How to Keep Lone Workers Protected – In and Out of Hazardous Locations

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White Paper

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What is YOUR Safety Plan?

Having the proper procedures in place to respond to emergencies is an absolutely vital part of any Safety Plan. Employers never want their field workers in a situation where they have to work alone. Unfortunately, circumstances often don't allow for the buddy system. This can result in life threating issues if a field worker has an accident or medical emergency and is unable to call for assistance. Technology plays a vital role in these cases. Integrating personnel monitoring into devices workers may already be carrying enables safety procedures to be initiated as quickly as possible. Lone worker/personnel protection systems* are vital to ensuring emergency response resources are deployed as quickly as possible.

In today's connected world, most employees are already carrying some type of smart phone or tablet as part of their daily tool bag. By leveraging the capabilities of those devices, companies can ensure that even when it is necessary for an employee to work alone, they can maintain the ability to quickly respond to a medical emergency. Having the right technology in place can be especially challenging in hazardous areas where any equipment needs to meet special safety requirements. Fortunately, there are options available that can help keep workers connected in even the most demanding environments. Depending on the particular solution being used, this can be done in a number of ways. Most lone worker protection systems rely on two main device features or apps to help keep workers safe:

1. Tracking

Using the GPS capabilities of smart devices, lone worker applications have instant access to positional data that is immediately broadcast to emergency response teams when an alarm is triggered. Response time is critical, so having immediate access to exact location data when an employee may not be able to communicate is vital. In some cases, the employee's position can be automatically overlaid onto a map of the facility.

In indoor areas where GPS isn't a reliable options Bluetooth beacons, Wi-Fi, or even RFID technologies can be incorporated to supplement GPS tracking of personnel.

2. Communication

When an alarm is triggered, a call is automatically placed so that response teams can attempt to communicate with the potentially injured worker and gather details about the emergency. This provides the opportunity for response teams to direct the appropriate resources immediately in cases where the worker is able to communicate effectively.

How alerts are triggered is the next major component of a lone worker protection system, and usually occurs in one of three ways:

Device Sensors

The same sensors that tell a smart phone when to automatically rotate the screen can be used to detect falls, lack of motion, or if an employee is in a horizontal position. A device's settings can be configured to meet certain thresholds before an alarm is triggered. Should a worker need to lie down to perform maintenance on a piece of equipment, a pre-alarm function is also available. This enables the worker to deactivate the alarm function, preventing a false alarm from being sent. If the pre-alarm function is not activated, a distress signal will be triggered.

Pre-Defined Timer

In an especially high-risk situation, it is imperative for an employee to "check in" every so often. In these situations, a pre-defined timer can be set prior to entering the hazardous area, requiring the employee to affirm that they are OK with a simple button press. If the timer reaches zero with no response from the employee, an alarm is automatically triggered.

One-Touch Alarm Button

In addition to these lone worker protection systems, smart devices that employ these programs often have a dedicated physical alarm key. Field workers can activate an alarm on their smart device simply by pushing a button that immediately notifies first responders of an incident. In situations where an employee is incapacitated, there is no need to scroll through contacts or work a keypad. A simple push of a button triggers the alarm.

What happens when an alarm is triggered?

Lone worker protection systems can be configured according to the needs of the user as to what happens once an alarm is triggered. At the simplest level, text messages, emails and voice calls containing GPS location data are immediately and simultaneously sent to supervisors and emergency responders.

In addition to transferring the coordinates, the site of the accident can also be visualized on a separate map. This makes it immediately apparent where the employee is located. More advanced systems may offer 24 hour remote monitoring options as well as additional features.

