PERTRONIC INDUSTRIES LTD

FIREBITS

December 2003

Two F120 Panels Networked At Britomart

Auckland's Britomart Transport Centre became a reality in June after many years of debate, delay and design changes. The $200 million-plus development finally brings rail transport to the bottom of the CBD and forms the focal point of ongoing development to the region's transport networks.

Running east to west, the main station (pictured) has five platforms and is completely underground. A tunnel (approximately 500 metres long, with two tracks) runs eastwards towards the old railway station, and can be seen above as a small area of light in the background behind the train. The large circles of light above the train are cone-shaped skylights to draw natural light into the station, and are symbolic of the many volcanoes around the Auckland region. The main passenger entry and exit to the station is to the west, through the fully refurbished CPO building, protected under the Historic Places Act, with the interior converted into retail and commercial space. The platform number signs also incorporate a PIDS (Passenger Information Display System), providing continual information on train arrivals and departures.

A Pertronic F120 analogue addressable fire alarm panel, with six data loops, is used to co-ordinate the specialised fire detection and suppression systems throughout the station and tunnel areas. (go to page 4)

Seasons Greetings !

It's hard to believe that it is twelve months since we last wrote this greeting, as another busy year has once again passed very quickly. From all of us at Pertronic Industries, thank you very much for your ongoing support during 2003. We continue to enjoy working with the different sectors of the fire protection industry and look forward to further developing these relationships in 2004. Please accept our warmest wishes for you and your families to have an enjoyable and safe Christmas and New Year.

Christmas - New Year Business Hours

Pertronic Industries will close for the Christmas break on Tuesday 23 December and reopen on Monday 12 January 2004, although some warehouse operations will resume with reduced staffing on Monday 5 January. A limited emergency supply service will also be available between 23 December and 5 January, although fire alarm servicing companies are encouraged to order stocks of spare parts in advance.

A New Year - A New Home

The continuing growth of the company's business in New Zealand and Australia is now generating pressure on available space in our Lower Hutt premises. So in 2004 we are moving to a bigger and better building. But we won't be moving very far - just across the road in fact, once the new location has been extended and refurbished to our requirements. More news on our move next year.

Not All Heat Detectors Are Created Equal

One of the changes in NZS4512:2003 is that *all* detectors shall provide a visual indication of operation (clause 216.5), and this change is scheduled to take effect from April 2004. With heat detectors, this means that devices with LED indication will need to be used. Indicating heat detectors have always been available, but seldom used as they have a higher cost than the non-indicating version. But the benefit of using indicating heat detectors is obvious. The device that is in alarm can be more easily and quickly identified - by building occupants, by fire service personnel and by alarm servicing technicians.

Pertronic Industries have developed a new, cost-effective indicating heat detector. Still using the same external casing as before, the unit has a completely redesigned circuit board which utilises surface-mount circuitry. A rubber gasket has been added to provide improved moisture protection for the new circuit board. The design of the terminals has also been improved to prevent damage (and a faulty electrical connection) from over-tightening.

Some makes of heat detectors have the terminals designated *positive in, positive out* and a *common negative*. With some of these detectors the circuit wiring from the panel must be connected to the *positive in* terminal for the detector to work. The danger with this design is that if the devices are incorrectly wired, all will appear to be OK at the panel but the detectors will not raise an alarm in a fire situation.

To prevent this possibility, the *Pertronic Indicating Heat Detector* terminals are *Bi-Directional*. The terminals are designated *R, R* (for the positive in and positive out) and *B* (for the looped common negative). Either *R* terminal may be used for the positive in, with the other used for positive out. This Bi-Directional feature requires a small number of additional components to be built into the detector. However, the alternative design approach requires strict observance by the installer of the in and out wiring direction (not always easy to identify the wires in a ceiling space).

We believe that the small amount of component cost required for Bi-Directional wiring capability is more than justified by the increase in safety, with ease of installation an additional benefit.

So not all heat detectors are created equal. Only Pertronic Indicating Heat Detectors are approved for use with Pertronic fire alarm panels. Beware of inferior substitutes.

Trends In Fire Detection

Recently Stuart Davies, European Marketing Manager for System Sensor Europe, wrote an article on trends in fire detection for the *International Fire Protection* journal. The article provides a very good overview on technology improvements by detector manufacturers generally, and explains key points of difference in detector types. We reproduce this article in sections over the next few editions of Firebits.

"The fire detection industry is extremely innovative; the major detector manufacturers are continually developing new detection methods and improving existing technologies in order to provide better performance. The ultimate goal of instantaneous detection of a real fire combined with zero false alarms arising from environmental disturbances is unlikely ever to be realised, but today's fire detectors are orders of magnitude better than those available only a few years ago.

Conventional and addressable fire detection systems

The fundamental difference between the two types lies in the ability to identify the location of any specific detector. In a conventional system, the control panel can only give a general location accurate to a single fire zone; in an addressable system, each detector and module has a unique address.

The choice between the two system types is relatively straightforward at the two extremes; conventional systems are normally more than adequate in small installations, while analogue addressable systems are the norm in large premises. The most difficult choice to be made between conventional and analogue addressable systems lies somewhere in the middle, where both could be applicable. This boundary is not a fixed point; it has steadily fallen as lower cost computing power has made the analogue addressable system a cost-effective alternative in smaller systems. In 1990, the boundary was above twelve zones; by 1995, it had fallen to eight to ten zones; today it is close to six zones.

