

RugGear and ARGE Tunnel Alabastrieg have developed mobile safety equipment for tunneling in Germany



The German brand RugGear stands for extremely robust and waterproof mobile phones, smartphones and tablets. RugGear Phones are developed for use in the industrial and outdoor sector by German engineers. All RugGear Phones are IP68 dust and waterproof and can be used underwater in depths of up to two meters for one hour. According to MIL-STD standard, they are also extreme temperature-resistant and withstand from falls from two meters.

Coupled with applications from various system solution partners, RugGear Phones are particularly suitable for professional lone worker protection and personal emergency call solutions, push-to-talk as well as location and maintenance systems.

RugGear in construction site use

Especially for the construction industry, the robust RugGear devices are ideally suited and versatile in use, especially in the field of tunneling, one of the most difficult areas of the construction industry. For here the topics of fire protection, escape routes and in particular the voice and data communication are of particular importance.

Focusing on the construction of the Alabstiegtunnel, which belongs to the railway project Stuttgart 21 of Deutsche Bahn AG, the award of this project was made to Ed. Züblin AG as the engineering lead, in collaboration with Max Bögl as the construction company. The section of the Alabstiegtunnel covers a total length of about six kilometers and an eruption cross section of about 100 square meters. As a railway tunnel for the ICE (Intercity-Express), it is an integral part of the new Wendlingen-Ulm line. This is to be completed by the end of 2018 in the shell and commissioning is planned for late 2021.

Increased safety requirements

Due to the ever-increasing safety requirements of construction companies active in tunnel construction, communication devices are increasingly becoming personal safety equipment. To ensure the safety of the 360 workers on the Alabstiegtunnel construction site, who work in three shifts around the clock, seven days a week, ARGE Tunnel Alabstiegtunnel and RugGear's business partner i.safe MOBILE GmbH started to cooperate in 2015. The aim of this collaboration was to develop a common system solution for the mobile phones in use based on the extensive requirements. It was not only the robustness and water-tightness of the devices that mattered, but also numerous additional functions, which are essential in addition to the actual communication characteristics of mobile phones.

The technology used

Together the two partners developed mobile phone solutions that meet the personal protection requirements of every employee in the tunnel. For example, the devices automatically register via Bluetooth in the passenger detection system when they enter the tunnel, and the visualization shows that the worker has now entered the tunnel. In addition, it can be located in the tunnel at any time and receive, in case of evacuation, an SMS alert (siren ringing tone) with instructions sent directly to his mobile phone, with information on what happened and that he should leave the danger area as quickly as possible.

Of course, this warning sound must not be ignored in all the construction noise and therefore the RugGear devices used for this case, a special amplifier and speakers were integrated: alerts could be heard next to an active compressor. A centrally placed SOS button, in conjunction with a lone worker protection app, provides additional safety for workers in the tunnel in an emergency.

The RugGear RG310

The devices used are the RugGear RG310, a key operated phone with Android operating system. This allows the user to operate with gloves of all kinds. Similarly, the site operator can install his individually programmed app, whereby he receives maximum flexibility in the localization, as well as the frequency of alarms, etc. At the same time, the devices used are wirelessly updated via a RugGear proprietary over-the-air (OTA) system to keep them up-to-date. A mobile device management system (MDM) allows the mobile phones to be managed centrally. In addition to the features listed so far, the RG310 used has a built-in LED flashlight, which is also very useful in tunneling. The device is powered by a powerful battery which ensures the runtime of at least one more shift. An additional charging station (cradle) provides an effortless charging process.