Safety 4.0 in Hazardous Areas

Lone Worker Protection and Communication with the Smart-Ex® 03

At a Glance

- Reliable lone worker protection in hazardous areas
- Detection and localization of accidents
- Emergency call even if the worker is unable to act
- Automatic video stream when entering a high-risk area
- Automatic audio and visual connection in the event of an accident
- Rugged design and powerful battery



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The Application

The factory of the future relies on the extensive networking of production, even in expansive plants. Enterprise mobility solutions provide direct access to data and processes, allowing companies to improve both their productivity and the safety of their employees. In companies operating on expansive plant premises, employees often work alone where they are out of sight and earshot of other persons, even in hazardous areas. They are often exposed to increased risks and need quick help in case of an emergency.

The company must ensure that an accident is detected immediately and that the rescue chain is set in motion reliably. This requirement must also be fulfilled in the event that the victim of the accident is unable to take any action and no one else has noticed the accident.

This is particularly true for plants where critical hazards are present and where there is a risk of significant injury or adverse effect on health. In such environments, there is a legal obligation to establish a lone worker protection (LWP) system that has been tested and certified according to BGR 139, a German occupational health and safety regulation.



The Goal

Lone workers must be equipped with a personal alarm signal device that reliably detects a critical incident using position and acceleration sensors and configured patterns, and triggers an alarm accordingly. The device must be able to establish an audio and visual connection to the victim of the accident, so that they can communicate even if they are unable to move. If the worker is unable to respond, the control center can use this connection to initially assess the situation without any input. For easy and secure data sharing, it should be possible to integrate the mobile device into a cloud server system.

The Solution

The Smart-Ex® 03 smartphone from ecom is certified according to ATEX/IECEx for Zone 1/21 and Division 1.

In an emergency, the device sends an emergency signal to the control center when the button is pressed (voluntary emergency call) or if the position or impact sensor is triggered (involuntary emergency call). All SOS messages are linked to location data: The devices determine the position via GPS and by using the Loc-Ex® 01 BLE beacon can even determine the floor for when accidents occur in a building. The emergency call automatically activates the device's hands-free function and camera, so that the condition of the injured person can be checked directly.

Even if a device falls or no motion is detected, programmable 3-D motion sensors automatically activate an emergency call. Geofencing enables any workspace to be mapped; lone worker protection is enabled when entering the work area, as is video streaming where required.

The Benefits

The Smart-Ex® 03 networks—within the context of Industry 4.0—people, processes, and systems in hazardous areas, increasing employee safety. Programmable 3-D motion sensors automatically trigger an alarm in the event of a hazard, report the location of the injured party based on GPS data, and document the entire process for subsequent examination. Emergency signals are sent to the control room when a button is pressed or when the position or impact sensor is triggered. The smartphone's hands-free function and camera are then automatically activated so that the condition of the injured person can be checked immediately.

This not only increases employee safety but can also reduce personnel costs, since supervisors are no longer required during refueling, for example.

Technical Features Smart-Ex® 03



- 5G and Wi-Fi 6 ready
- High-performance Android™ 15 operating system
- Ultra-rugged large 6-inch multitouch display
- Android Enterprise Recommended (AER)
- Powerful and replaceable 4,400 mAh battery