



EVRESYS

Your RTLS and IoT platform



Case study

TEPNL offshore gas production platform



Evresys offshore solutions

Crew safety in hazardous environments

Whether people or things, using Evresys' RTLS services you always know exactly where they are. Providing you with direct insight in both live locations and long-term trends. Adding automated event-driven actions to your preference, Evresys saves you time, money and offers peace of mind.

The Evresys platform is developed to meet the high standards and demands of leading companies, like French energy company TotalEnergies EP Nederland B.V. (hereafter TEPNL). In this case study, you'll learn how Evresys helped TEPNL to improve personnel safety in the hazardous and challenging environment of an offshore gas production platform.

The TEPNL case

Working on a gas production platform offshore is one of the toughest and most dangerous jobs out there. The risks are high: dealing with highly combustible materials twelve hours a day while facing harsh conditions and being isolated at sea.

Such conditions go for TEPNL's gas production platform K5CC, located in the North Sea, in the territorial waters of the Netherlands. It consists of 3 separate structures, connected by bridges. On average a crew of six technicians do the hard and hazardous work at the platform. Their work is overseen by one operator authority in charge, monitoring the entire operation.

PROBLEM STATEMENT

Request for proposal

TEPNL asked Evresys to provide solutions for:

1. Real-time knowledge whether all platform crew are safe and well.
2. 24/7 live insight in the exact location of each crew member.
3. Easy communication between crew members and third parties.

Challenges

For meeting these demands, Evresys was faced with four challenges:

1. Adapt Evresys to a stand-alone service on the gas production platform, without any internet connectivity.
2. Have the live localization algorithms function accurately in the heavily steel-based environment of an gas production platform.
3. Find a way to continuously monitor each crew member's safety.
4. Develop a clear and simple way of communication.



Oil production platform (not TEPNL K5CC)

Run Evresys on an offshore rig

Usually, Evresys runs its software as a cloud-based service. However, the gas production platform has no internet connectivity we could use. Also, Evresys usually uses Bluetooth Low Energy (BLE) beacons to tag and track moving objects. This setup usually requires BLE-receivers to get their signals to the Evresys platform over Wi-Fi or ethernet. But neither of those are available, nor an option at the gas platform, due to both security and financial reasons.

How Evresys met this challenge

- The Evresys system was deployed as a stand-alone service on a local server, so there's no more need for a cloud connection.
- In collaboration with implementation partner Lumiad, Evresys installed a private LTE network. This provides full data coverage at the entire gas production platform.



Accurate localization on the gas platform

In case of an emergency, overview is key to lead a successful rescue operation. Hence, TEPNL wanted to:

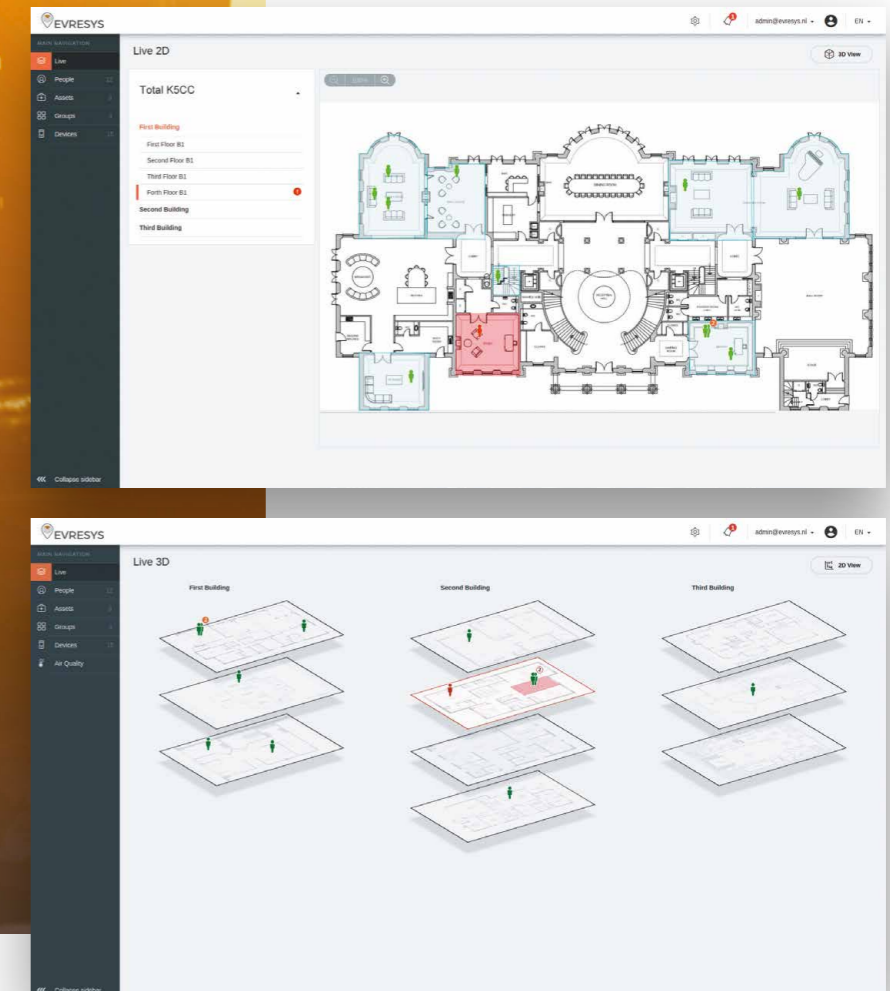
- have an overview of where the technicians are;
- know which person set off an alarm and follow its live location;
- see the location where the alarm was set off.

