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Fire detection in mining applications

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Dave Boyack - 3/1/2008

As is the case in most specialised applications, fire detection systems need to be designed with the requirements unique to that particular industry in mind.

The mining sector is a good example of this. While the obvious reaction to fire risk assessment would be to focus on underground tunnels, the majority of fires on mines do not occur in these locations.

The likelihood of fire is far greater in plant rooms and on-site substations and often the effect of this in terms of lost production can be equated to other 'large-scale' mining incidents.

Relatively high power consumption, increasing use of sophisticated electronics and the harsh environment are all factors that contribute to the element of fire risk and as a result increase the necessity for a suitable smoke or fire detection system.

Do not play with fire

The environments are in virtually all applications very dusty, often wet, potentially explosive and subject to seismic disturbance.

System design needs to take this into consideration and particular attention needs to be given to the types of equipment installed, form of detection and location.

Fire detection companies with experience in 'special risk' applications know from hard-won experience that not all products are created equal and in assessing their equipment usage, some common patterns emerge:

Intrinsically safe products

Given that processes on mines both require and produce hazardous and explosive chemicals, special attention should be given to the equipment chosen. Smoke detectors and related devices approved for use in these areas are mandatory. Only persons with the relevant experience should be permitted to undertake these designs and on completion it is vital that the system be inspected by suitably-qualified persons.

Equipment suited to harsh environments

Mining processes produce large amounts of dust and although most equipment rooms feature some form of filtration, even these critical areas will over time show some level of contamination.

This dust, combined with the need for early warning and sometimes-explosive applications, lead many installation companies to favour aspirating smoke detection systems such as the Vesda units.

Their longevity and effectiveness has been proven in mining applications and lower maintenance input remains a big plus.

Some specific applications are: plant rooms, equipment stores, hazardous areas, conveyors, underground tunnels and dump truck engine compartments.

Networkability

Mining operations usually encompass large areas and feature central control or operations centres.

This makes the ability for products to network or interface to site networks vitally important.

Reaction times to an incipient fire are often lengthened by the size of these sites and again, this is a good argument in favour of very early warning detection systems.

The use of suitably qualified people and the correct product cannot be emphasised enough and it is vital to protection of life and sustained productivity that this be taken into account when assessing and protecting mining environments.

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