COMPASSPRO

USE CASES

The new COMPASS Pro™ from Safeguard Equipment® is the most innovative and advanced personal voltage and current detector (PVCD) for line workers, lone workers, and storm responders.

The Safeguard Equipment® COMPASS Pro™: Capabilities and Use Cases

The new COMPASS Pro™ emergency response solution by Safeguard Equipment® is a unique product for industries whose workers work with and around energized lines. The product is a combination of a hardware detection device and a linked cell-phone based software app that conveys information from the device to a designated in-house response team.

The detection device component of the product is a compact, hard-hat mounted unit that is designed to provide 360 degree detection of electrical and electro-magnetic fields, giving warning to users that energized lines are present. The device provides an audible and visual alert, as well as directional indicators, so that workers can locate the source of an electrical field.

In addition, the unit has sensors that can detect an arc flash, as well as detect falls, head impacts, and man-down. These incidents are the most likely results or causes of an electrical injury or injury related to electrical fieldwork. When the unit senses one of these events, the linked Safeguard Equipment app immediately notes the time and starts the 60-second count-down timer.

The purpose of the timer is to allow the user a limited window of time in which to disable the alert, in the case of a false alarm or in cases where the worker may have suffered an event, but does not need medical assistance.

If the alert is not canceled, the app immediately relays an alert signal to the designated response team, whose information has been input into the app at set-up.

The response team then can attempt further communication with the user to verify the user's condition. The response team can notify personnel within the vicinity who may be able to assist, as well as notify 911 emergency services of the existence of a medical emergency. The alert also automatically activates the app's location services data for the cell-phone. This enables the response team to convey to 911 emergency services three items of critical information: the accurate location of the person or persons needing medical aid, the exact time of the incident, and the likely cause of the incident (based on what the sensor detected).

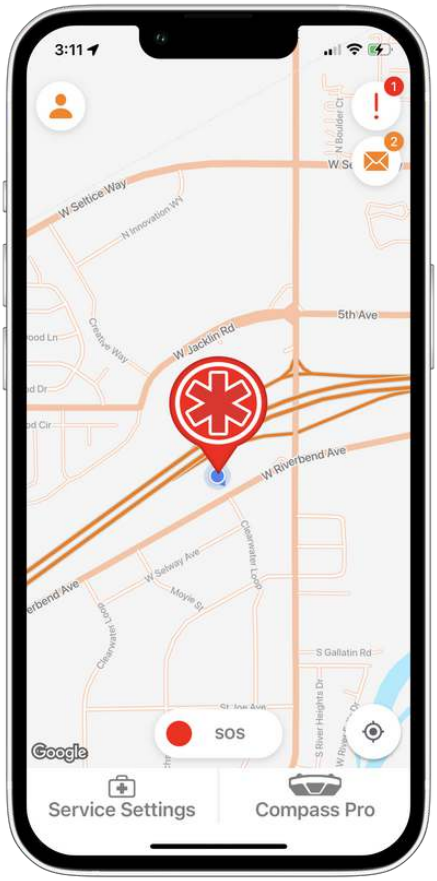
The pre-set protocol in the device and the App act as prompts to ensure that emergency response follows a timely and orderly pattern. This eliminates many of the problems that plague emergency response issues when traumatic injuries occur. Chaotic situations often lead to a lack of appropriate response by individuals, who may panic or exhibit confusion. The goal of the communications link is to keep key personnel who can manage the situation in the loop, and to provide an interconnected channel of communication between the response team and all involved personnel.

The COMPASS Pro emergency response solution is designed to be integrated into an organization's exisiting comprehensive safety plan. For example, when these types of injuries occur, utility companies will implement several steps even before 911 services arrives, such as securing the area to avoid further injury. If the injury is caused by live lines, other

workers will be summoned on-site to make sure additional workers as well as 911 responders do not expose themselves to electrical injury when they attempt to render aid. Another advantage of the communications avenue created by the Safeguard Equipment app is that available personnel can be instructed on whether they can render any immediate, life-saving aid prior to the arrival of 911 services.

Risks Associated With Delayed Response

Universally, emergency medical response technicians (EMTs) acknowledge that one of the most critical factors that determine the medical outcome in any kind of medical emergency is response time.



