

**You can't help. Unless you know.**



# Do you have visibility of safety shower and eye wash activation?



## Safety Shower Use Should Be Alarming

*The typical Safety Shower alarm is a siren or flashing light that activates when a safety shower or eye wash station is triggered. Localised alarms rely solely on the hope that there is someone else in the vicinity that is able to respond, or call for further assistance. Lean staffing arrangements have compromised this assumption leaving employees at risk of suffering unnecessarily for extended periods.*

It is fast becoming a necessity to attach some sort of device to each safety shower and connect that all the way back to the control room. If the safety shower is activated, then an alarm should be raised in the control room so that an emergency response can be initiated immediately.

In a production facility that contains tens, if not hundreds of thousands of data points just to control the process, alarms and other monitoring points that are of value to a WHSE Specialist are easily overlooked. If a hazard is identified that should be monitored more closely, like an alarm





point for a safety shower, then there are common barriers to overcome:

- There is no power in that area of the plant.
- We do not have spare instrument cables nearby.
- There is limited capacity in the control system.
- The installation cost far exceeds the perceived risk.

Some facilities have gone through the process of installing monitoring equipment on the safety shower and running cables all the way back to a control room. In addition to the cost of any instrumentation, these projects may have also incurred the costs for engineering design, changes to plumbing, additional cabling, cable tray's, scaffolding, digging trenches, new power supplies and additional control system hardware. The solution is seen as a necessity by many, but one that comes with a hefty price tag.

Wireless instrumentation allows for this solution to be implemented quickly and without the costly investment in local power sources, cabling and any associated engineering design work.

The ideal solution would be something that can be attached to the safety shower without interfering with the plumbing, has its own power supply and can connect to the control system without any cabling. Fortunately, some process control engineers already make use of such devices, making them useful, proven solutions, to be added to the WHSE toolkit. They are wireless transmitters.

### WirelessHART

WirelessHART refers to an international standard for wireless transmitters. These transmitters, available from many vendors, are specifically designed for reliable and secure communications between the transmitter and the control room. WirelessHART transmitters require no instrument



nor power cables and come with internal power modules, making installation rapid and easy. The power modules are intrinsically safe and can run the transmitters for up to 10 years.

WirelessHART transmitters:

- do not need power in that area of the plant.
- do not need spare instrument cables nearby.
- do not need to connect to the control system.
- are immune to and have no impact on wifi networks
- achieve greater than 99% reliability

### Reliable and Secure

In a large facility, it is common to find areas where radios are unreliable. This is because traditional radios rely on direct, line of sight links between two points. WirelessHART gets around this by letting each and every sensor act as both a transmitter and a repeater. Each transmitter need only send its data to its nearest neighbour which will pass the message along to the next neighbour and so on, relaying the message up to seven times, until it is received at the control room. In practice, WirelessHART networks will get messages over and around any obstacle that would normally block radio signals so that every part of the plant can be reached.

WirelessHART has been designed to be as reliable, if not more reliable, than traditional cabling. The WirelessHART network is constantly monitored and will automatically optimise and heal itself if there is a disturbance. If a transmitter drops out of the network, a fault warning will be raised. Compare this to a simple wired proximity switch that is either normally open, where a cable break can go undetected, or normally closed, where a cable break initiates an alarm. When a WirelessHART device is installed according to best practices, the user should expect at least 99% availability.

### Proving Compliance

Standards require that safety showers and eye wash stations are regularly inspected and tested, with every facility obligated to provide evidence that this is being done. With a monitoring system in place, it is a simple matter of walking around the plant and activating each shower in turn. Every activation will generate an alert in the control room which will be logged. At the end of the series of tests, the alarm log can be printed off and attached to a report as evidence that the tests have been



Safety Shower Setup

carried out. Whilst providing a safe workplace is most important activity of a WSHE Specialist, the value in demonstrating compliance cannot be underestimated.

Safety showers are only the tip of the iceberg for improving plant safety. Other uses of these transmitters include backup monitoring of existing systems and removing the requirement for employees to perform manual checks, keeping them away from hazardous areas.

### Safety System Monitoring

In many plants, there are existing safety systems that must be checked manually on a regular basis. Automatic verification can improve the process by

increasing the frequency of tests and removing the reliance on human vigilance. Since safety systems are wired, utilising a wireless solution means that the secondary measurement is via an alternative pathway, making it highly unlikely for both systems to fail at the same time.

At a petrochemical plant, in Australia, tank level safety systems were regularly verified using dip sticks. This is a manual task requiring technicians to climb to the top of several tanks to take readings. A decision was taken to automate the procedure using wireless enabled level transmitters. In this instance WirelessHART transmitters replaced the dip stick method, improving both safety and accuracy, and provided a redundant communications path, independent of the wired system.

At a refinery in America, junction boxes where multiple power and communications cables meet are supplied with air for continuous purging. There is always the potential for explosive gases to be in the atmosphere, so by purging the junction boxes, if there is ever a fault that causes a spark, the contents of the box will not be flammable. A safety review found that the loss of purge pressure posed a significant risk and that a plan was required to implement continuous monitoring. WirelessHART transmitters were easy to install, had the mesh network to reach every corner of the facility, and operated independently of cabling associated with the junction box.

## Hazardous Areas

The most common method of improving plant safety is to reduce the exposure of employees to hazards. Wireless transmitters can be also used to keep staff out of hazardous areas. This will reduce their exposure to chemicals, explosive materials, radiation or simply reduce the time spent working

at heights or in enclosed spaces which have their own associated risks.

An oil and gas producer operating in Australia regularly sends staff out to remote locations to verify the integrity of equipment. Wireless instrumentation was installed to reduce the required manual inspections by 75%, minimising the time staff spent travelling, often alone, along remote gravel roads.

In India, at an oil refinery, staff were constantly checking the supply of lube oil to pumps and noting down which devices were running low. A failure of any pump can lead to a plant shut down, so close monitoring was warranted, however, the products being pumped are highly flammable, so the area is considered hazardous. The addition of wireless level transmitters transformed their maintenance procedures. The time staff had to spend in the hazardous area was reduced significantly, and the reduction in manually collected data improved monitoring accuracy.

## Safety Smart

The number one goal of every company is to keep staff safe, and yet, the effectiveness of any improvement to site safety is always balanced against the cost of implementation. With the reduced installations costs of WirelessHART over conventional technologies, it is, of course, a very effective and most applicable solution for safety applications.

