov.on.ca.

What does this mean?
It can be expected that MOL inspections will continue to rise and failure to comply with the current *Health and Safety* and *Labour regulations* may result in shut down of equipment, machinery, entire plants, large fines or even jail time.

Does the ministry have to give you notice of their arrival?
The answer is NO. The ministry is not required to give written or other warning of their arrival. The MOL website states:

> *"Any officer or inspector of the Ministry, acting under the written authority of the Deputy Minister, has a right of access at all reasonable hours to any office, factory, shop, place of business or other premises for the purpose of carrying out this Act or any Act or regulations administered by the Ministry."*

What action can the ministry take?
The ministry has the power to issue a Stop Work Order. This means that they can halt operation on any equipment, machine or process or in some cases entire plants. They also have the power to issue large fines and in extreme cases criminal charges.

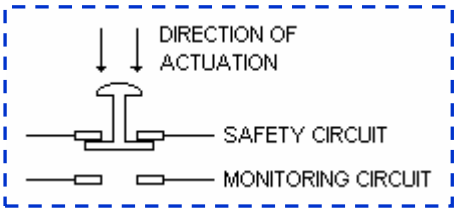
> *"Where an inspector is of the opinion that work on any undertaking or any part thereof to which any Act or regulation administered by the Ministry applies is being done in a manner or under conditions that are dangerous to life or property, he or she may, by written order to any person responsible for or in charge of the work, require the immediate cessation of the work or any part thereof that he or she considers dangerous."*
>
> *"Every person who contravenes this Act or the regulations or any notice or direction made thereunder is guilty of an offence and on conviction is liable to a fine of not more than $25,000 or to imprisonment for a term of not more than twelve months, or to both."*

What preventative action can be taken?
The best way to prevent a Stop Work Order is to assure that all equipment and machinery in the work place meet the *current* safety standards. Taking the steps to do this is always easier and less costly than dealing an injury in the work place or a Stop Work Order issued by the MOL.

90 Rankin St., Unit 28, Waterloo Ontario N2V 2B3
Phone (519) 884-7999 ● Fax: (519) 884-5333
wintek@wintek-eng.com

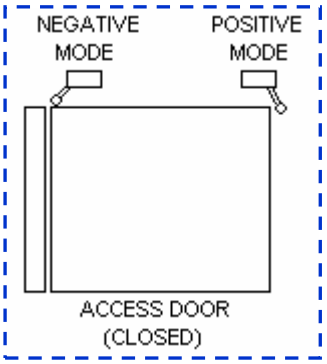
LIMIT SWITCHES AS ELECTRICAL INTERLOCKS

Mechanically actuated interlock switches can be used to secure a hinged or removable guard against entry while a machine is running.

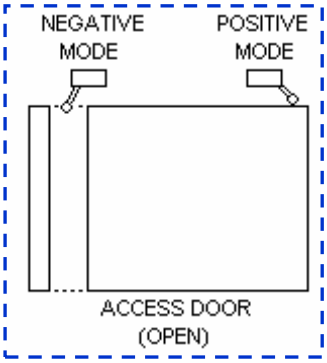


To ensure that these interlocks will function in a fail-safe and reliable manner, several points must be considered:

1) The switch should have positive acting contacts. That is, the contacts are forced open by the actuating pressure, without springs. Most industrial limit switches fall into this category. Most "micro" switches do not.
2) The mechanical actuation should be designed so that when the guard is in place, the switch is at rest with the safety circuit contacts in the normal closed position. If the guard is opened slightly, the mechanical actuation must have the contacts open to de-energize the machine.



Note: The risk analysis of the machine will dictate the number and type of switches required for any removable guard. Where more than one switch is required, it is good practice to use negative mode actuation for the second switch.



ASi Safety @ Work, cont. from page 1

Of course, as with any safety bus, material costs are greater than a standard system. The savings is realized through reduced installation costs, improved troubleshooting capabilities, and improved functionality. Retrofits are a breeze – the ASi cable can run in free air, eliminating the need for installing additional conduit. Savings are especially high for those already using ASi that would already have the ASi monitor.

For more information, contact Wintek at (519) 884-7999 or visit www.as-interface.com.

ASK THE EXPERTS

I am moving a machine within my facility. Do I need to perform a PHSR?

A: Movement of a machine within a workplace normally does not require a PHSR to be performed as long as no modifications have been made to the machine and no hazard has been introduced by its position in the new location. Additional fixed guarding can be enhanced without triggering a PHSR.

However, if a worker is injured on that machine, the MOL would be in a position to request a 54 1 k audit, shut down the machine under 54 1 l, or lay charges. The MOL may request a 54 1 k if they don't like the look of the machine.

The most damning evidence would be if the machine has not been upgraded to meet the safety improvements already implemented in other similar machines in the facility or if the machine does not meet internal corporate standards.

My recommendation is to perform an informal audit (either internal or external) and establish a plan of action items and schedule for implementation as required. In this way, you are exercising due diligence by knowing the potential hazards and having a plan in place to deal with them.

WINTEK Engineering Limited is pleased to announce that Tyler Underwood has satisfied all the technical and experience requirements qualifying him as a professional engineer in the Province of Ontario. This entitles him to use the P.Eng. designation and provide full engineering services to all of our valued clients. Please feel free to contact him at our office with any of your engineering needs. Congratulations Tyler!

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.