

TETRA Solution for Kazakhstan Railway

Hytera Provides Reliable TETRA Communication for Kazakhstan National Railway

User
Kazakhstan TemirZholy, Kazakhstan

Market segment
Railway

Project time
2012-2015

Products
Hytera TETRA ACCESSNET-T IP System
DIB-500 Base Station
PT580H Portable Radio
MT680 Mobile Radio



Background ➤➤

Kazakhstan TemirZholy (NC KTZ), the largest national railway operator in Kazakhstan, provides 68% of freight and passenger traffic, covering 57% market share of the country. KTZ manages 18,800 kilometers of rail network, including some international lines that act as a transit in the trade between China and Europe.

To meet the growing business demand, KZT decided to modernize its system, especially its rail signaling system, ETCS LEVEL 2. KTZ was asked to improve the system's operation efficiency.

Challenge ➤➤

The European Train Control System (ETCS) is a signaling, controlling and train protection system currently used by European railways. Its Level 2 is a digital radio-based system.

GSM-R communications technology was the first choice for ETCS Level 2. However, Due to a lack of spectrum availability and its high cost, finally a TETRA solution was selected as a signaling data bearer by KZT.

Hytera TETRA is quite different from the current technology, GSM-R & ETCS, therefore all modifications need to be tested, tailored and verified to interface with the signaling provider.



Solution

Since 2012, Hytera has worked with Kazakhstan's national railways company to continuously deploy KTZ TETRA network to support a rail signaling solution based on ETCS in the following three railway lines:

- Kandyagash – Nikaltau, 150KM
- Кызылорда - Шиели(Kyzylorda-shieli),180KM
- Хромтау – Айтикеби(Khromtau-aiteke),600KM

The Hytera TETRA solution used for voice communications and data applications, including train signaling and telemetry data of trains, increasingly help optimize KTZ's freight and passenger operations.

--Totally 48 Base Stations with a minimum capacity of 2 transceivers were deployed by KTZ. These Base Stations are directly connected over IP backbone and all switching task for voice and data are implemented by centralized architecture at 4 separated regional points. 900+ TETRA terminals make train staff's operation more efficient and safer.

--The Network Management System (NMS) is available with a wide range of software, such as Voice and Data Management and a comprehensive Network Management tool, including subscriber management and network performance statistics.

--Redundancy features ensure continuous radio operation. Redundancy of controller, transceivers and power, with fallback operation of the base stations, assures voice and data communication when the network fails..

Highlight

1. The first ETCS Level 2 over TETRA network

All train movements data, such as speed and route, are transmitted to the vehicle continuously via Hytera TETRA system, which will improve the safety, reliability and efficiency of both passenger and freight trains.

2. Advanced network architecture

Redundancy of controller, transceivers and power increase the reliability of the local site. Also Reliable and fault tolerant systems at separated centralized point help KTZ ensure running safety.

3. Leading project implementation

Hytera has abundant experience in providing smart transportation systems for railway operators across Kazakh and worldwide. It has successful and tailored many solutions to meet challenging requirement raised by customers.



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