It is important to note that this is not the response time between the time the 911 is notified and the time EMTs arrive on-scene to render aid, but the response time between the actual onset of the emergency and the time necessary medical aid is rendered, even if rendered by bystanders. In a significant number of cases, what happens in the first few minutes of an injury event is determinative of the medical outcome in the way of mortality, medical costs, length of hospital stay, and degree of long-term quality of life suffered by the victim. The short version: time matters. This is especially true in cardiac events, which electrical shock injuries often are.

Unfortunately, one of the things that causes delayed response is the fact that the 911 system has not kept pace with technology – specifically, cell-phone

technology. While the 911 system can locate the source of a landline-based call, this is not the case with cell-phones. While the technology exists that would give the 911 system the ability to locate people who call from cell-phones, the system itself has not been upgraded in many places across the country.

For the most part, people with cell phones do not realize this handicap, and often think that being able to call 911 without having to find a land-line is a great advantage. While it is in one sense, in another it is not, because using a cell-phone makes it harder for 911 services to find the people who need their help. Consequently, the most critical piece of information that 911 services needs is location, even before knowing what the nature of the emergency is.

The COMPASS Pro emergency response solution eliminates this problem by specifically enabling and activating location services for the cell-phone that is connected with the detection device, via the Safeguard Equipment app. (N.B.: being within cell-phone service range is required for the App to operate properly.) Further, because the call is made by a member of the response team, the necessary information can be accurately and clearly conveyed to 911 services even by personnel who are not on-site.

Typical Use Cases for the COMPASS Pro Emergency Response System

The emergency response utilities of the COMPASS Pro emergency response solution now make the COMPASS Pro more versatile for use in more industries, not only in situations where the risk of fall or shock injuries is high, but where emergency response times is critical. The following are some of the typical use cases for which Safeguard Equipment believes that the COMPASS Pro can appreciably enhance the safety of workers.

Utility and Telecommunications Workers

Given the COMPASS Pro's emergency response solution's utility, the typical users will be utility line workers and telecommunications line workers who have to work near energized lines on a regular basis, and who are most at risk from fall or shock injuries.

Already, COMPASS personal voltage and current detectors (PVCD's) have demonstrated their effectiveness at helping workers in the field avoid injury by making them aware of the presence of live lines, even where lines should have been de-energized. With the added utility of emergency response, the COMPASS Pro emergency response solution now enhances the safety of these workers by ensuring that, should an adverse electrical event occur, the chance of receiving emergency medical aid in a timely manner will be materially increased.

Lone Workers

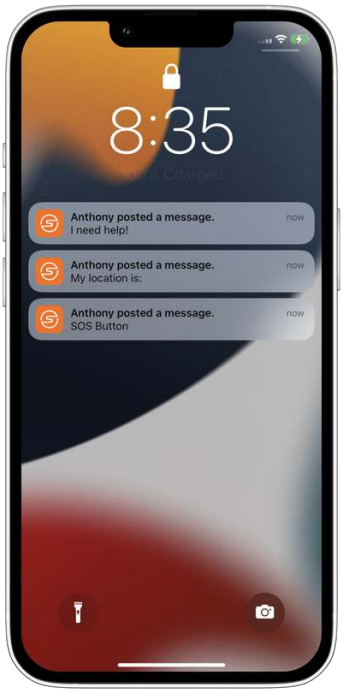
While safety precautions for jobs in the field usually recommend the use of the "buddy system" as a standard, there are situations today in which this is not possible as a result of manpower shortages or other situations. Moreover, even when a crew or team goes out on a job site, it is sometimes the case that one or another member is not actually working side by side or even within line-of-sight of another team member. This means that an individual can be a "lone worker" for at least part of the time the team is out in the field.

Whenever there is a lone worker, the risk of injury is higher. First, any job that presents an unexpected complication will be harder to accomplish safely if there is only one person to handle it. Second, when a worker is unaccompanied and cannot rely on a "buddy system" that helps workers

watch out for one another, it is difficult to maintain situational awareness of potential dangers while still focusing on the job at hand.

For safety reasons, companies generally require lone workers (and even teams) to "check in" by phone on a regular basis, to report any concerns and to verify that a worker is safe. But checking in is not always convenient in the middle of a job, and the practice is not always assiduously followed. This means that if a check-in is missed, the person who monitors the check-in is unaware of whether the missed check-in is because of an actual problem, or because of neglect or inconvenience.