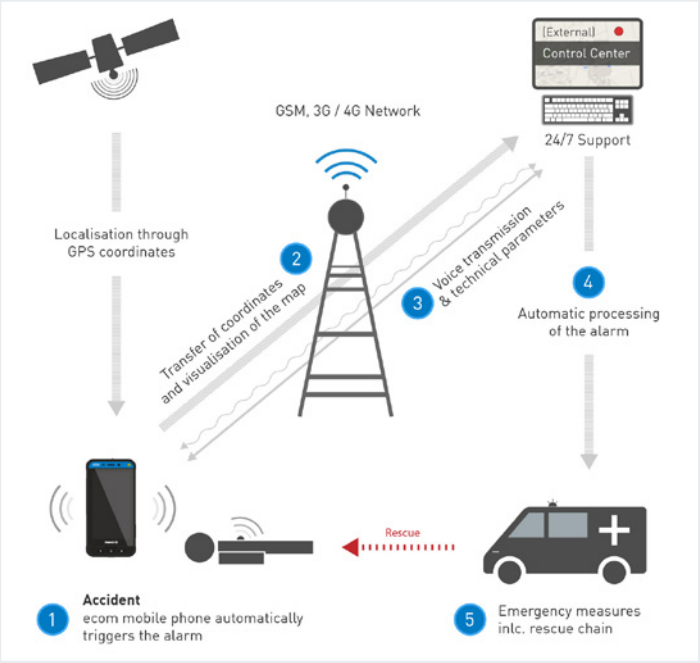
Lone Worker Protection can be applied to applicable smart devices in three different modes: Basic, Professional System, and Professional DGUV Certified.

The Basic Mode provides the basic function of a call to a control station or a telephone in the event of the alarm being triggered.

- The lone worker suffers an accident or gets into a dangerous situation. The sensors in the worker's smartphone (Smart-Ex® 02 / Ex-Handy 10) with LWP functionality register this in accordance with the selected alarm modes.
- The smartphone with LWP functionality automatically triggers an emergency call. The emergency call can be sent to up to five different recipients and any type of phone. The SMS contains the GPS coordinates.
- The smartphone with LWP functionality simultaneously establishes vocal communication with the recipient of the emergency call. This enables the recipient to determine whether the injured employee is still responsive and/or what injuries he/she has suffered.
- The recipient of the emergency call coordinates additional measures and sets the chain of rescue in motion.
- The employee is rescued.

In addition to the basic function of a call to a control station, the Professional System Mode provides additional functions that can be activated via a server and retrieved via a PC workstation.

- The lone worker suffers an accident or gets into a dangerous situation. The sensors in the smartphone with LWP functionality register this in accordance with the selected alarm modes.
- The smartphone with LWP functionality automatically sends an alarm to an internal control center or an external service provider. In addition to transferring the coordinates, the site of the accident is also visualized on a separate map. This makes it immediately apparent where the employee is located.
- The smartphone with LWP functionality simultaneously establishes vocal communication with the recipient of the emergency call. This enables the recipient to determine whether the injured employee is still responsive and what has happened.
- The processing (organization and coordination) of the emergency call is safeguarded and documented in the System Mode. The rescue of the employee is thereby also guaranteed.
- The employee is rescued.



With the use of public telecommunication networks, the third lone worker protection mode, **DGUV Certified**, can be secured for hazardous areas with potentially explosive atmospheres. After the purchase of a smartphone certified for hazardous locations, all of the aforementioned lone worker protection system properties can be downloaded. In an emergency, an emergency call can be sent to the control center manually by pushing the button (voluntary emergency call), as well as automatically by triggering the sensor (independent of the person's emergency call). Accidents can be detected in the open air via GPS and in rooms via Beacon technologies.

Having some form of lone worker protection is a vital component of any Safety Plan. It becomes even more important when working in classified areas with potentially explosive atmospheres. Naturally, any monitoring system must then also meet the stringent requirements for hazardous areas. Fortunately, there are Division 1 and Zone 1 certified tablets and cell phones, such as the Smart-Ex 02 or Tab-Ex 02 from Pepperl+Fuchs,that are available with a plethora of options available for lone worker protection systems.

These same devices can also be used for a multitude of other options: inspection reports, operator rounds, maintenance procedures, process monitoring, standard communication including Push-To-Talk systems, and many other applications. More information on Lone Worker Protection applications, including Pepperl+Fuchs own eSentinel application, can be found in ecom's app library. Integrating personnel monitoring into devices workers may already be carrying, or using those devices for multiple applications, increases ROI and makes operations safer and more efficient for everyone – especially the lone worker.

* Some jurisdictions have minimum requirements for what constitutes an official Lone Worker Protection System. Please verify that whatever system is in use meets local requirements.

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Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus Infrastructure
- Remote I/O Systems
- Electrical Explosion Protection Equipment
- Purge and Pressurization Systems
- HMI Systems
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Industrial Ethernet
- AS-Interface
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