

Hytera Intrinsically Safe TETRA Radios Enhance Safety and Quality of Communications at Saudi Refinery



Introduction

The Saudi Aramco Mobil Refinery (SAMREF) in Saudi Arabia needed to replace its old analogue radios with modern, digital intrinsically safe handheld radios, plus mobile radios. Hytera partnered with local distributor specialized by stc in supplying TETRA PT790Ex ATEX handheld radios and TETRA MT680 Plus mobile radios, which greatly improved the efficiency and safety of day-to-day operations at the refinery.

The Background

The SAMREF is a major crude oil refining facility located in Yanbu and also an equally owned joint venture between Saudi Arabian Oil Company (Saudi Aramco) and Mobil Yanbu Refining Company Inc. (a wholly owned subsidiary of Exxon Mobil Corporation). The refinery processes about 402,000 barrels of Arabian light crude oil per day.

User Name

SAMREF

Date

2022-2023

Industry

Oil and Gas

Products

TETRA PT790Ex 800MHz Portable Radios

TETRA MT680 Plus Mobile Radios



The Challenge

The SAMREF relied on an analogue MPT radio system for more than 10 years. But the system was no longer covered by a maintenance services agreement and the age of the equipment meant it was no longer possible to obtain spare parts to repair faulty radios.

The lack of maintenance services and the outdated nature of the analogue radio system meant that SAMREF did not have a communications system that was fit for purpose to help it run its daily operations. In addition, some key indoor work areas were not covered by the radio network as the signal was blocked by thick concrete walls, which impaired operational efficiency.

SAMREF needed to upgrade its communications with a modern digital two-way radio solution. Given the hazardous nature of the oil being processed on the site, it was also essential that the replacement radios were intrinsically safe and could be safely operated in the potentially explosive environment of the refinery.

The Solution

Hytera and its local partner have built up considerable experience in supplying communications equipment, including intrinsically safe two-way radio products, to oil and gas companies in Saudi Arabia.

The company supplied SAMREF with 700 intrinsically safe Hytera TETRA PT790Ex portable radios and 100 TETRA MT680 Plus mobile radios to replace SAMREF's existing analogue radio fleet.

The PT790 Ex is the world's first TETRA handheld two-way radio to meet the highest intrinsic safety level of Ex 'ia'. This means the radio can be safely operated in Zone 0 conditions where an explosive atmosphere containing a mix of air and combustible gases, vapors or mists are permanently present. The "ia" classification means the radio can continue to be used safely in a hazardous atmosphere even after two circuit faults.

To achieve this rating, the whole radio plus battery is designed to meet the 'ia' grade. Hytera uses a triple protective circuit, strict PCB (printed circuit board) design and a silicone encapsulant technology to protect the radio. All the key PCB components are covered with a shield, which minimizes the circuit fault probability and delivers a higher EMC (electromagnetic compatibility) performance.

Hytera also developed a patented design to disengage the battery from the radio. To take off the battery, the user has to remove the lock and bolt of the latch along two different axes. This cuts down the chances that the battery might be dropped, thereby causing a spark. The PT790Ex has passed ATEX, FM and IECEX certification.

With Hytera's strong after-sales service network, radio repairs are made easy and convenient. Normally, faulty radios need to be sent out of the country for repair, which can take up to six months for a complex ATEX intrinsically safe radio. To overcome this problem, a local workshop authorized by Hytera and approved by third party FM was set up to repair PT790Ex devices. This greatly speeds up the repair time and avoids delays caused by the strict radio control import and export customs procedures imposed by the Saudi Arabian government.

Products

TETRA PT790Ex
800MHz Portable
Radios
TETRA MT680 Plus
Mobile Radios



The Benefits

Intrinsically Safe Operation

The PT790Ex TETRA handheld radio provides the highest explosion proof standard available to guarantee the safety and security of users operating in hazardous environments.

Loud, Clear Audio

The PT790Ex radio benefits from the latest Hytera speech processing technology to remove background noise and reduce echo, so users enjoy clear voice communications even in the noisy environment of the oil refinery. The radio also supports full duplex calling, so users can call mobile phones and fixed telephony systems.

User Protection

The PT790 Ex comes with in-built GPS, which supports lone worker, man down alarm and emergency alarm features to enhance worker safety.

Robust and Reliable

The PT790 Ex is built to cope with the harsh desert and salt seaport environment of the refinery, as it is dustproof and waterproof (IP67) and complies with MIL-STD-810G for shock, drop and vibration resistance.

Long Battery Life

The radios feature a 1800mAh/2400mAh large capacity Li-ion battery, which can last for more than 20 hours under 5-5-90 duty cycle, so radios do not need charging or batteries replaced during a normal shift.

Local Repairs

The authorized local repair facility significantly reduces the time taken to fix faulty radios, which means radios are out of action for less time. This lessens the impact on the overall mission critical communications for SAMREF.



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