The recent past has seen development effort from the majority of fire detector manufacturers concentrated on their analogue addressable product ranges. Analogue addressable fire systems offer distinct advantages over conventional ones, particularly in larger and more complex installations, where the installer, the building's occupants and the emergency services all benefit from the inherent sophistication and consequent increased functionality and discriminatory abilities of the analogue addressable system. To go back to fundamentals: the primary purpose of a fire system is to detect a fire and subsequently warn the premise's occupants and the Fire and Rescue Service; by providing as early a warning as possible, the occupants have the best chance of avoiding injury and damage to the building will be minimised. As our understanding of fire has grown over the years, so fire systems have become more sophisticated, with different detection methods characterised to particular sorts of fire. All detector developments are intended to improve the speed of response to a real fire without increasing the frequency of false and nuisance alarms.

The total installed cost of a fire system is heavily dependent on the size of the installation. As a general rule of thumb, in systems with more than six fire zones, an intelligent system is more cost effective, because the higher cost of the analogue addressable detectors and control panel is more than offset by reduced installation costs and ongoing service benefits. By enabling both detectors and sounders to be connected on the same loop, the wiring requirements are reduced even further, a significant factor in large or multi-floor buildings. In such larger systems, not only is the initial cost of installation lower, but also the functionality of the system is increased. Control panels can normally be networked, either in a peer-to-peer or master-slave configuration, enabling one system to monitor large and multi-building sites. The fire system can also be more closely integrated with other building service systems such as security, access control, environmental control, heating and lighting.**"** (to be continued in Firebits March 2004).

New Fire Alarm System - Congratulations

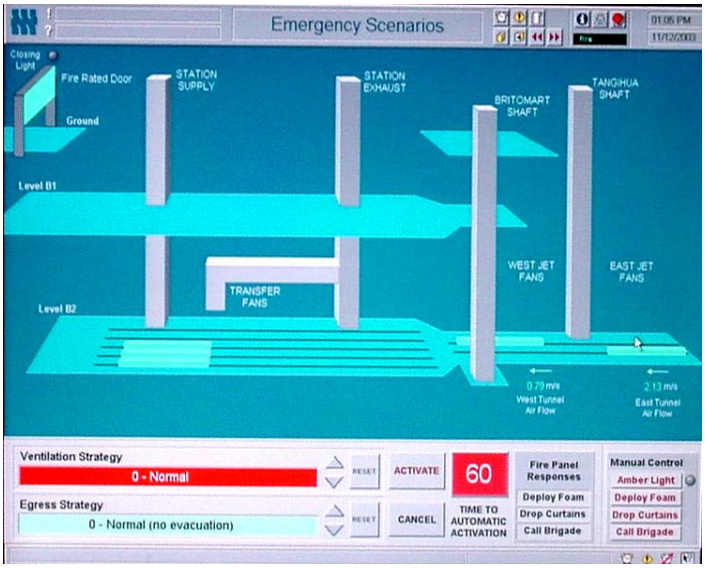
Congratulations to Tyco Electronics on their move to a brand new building in Christchurch. We are pleased to note that during construction a Pertronic F16 fire alarm panel (together with Pertronic heat detectors and Pertronic manual call points) was installed to provide comprehensive fire detection coverage.

We also congratulate the Tyco Group on the wisdom of their choice in fire alarm systems.

PERTRONIC INDUSTRIES LTD
20 Eastern Hutt Rd, Wingate, Wellington.
PO Box 35-063, Nae Nae, Phone (04) 5673229, Fax (04) 5673644, email: sales@pertronic.co.nz
AUCKLAND OFFICE:
PO Box 20-353, Glen Eden, Phone (09) 8134555, Fax (09) 8134666, Mobile 021 2208885

(from page 1 - Britomart Transport Centre)

A fibre optic linear heat detection system is installed throughout the tunnel and platform areas. The system is capable of detecting and reporting heat changes to within a one metre accuracy on its 2,000 metres of cable. This data is then processed into the relevant detection zone (32 in total) in the interface to the Pertronic F120 fire alarm panel. A corresponding 32 zones of foam deluge suppression systems have been installed, also interfaced back to the F120 panel. There is a further high-level interface from the F120 panel to the SCADA (System Control & Data Acquisition) system, used to control and supervise all electrical and mechanical services within the Transport Centre.



An alarm input from the fibre optic system generates an alarm at the F120 panel, which in turn alerts the SCADA system and starts a countdown timer. The SCADA operators in the control room see the alarm on their touch screen schematic (above right), which also displays a set of response options (e.g. initiate an evacuation, call the brigade, operate a zone of foam suppression, override the alarm, etc). If the operator takes no action by the end of the countdown period, the F120 panel is programmed to commence a set of predetermined actions itself. Several different evacuation scenarios are in place (depending on the location of the alarm) and the PIDS displays on the platforms then show the relevant evacuation information.

Nine independent gas flood systems throughout the complex are also interfaced back to the F120 panel for control and supervision of the relevant responses to any activation from these systems.

A second F120 panel is located in the CPO building (left) for the fire detection systems throughout the retail and commercial areas. Five Vesda systems cover the ground floor area (the main transition point for commuters to and from the underground station) and are also interfaced to this F120 panel. The Vesda pipework is installed in copper and is concealed above a false ceiling to preserve the aesthetics of the building. Repeater displays for each Vesda are also located in the station's main control room. The F120 panel in turn is networked to the main station's F120 panel, to allow selected information and events at each panel to be displayed on the other, and to have information for the overall site displayed on three LED mimics.