Oslo Metro

Keeping commuters connected: How we helped Telenor provide coverage to the Oslo Metro

Case Study

The most important thing we build is trust

Overview

Worked with Telenor to provide a customised multi-band, multi-operator distributed antenna system (DAS) to enable seamless mobile phone usage inside the trains and station of the metro.

Challenge

With 85 million commuters every year and a confined environment like a metro, this posed multiple challenges, including limited space and extremely high capacity demand while on the move.



The Challenge

Norway's capital city, Oslo, has a metro network consisting of six lines totalling 86Km of track that all run through the city centre, connecting 97 stations over 14 boroughs.

The Oslo metro is utilised by 85 million commuters every year. With the mass proliferation of smartphones, all commuters expect to make calls, text and browse the internet while on the move from one location to another. Therefore it's just as important to provide a smooth coverage handover from the station to the tunnel as it is to provide coverage in those individual areas.

With an environment like a metro, there are multiple challenges from limited space for the equipment to extremely high capacity demand, but how do we overcome them?

Due to our extensive experience providing coverage to 70% of metros worldwide, Telenor, a leading mobile phone operator in Norway, approached Cobham Wireless to ask for guidance when choosing and designing the right solution for this complex environment.

Telenor were joined by two additional mobile operators, Netcom and Mobile Norway, making this a multi-operator project. All three supported the project financially, with Telenor as the project developer/owner and our main point of contact during this deployment.

The Solution

On review of the project, the Cobham Wireless team determined that a customised multi-band, multi-operator distributed antenna system (DAS) would be needed to meet all the requirements. Four base station hotels were installed, housing multiple base stations for each mobile operator. The DAS takes the RF signal from the base station hotel, converting it to light via the Optical Master Unit (OMU) before feeding the remote units spread across the metro network. To give you an idea of the size of this communication system, the team installed 30 OMUs and 164 remote units.

The solution also supported MIMO (multiple-in and multiple-out) capability to manage the increased data demand inside the confined setting of the tunnel. Although we have



"The first stages of the Metro project in Oslo are now complete. Cobham Wireless delivered a high quality service and a satisfying technical standard. The initial results are very good, providing our customers' access to Norway's most advanced mobile network up to date.

By developing new ground-breaking technology we have found that both MIMO and handover solutions is in fact possible!"

Camilla Stroem-Hagberg,
Project Manager,
Telenor Norway AS

experience providing MIMO capability inside buildings, it was a first for the metro scenario. By installing 2 MIMO bands on 1800MHz and 2600MHz, this increases the data speed connection for those travelling on the metro line.

To ensure a smooth handover of coverage from the station to the tunnel Cobham Wireless worked with Telenor to develop a new transitional solution consisting of a crossover section of two leaky feeders. This enables passengers to start a phone call at the station and remain connected whilst boarding and travelling the metro through the tunnel.

The entire communication network can be monitored and configured using the Active Element Manager (AEM). This allows the support teams to manage the equipment located at multiple sites from one remote location, identifying the need for changes as and when they arise, keeping them in full control at all times.

The Benefit

The commuters on the Oslo metro can now benefit from a world-class 2G, 3G and 4G coverage system which enables them to remain connected whilst on the move, whether it's for business or leisure.

Compared to other technologies in this space, a Cobham Wireless Fibre DAS is a multi-band, multi-operator system that works in any frequency combination that is required. This flexibility means systems are able to cope with growth as and when it is required. It also means less equipment needs to be deployed, resulting in a smaller footprint within the metro and savings on both CAPEX and OPEX.

Both the metro and mobile operators involved were keen to find a solution to this problem, and by working with the Cobham Wireless team they now have happier customers who can connect to a system which can cope with the data demands, even at peak times!







Sources: Ruter Annual Report 2013, www.tbanen.no and www.wikipedia.org

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