How Evresys met this challenge

First, Evresys reworked its algorithms for localization to work 'the other way around', as compared to the usual setup. Instead of the usual mobile beacons combined with fixed BLE-receivers throughout the platform structure, Evresys mounted fixed BLE-beacons throughout the platform structure, and had the crew's dedicated ATEX certified smartphones act as BLE-receivers to send the BLE-beacon's data to the Evresys server through the private LTE network. To make this work properly, Evresys had to deal with the heavily steel-based structure of the gas production platform, which to a great extent obstructs radio-based localization. Evresys however managed

to achieve outstanding accuracy and reliability in this challenging environment.

To provide the operator authority with real-time insight in the crew's whereabouts, Evresys developed a digital 3D overview of the entire gas production platform. In this view, the live location of each crew member is shown. This way, the operator authority can see which crew member set off an alarm, follow his live location and see which other crew members are in the potentially dangerous area where the alarm was initially set off. For a more detailed view of a specific deck, an additional 2D view of each deck can be shown.



Lone Worker Protection (LWP)

Working at a gas platform is a dangerous job in a hazardous environment. With a crew of only six spread over the huge structure, crew members often don't see each other for most of the day. Despite the daily risks on the job, the gas production platform didn't have a proper alert system in case someone got hurt or needed help. For TEPNL, this was unacceptable. Evresys was asked to provide a safe solution.

How Evresys met this challenge

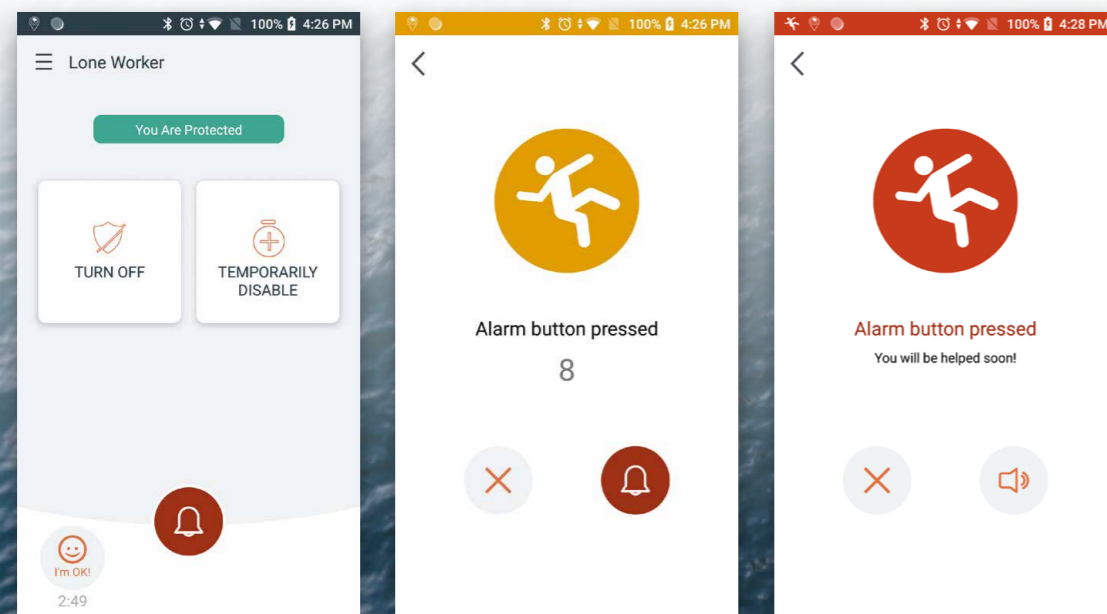
To monitor each crew member's safety, Evresys developed the Lone Worker Protection (LWP) app as an extension to the standard Evresys-app, which runs on the Android-based Ecom SmartEx-01 smartphone. Each crew member is equipped with one of these sturdy ATEX-approved phones, to continuously monitor their safety and to detect potentially dangerous abnormalities: man-down, no-movement, weak-movement, and free fall. The LWP-app also boasts a dead men's switch, which needs to be pressed regularly to confirm that the crew member is doing well. By pressing the phone's integrated alarm button, crew members can call for immediate help. When one does, all crew members are alerted automatically, receiving detailed information for them to act swiftly and directly, like:

- Who is in danger;
 - What happened;
 - The exact location of the crew member in need.
- To avoid false alarms, the system sends a pre-alarm first, for the crew member to cancel within 10 seconds. After 10 seconds, or immediately if the crew member confirms the pre-alarm, the alarm is sent and help is underway.



About Ecom

As an industry pioneer, Ecom has decisively developed explosion protection for mobile devices since 1986 and has proven its technological expertise with a multitude of innovations. Ecom is the preferred brand for intrinsically-safe mobile phones, 4G smartphones and tablets that meet the highest requirements in industrial use. As part of the Pepperl+Fuchs Group, one of the world's leading companies in explosion protection and sensor technology, customers benefit from a comprehensive, end-to-end product portfolio for the hazardous area, which opens up completely new possibilities for the entire process automation.



Clear and simple communication

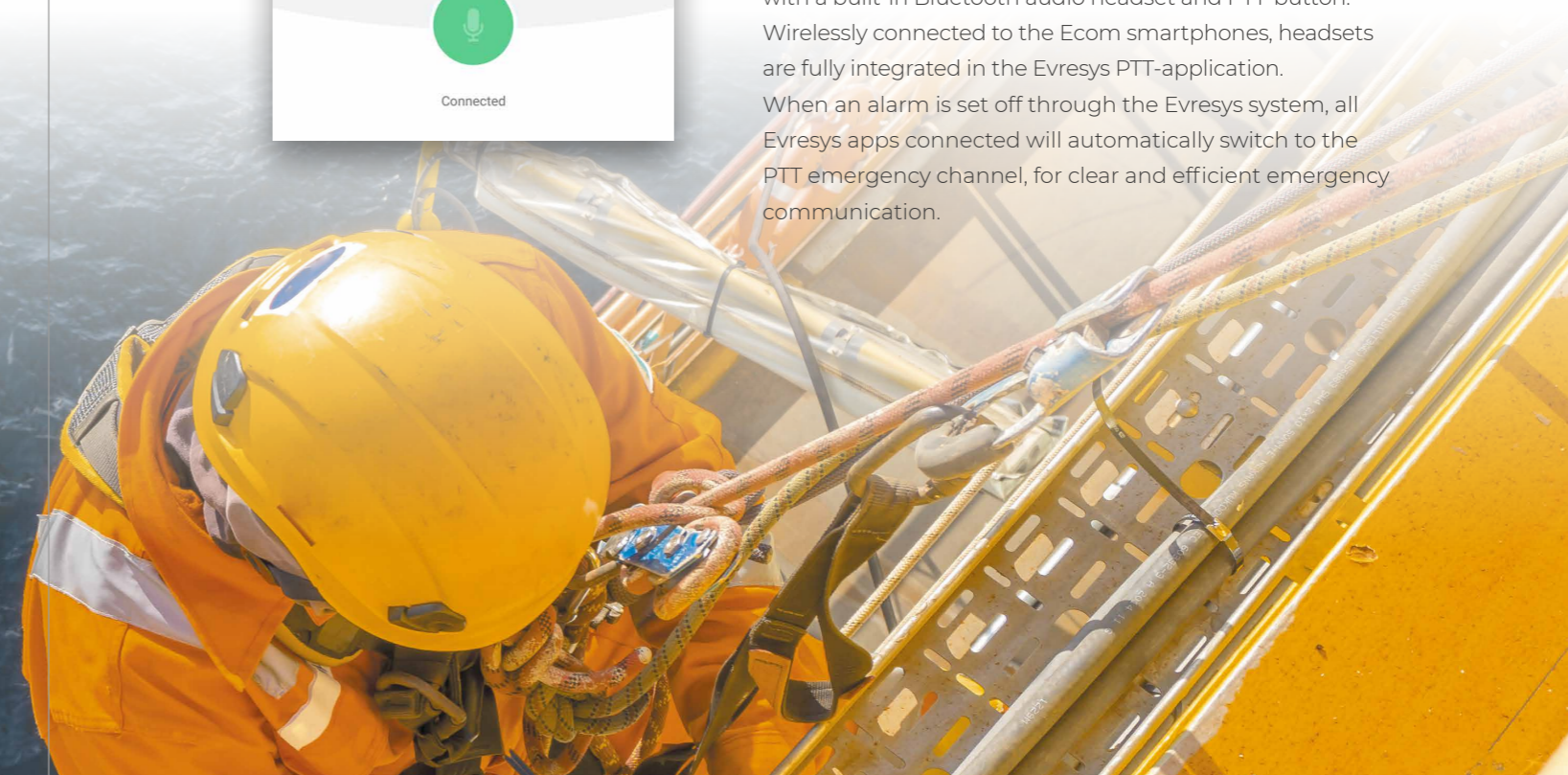
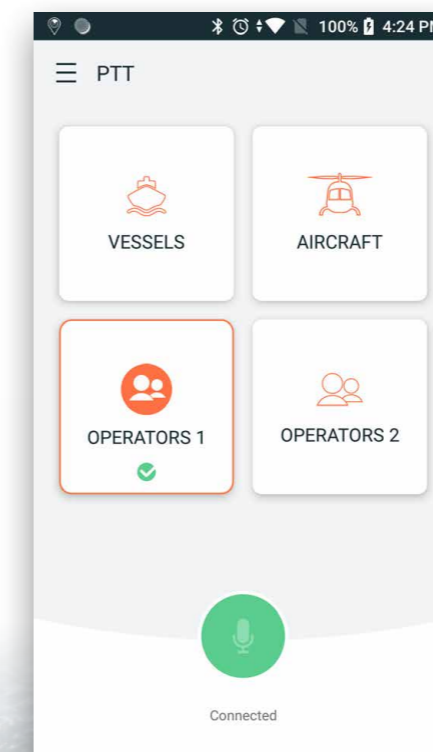
The hazardous environment of a gas production platform requires easy and effective communication with both on-site crew members as well as off-site helicopter pilots, vessel crews and on- and off-site control rooms. Traditionally, separate radio devices were used: handheld transceivers for on-site, and both marine radio and aero radio for off-site communication. Using three separate radio devices though is both inconvenient as well as inefficient.

How Evresys met this challenge

All crew members are equipped with an ATEX-approved Ecom SmartEx-01 smartphone. It runs the Evresys-app, extended with Push-To-Talk (PTT) functionality. At the push of the phone's PTT-button, crew can talk to both on- and off-site contacts using the same channel. In the on- and off-site control rooms, dedicated desktop devices are used.

In order to connect all different types of radio technologies to the Evresys app, Evresys teamed up with communication solutions company MEP, and integrated with their high quality communication server, bridging Evresys' SIP stream to marine, aero and handheld radio transceivers with minimal latency.

Since a gas production platform can be a noisy environment, platform crew is usually wearing ear protection, often with a built-in Bluetooth audio headset and PTT-button. Wirelessly connected to the Ecom smartphones, headsets are fully integrated in the Evresys PTT-application. When an alarm is set off through the Evresys system, all Evresys apps connected will automatically switch to the PTT emergency channel, for clear and efficient emergency communication.





EVRESYS

Information and contact

For more information about what Evresys can do for your organization, please contact us at

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