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Russian Railways picks up speed
with Sepura radio terminals

Challenge: To enable innovations in train safety
and control with a new voice and
data radio communications system

Solution: Digital TETRA radio technology
from Sepura

Results: Success in implementation of an
automated railway management
system and improved efficiency of
railway operations

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When rail transport giant Russian Railways embarked on a programme of modernisation, including the development of an automatic railway management system and migration from an analogue to a digital radio communication system, only one supplier could meet its radio equipment needs. In particular, Sepura was the only major supplier with radio terminals that could operate in a specific frequency range required by the company.

"Sepura was the only supplier Russian Railways looked at who offered the 450 to 470 MHz range," said Sergey Smirnov, Director of InformCom, Sepura's partner in Russia. "This is the government-approved frequency range for use by Russian Railways, since the standard 410 to 430 MHz range is used by other radio devices in some areas of Russia."

"Besides the equipment's unique frequency range," he added, "Russian Railways was also particularly impressed with their data transmission capabilities and interoperability with many infrastructure types."

Modernisation challenge

One of the challenges facing Russian Railways when it was established as a joint stock company (JSC) by the Russian Federation in 2003, was to improve the ability of the country's rail transportation network to satisfy the economic needs of the country. The company is responsible for almost 80% of Russia's railway

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transport services. It carries both freight and passengers across the country in an operation that employs 1.2 million people and is one of the five largest companies in Russia, in terms of operating revenue.

Modernisation is fundamental to meeting the company's challenges. In February 2004, for example, the company launched a high-speed intercity train service from Moscow to Mytischi, halving the travel time while increasing comfort and safety. One of the many changes supporting improved safety and efficiency has been the replacement of the existing analogue radio communication system, used for inter-train communication and control of shunting, as well as by railroad maintenance and other staff.

"The existing system was not reliable and did not provide effective radio communication for staff," explained Smirnov. "Nor did it have data transmission functions required by Russian Railways' new automated railway-management system, for transmitting data to and from trains with an automated control system."

Sepura delivers the goods

The obvious solution was a terrestrial trunked radio (TETRA) digital radio system. TETRA is a spectrum-efficient, worldwide standard for digital private mobile radios, developed by the European Telecommunications Standards Institute. It offers high levels of voice quality, secure encrypted communication and comprehensive data capabilities.

Of the TETRA equipment suppliers operating in Russia, Sepura is not only the sole provider offering terminals operating in the 450 to 470 MHz range, but is also the supplier of more than 90% of all TETRA terminals in Russia.

"Russian Railways knew the functionality and reliability of Sepura equipment was proven and that Sepura would provide the support they needed," said Smirnov. "In fact, Russian customers of Sepura will benefit from a service centre for Sepura equipment at InformCom's premises, and from the provision of locally produced Sepura terminals under the trademark of TetraCom."

Technology up to the task

Sepura started providing TETRA terminals to Russian Railways in 2003, and has supplied a total of 800 SRP2000 handportable units and 150 SRM1000 mounted terminals. Users of the handportables have been amazed by the small

size and light weight of the units. The mounted terminals are being used in trains by drivers, in vehicles by maintenance personnel, and in station buildings by duty officers, all of whom have been impressed by their power and range.

Other features cited by Russian Railways as particularly useful are the terminals' Cyrillic interface and their standard peripheral equipment interface (PEI) for applications development.

"The improvement in voice quality, range of features and data transmission functions have made a real difference to the efficiency of railway operations and the safety of train movements," commented Smirnov. "It's changes like this that will enable Russian Railways to meet its major objective of becoming an integral and important part of the Eurasian transport system."

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