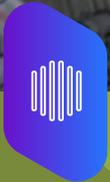




CASE STUDY

TUNNELS



SAFE MAINTENANCE WORK IN TUNNELS ENABLED BY TASSTA

There are a large number of tunnels worldwide, in Central Europe, there are about 100 tunnels, which are used by many drivers every single day. They have the advantage to provide shorter routes and faster journey by avoiding narrow, winding routes over mountain passes, that may well be affected by winter conditions.

Keeping them clean and in good condition is essential to guarantee security for passing vehicles.

Tunnel maintenance is a dangerous job, tunnels are closed during maintenance work, but still it is necessary to be careful, because of possible danger in a barely lighted tunnel of about 35 miles. It is essential for maintenance work to be effective, quick and secure, so the tunnel can open as soon as possible without incidents, and it is where TASSTA does help.

MARKET CHALLENGES

Companies in the tunnel industry aim to provide fast and reliable roads or railway routes, which is a simple and quick way for drivers and passengers to reach their destination. Tunnels closure causes delays, but it is necessary for maintenance. It is all the more important, that maintenance work to be completed quickly and efficiency would be the way to complete the project on time. Therefore, these companies are in need of a reliable and effective communication system, so the tunnel workers can coordinate easily.

Knowing the exact location of every person and possibly tools in the tunnel and monitoring at an outside control center helps to improve efficiency and security.

SOLUTION

TASSTA's T.Flex, smartphone solution, has a number of options that can be configured to provide more advanced communication capabilities beside using the sensors within the phones for "Man Down" alerts. Additionally GPS and In-House Localization can transmit the exact location of alerting devices; and Video and Audio Feeds can be enabled from any device that pushes the emergency button. T.Flex uses the immense computing and sensor functions present in today's devices to deliver advanced communication and emergency services. Ex-Certified Smartphones, use TASSTA's Applications in hazardous areas.

TASSTA's T.Flex and T.Rodon together deliver advanced communication capabilities to allow tunnel workers instantly communicate via Push-To-Talk (PTT) and to provide an emergency alerting system in case of an incident. At its simplest, T.Flex can be loaded configured to all type of smartphones, when "Emergency" button is pushed it sends an alert to the other workers or the dispatcher at an outside control center.

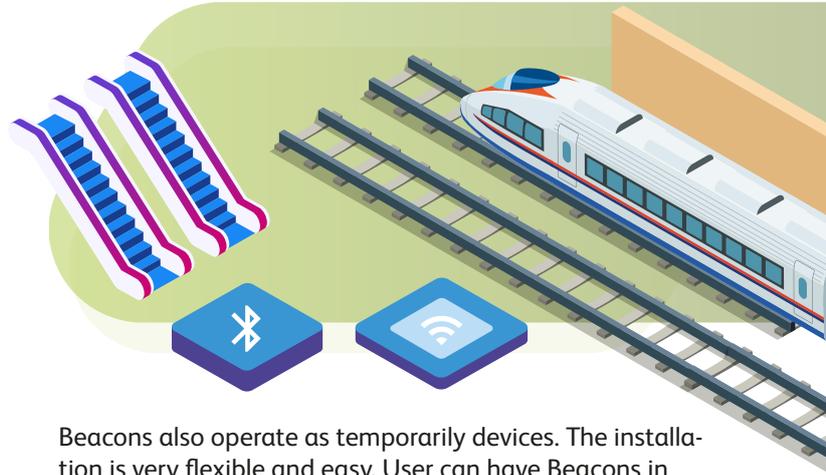
The T.Rodon application provides additional capabilities. In conjunction with the T.Flex client, it is a full-featured dispatch, command and control center. It can transmit Push-to-Talk (PTT) messages and data to individual users, create and track tasks, provide voice recording, monitoring GPS, and manage staff activity in the tunnel.

In addition to functions like Push-to-Talk (PTT) or safety features, TASSTA offers an reliable and accurate localization solution for indoor areas to locate persons or products. It is not only a safety precaution but also a perfect finder for tools in respect of the size of some tunnels.

With TASSTA Indoor localization solution user is able to install Bluetooth Beacons in goods. You can scan them with a smartphone and fixed PC stations to locate products over the Bluetooth beacons. If the location changes, the data of the new position is shown immediately to the T.Rodon command and control center solution.

The indoor navigation with Bluetooth Beacons offers fast and exact localization. Beacons behave like senders. They enable user to do indoor tracking. Beacons can be used cross-platformed and offer a tracking accuracy of meters.

According to security Lone Worker Protection Alarming Solution is important. The reason for need of such system is, in tunnels workers are located at various distances, and in an event of emergency quick help must be provided.



Beacons also operate as temporarily devices. The installation is very flexible and easy. User can have Beacons in different colors, so that they are not that conspicuous. The innovative battery technology enables battery life from two to eight years, without revert from external energy sources.

Indoor Localization is one of the features, which provides, of safety, as all users and goods on the network can be monitored internally and everywhere. Beside that it is also a huge help to optimize the decision process of the team and operators.

Another indoor localization capacity is the localization via WiFi. TASSTA's WiFi Indoor Location Determination is used for different projects and businesses. This is the reason for use of WiFi-Hotspots as a feature. Additionally, the location determination starts immediately if the users have WiFi activated on their smartphones. User does not need to log in for the WiFi location determination. The accuracy of the determination via WiFi is only two to five meters depending on WiFi signal availability.

TASSTA's communication solution is specifically designed for demanding industries like tunnels. Thanks to the Lone Worker Protection Alarming Solution, TASSTA delivers advanced communication capabilities to allow all tunnel staff to instantly communicate via Push-To-Talk (PTT), and to provide an alerting system in case of an event.

TASSTA's goal is to provide a reliable and helpful solution for these companies, handling valuable products, high-cost goods or personnel. Companies look for the best way to rely on safety and organized work structures while implementing their daily tasks and to secure their assets.

TASSTA other feature is a Guard Tour, which is a very practical feature, if for security reasons the whole staff needs to meet at a predefined point, for example the entrance of the tunnel to make sure they all leave the tunnel before it opens again. The in-house localization system automatically detects when everyone arrived, and a report is sent the control center or the shift supervisor. This proves that TASSTA meets the needs of such work environments and it is a great solution.