

INTRODUCTION

Employers are responsible for providing a safe and healthy workplace for their employees. Those workplaces contain often spaces, which are considered to be “confined”. In a confined space, employees face an increased risk of exposure to hazardous atmospheric conditions. Limited access and restricted airflow would normally not arise in an open workplace, but are typical for those atmospheric conditions. A confined space is by definition:

- A space with limited or restricted means of entry or exit
- Large enough for a person to enter to perform tasks
- Not designed or configured for continuous occupancy

These spaces include underground vaults, storage bins, tanks, containers, pits and diked areas, silos, vessels and other similar areas.

According to the OSHA (Occupational Safety and Health Association) some of these spaces require a permit to enter. A permit-required confined space has at least one of the following characteristics:

- Contains or has the potential to contain a hazardous atmosphere
- Contains a material with the potential to engulf someone who enters the space
- Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section
- Contains any other recognized serious safety or health hazards.

Before giving permission to enter into a permit-required confined space, the potential hazards have to be identified and evaluated. Also the atmospheric conditions have to be tested before entry and monitored during the entry.

This application note focuses on using the AirWatch for performing the above mentioned necessary measures during entry in exemplified applications. For testing

the atmosphere before entry, please take a look into “Technical/Application Note 1: Using the AirWatch For Controlling Machines”.



Figure 1. Confined Space Entry

CARBON MONOXIDE AT CONSTRUCTION SITES FROM UNDERGROUND PARKING GARAGES

At construction sites of parking garages and tunnels beneath the ground, so called confined space areas, the workers have often the problem to be aware of gas concentrations, which they caused themselves with their heavy machines. Additionally, the deeper they have to dig, the more CO is going to accumulate over the whole parking garage.

To solve this issue, the workers had to fix portable devices at strategical locations with the airflow around each sensor in consideration. Keeping in mind that portable detectors are for personal protection, this solution is not optimal, especially if taken into consideration that there have to be columns and that additional Beacon Sounders are needed due to lack of visibility.

The AirWatch for monitoring construction sites beneath the ground (Building Parking Garage For example). Not only offers the AirWatch as a pumped gas detector the opportunity to measure before entering the confined space area to check if it is safe, also you can multiple spots at once with a T-pliance. In its GasPod version you have no boundaries in placing it strategically. The pump itself comes with a 2-year-warranty, which makes it even suitable for permanent applications.



Figure 2: Construction site monitoring with portables.

ADVANTAGES OF THE AIRWATCH

- Pumped, semi-fixed 4 Gas detector
- GasPod version available
- 2-year-warranty on the pump
- Beacon Sounder available
- Easy to install with magnets on the back
- Can shut down machinery and close doors
- Programmable DataLog available
- Wireless function available
- Power supply from machines possible

The AirWatch Beacon Sounder in its GasPod version includes a 38 multi-colour LEDs, showing green when on, orange when there is a technical issue (e.g. pump blocked), and in case of an alarm the BeaconSounder will turn into a flashing red with a penetrating sound, so that it is not able to not notice the alarm. Also the Beacon Sounder is fully programmable, so that you can configure it for your demands.

THE AIRWATCH FOR BIOGAS UNLOADING ROOMS

In a biogas plant can easily build up a flammable concentration of combustible gases, especially in those areas, where trucks unload the biomass. To prevent fires or even explosions the AirWatch provides multiple opportunities. You can use it for access control, so that no one can get into the danger area, when it is not safe and it can shut down those trucks automatically. The AirWatch is specially designed for those kinds of applications, since it is not ATEX and not diffusion to keep the price low on the one hand and to make it most suitable for confined spaces like these.

The optional Wireless function allows the AirWatch to communicate to another AirWatch within a 300m distance and as soon as one AirWatch detects an alarm, the beacon sounders of the other AirWatches light up blue. This ensures that no one is getting into the danger zone, when there is an alarm.

Optional there is an AirWatch Repeater available, which allows bypassing a higher distance without an AirWatch itself. As the system is a mesh network and self healing. Also, the optional AirWatch Receiver allows the man-in-charge to monitor every AirWatch on one personal computer with the monitoring Software, which is provided for free with the Receiver.