The COMPASS Pro emergency response solution takes away some of this uncertainty. The hardware unit can detect specific types of injury events, even a fall from as little as six feet (which, since the unit is mounted on a hard-hat, may be triggered even by a fall on a flat surface) and automatically convey that information via the Safeguard Equipment app to an emergency response team. This means that, for lone workers, injury notification is not dependent on a missed check-in. Moreover, it eliminates delayed response, since the injury alert is sent within sixty seconds of a detected event. With a system that depends upon check-ins, a missed check-in means that the injury event could have happened at any time since the previous check-in.



Storm Response

It is often the case that line workers and others are sent out in storms to respond to downed lines. This, especially, is a time when voltage and current detection can be critical, since storm response also means that workers may

be trying to operate in low visibility and poor conditions. In these circumstances, it is difficult to tell where lines may have fallen, or if they have energized other objects through contact, such as cars or the ground.

The unpredictability of the situation also increases the risk of injury. In this atmosphere, when people are already dealing with a chaotic situation, electrical injury can make the situation more chaotic. This is when the COMPASS Pro emergency response solution can be invaluable, because it means that emergency response is not solely dependent upon people on the scene "keeping their heads." Instead, by notifying a remote response team of the event, emergency services can be contacted by individuals who can report calmly and efficiently the location, time, and situation that is in need of 911 emergency response.

Arborists

Like utility line and telecom workers, arborists are often working around energized lines, even if they do not work with energized lines, and they also work in bucket trucks. Although arborists are often aware of the dangers of electrical lines and use safety-rated equipment, their lack of intimate knowledge of working with electricity means that they are not always attuned to the risks their jobs expose them to.

The fact is, most serious electrocution and shock injuries are simply from direct contact with energized lines. This means that arborists face the same risks as line workers, albeit less often. Arborists work with equipment – chainsaws, pole saws, pruners, and loppers – that can easily come in contact with energized lines in the course of their work, making the COMPASS Pro emergency response solution a welcome item of PPE that will not only provide awareness of energized lines, but enable prompt emergency response should a fall or shock injury occur.

Electricians

While electricians may not always be at high risk for falling from heights, they are at high risk for arc flash or shock injuries. In such cases, the arc flash and head impact detection as well as the emergency response features can make use of the COMPASS Pro emergency response solution a critical part their equipment. The COMPASS Pro emergency response solution can ensure that, in the event of this type of emergency, a response team will get immediate notification, and medical aid will not be delayed.

This being said, the electrical field and magnetic field detection of the COMPASS Pro device is also a critical utility. While standard safety practices like lock-out tag-out are extremely useful in preventing electrical injuries to workers who need to repair, upgrade, or replace electrical equipment and wiring, these practices are only effective when they are applied without fail and without exception. The ability to detect voltage or current by receiving a visual and audible alert can protect electricians from dangers caused by the inevitable human oversights and errors that often lead to injury, such as when equipment that should be de-energized is still live.

Firefighters

Firefighters are more and more having to face the additional danger of electrical injuries in responding to fires, and having to add this worry to an already dangerous job is unwelcome. Firefighters have been killed and injured by electrical events, often from contact with energized lines.

The fact is, many fires are started by electrical problems, including downed power lines, arc flashes, overloaded circuits, and frayed wires. When responding to a fire, the standard response of most people is to throw water on it, and the same is true for firefighters. However, if water is

thrown on an energized wire or object, the water itself can become energized, making the situation even more dangerous, and increasing the risk of shock or electrocution. Smoke and gases from burning matter can also create a path for electrical charges.

Consequently, the ability to detect energized lines in a fire situation can be critical for firefighters. As noted above, the emergency response capabilities of the COMPASS Pro device are especially useful in chaotic situations, and firefighting is, by nature, chaotic. While firefighters are trained to work under these conditions, they, also, can lose sight of crew members or not have the ability to monitor or keep track of team members in the midst of performing their jobs. In this case, the fall and man-down detection capabilities can alert others to an injury event when it happens, enabling team members to conduct timely rescue operations.

Conclusion

These are just some of the situations in which the COMPASS Pro emergency response solution can prove to be life-saving. In designing the COMPASS Pro, Safeguard Equipment has done extensive research into the problems and situations that confront the different types of workers who frequently encounter risks from energized lines, as well as the types of injuries that occur and the issues that are most problematic in responding to injury events. While there is no way yet to eliminate the risk of death or injury to these workers, there are steps that can be taken to reduce the incidence of injury and to minimize the effects of injury.

Safeguard Equipment believes that use of the COMPASS Pro emergency response solution will significantly and materially enhance the safety of workers, and appreciably reduce the number of work-related deaths and injuries from adverse electrical events that occur every year.