Botnia Tunnel Project

Case Study

The most important thing we build is trust

Overview
Deliver a reliable radio communications systems for the rescue organisations and train operators travelling through numerous tunnels along the Swedish railway tracks known as Botniahanan

Challenge
To provide a state-of-the-art communications solution for Sweden's new high-speed line. The 190km track is designed for trains travelling at up to 250Km per hour, passing through 13 tunnels.





The Challenge

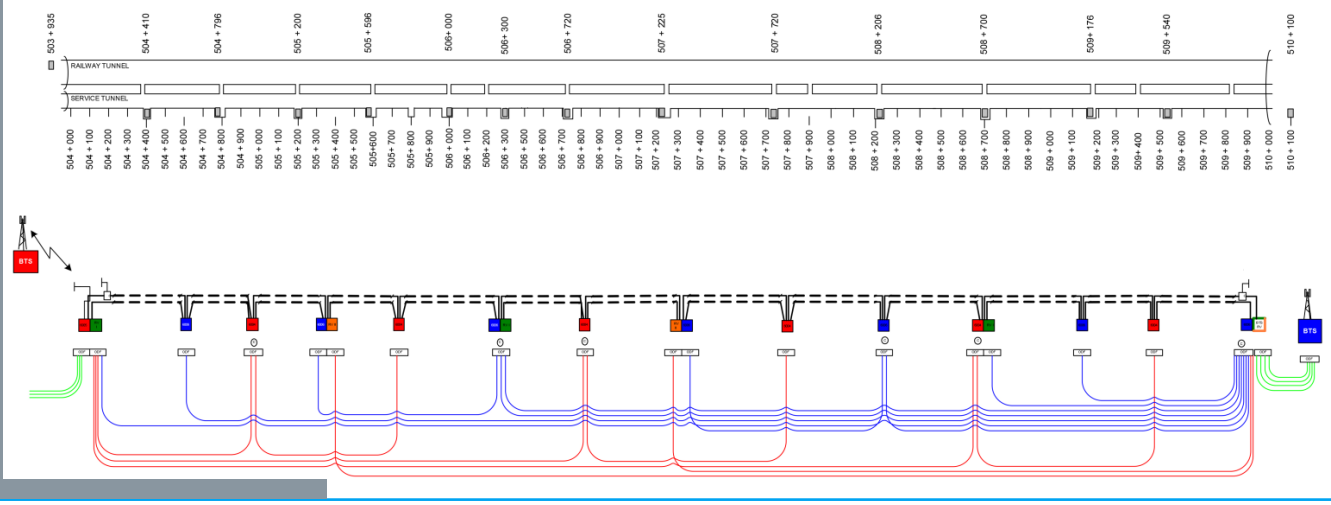
Far up in the northern part of Sweden, you will find some very long railway tracks with numerous tunnels by the name of Botniabanan. When these new tunnels were being built, the need for a complete integrated radio communications system became apparent and a tender was launched. The end customer, Botniabanan AB, required a state-of-the-art communications solution for Sweden's new high-speed line - a 190 km track designed for trains traveling at up to 250 km per hour, which included 13 tunnels.

The tunnels had to be equipped with radio communications systems for the rescue organisations, such as the fire brigade, as well as for the train operator. The chosen solution had to be reliable, redundant as well as cost-effective. It was also important for the procuring organisations that the system could be effectively supervised by a comprehensive management tool that would make remote monitoring and control simple and easily accessible.

The Solution

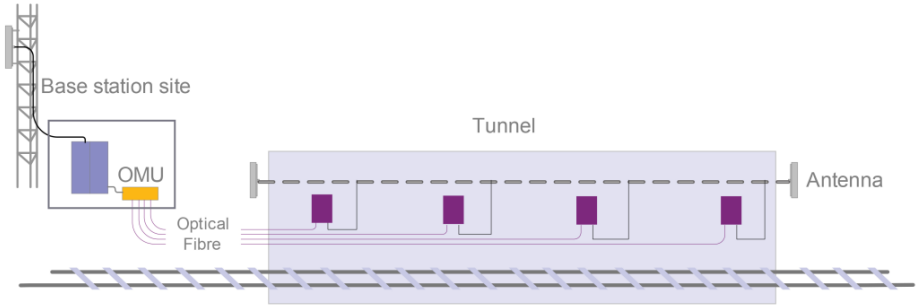
The tender process resulted in Cobham Wireless being awarded the contract to provide the active repeater equipment for the railway authorities (GSM-R technology) as well as for the rescue organisations (analogue technologies). The contract was awarded by Alcatel-Lucent who had the turn-key responsibility for the project as a whole. They relied upon us to provide the system design for the confined area coverage. Included in the contract, was the actual installation and commissioning of the equipment delivered by Cobham Wireless, as well as the delivery and set up of a management system.

An example of a tunnel system design is illustrated below:



A total number of 13 tunnels, equal to 25 kilometers, had to be equipped with radio communication systems. Most of the 97 repeaters deployed are fibre fed repeaters.

Optical Master Units (OMU's) power the fibre fed repeaters located inside the tunnel. The illustration below shows what the set up could look like.



"Cobham Wireless has shown a high degree of technical expertise through the designs and support they've provided us with. This has resulted in a reliable radio communications system that will be used for many years to come."

Magnus Paulsson, General Project Manager, Alcatel-Lucent

The Benefit

Alcatel-Lucent chose Cobham Wireless as their partner and subcontractor for this major project, because of our solid list of references and our understanding of designing systems in complex environments. Our advanced, yet friendly to use, Supervision and Management System (AEM) was already employed by the Railway Authorities, which further simplified the implementation of the solution as a whole.

Cobham Wireless' supervision tool (AEM) provides the user with many advantages, such as efficient alarm management, network optimisation and an excellent centrally managed overview of the installed base of repeater elements.