An Industrial Ethernet Backbone for Railway Operations in Norway

CCTV, PIS

At a Glance

Company:

A global transportation solution provider

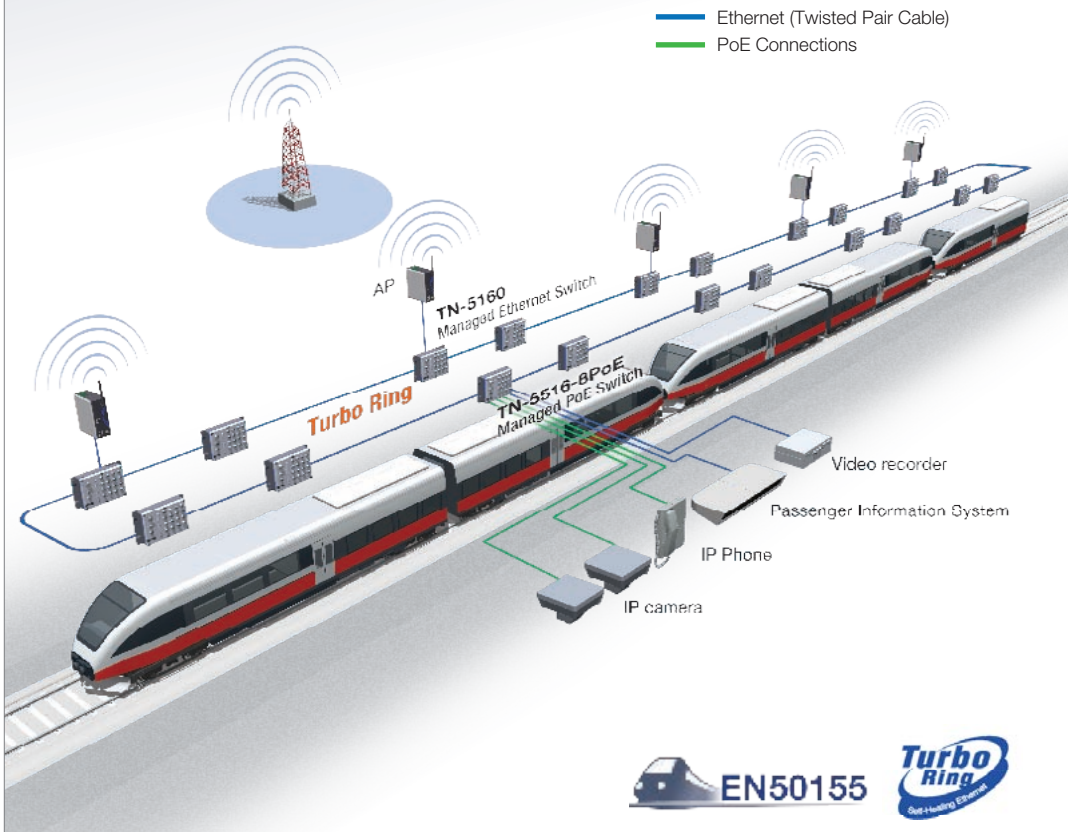
Location: Norway

Application:

Create a redundant Ethernet network on trains to support Passenger Information System, CCTV, and IP phone applications.

Project Introduction

In order to create their railway network, one of Norway's most important transport companies turned to a global transportation provider with experience in complete vehicle concepts in a wide array of different railway train types. The railway needed to establish a reliable, redundant train backbone to connect all associated devices inside the train cars. The network also should be able to integrate legacy devices while remaining easy to deploy, control, and maintain.



EN50155

Turbo Ring

TN-5516 series
TN-5516-8PoE series

16-port EN 50155 (PoE) Managed Ethernet SwitchesSwitches

- Built-in DC/AC power converter for saving space, time, and money.
- Wide selection of power inputs for on-board train
- PoE simplifying cable connections

Application Requirements

- A fast network with minimal boot up time. The train network must be up and available before the embedded computers in the train come online.
- Reliable, feature-rich, and railway-certified switches
- Enough ports to connect all devices to the network
- Comprehensive service and support, and high cost-effectiveness

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System Description

The railway vehicle manufacturer needed a reliable industrial Ethernet switches in order in order to create a network infrastructure on their trains that can connect to all the devices used in the system, such as IP cameras, IP phones, video recorders, passenger information devices, passenger counting devices, and WLAN devices.

One major topological requirement was that the Ethernet switches should form one ring per consist, which is composed of one locomotive and five cars. Moxa's Turbo Ring technology made it simple to achieve this topology. Four TN-5516 series switches are installed in each car. PoE versions of the TN switches are used to connect to IP cameras and IP phones in order to simplify the power wiring. Regular Ethernet switches connect to an embedded computer functioning as video data recorder that stores video data from the cameras, as well as to the passenger information and passenger counting systems. The network connects to several wireless access points for a consistent wireless connection to outside antenna towers so passengers have WLAN internet connectivity. The WLAN system is also connected to a central control station for monitoring, control and maintenance.

With a redundant, reliable ring backbone, the railway company is able to offer their passengers state-of-the-art information and entertainment services, and also make use of security functions such as video surveillance.

Products Used

TN-5516-8PoE series

16-port EN 50155 Managed PoE Switches

PoE Power over Ethernet

TN-5516 series

16-port EN 50155 Managed Ethernet Switches

- Turbo Ring, Turbo Chain (recovery time < 20 ms) or RSTP/STP for reliable network connections
- Isolated redundant power inputs with universal 12/24/36/48 VDC, 72/96/110 VDC, or 110/220 VDC/VAC power supply range
- EN 50155 and EN 50121-4 compliant
- -40 to 75°C operating temperature range (T models)

Moxa's Advantage

- Moxa's Ethernet switches take only 5 to 6 seconds to boot, beating other manufacturer´s products
- The TN-5516 has a built-in DC/AC power converter. This eliminates the need for an additional external converter, saving space, time, and money
- Moxa's sophisticated products cover the different power inputs on-board a train: 12/24/36/48 VDC, 72/96/110 VDC, or 110/220 VDC/VAC dual, isolated redundant power supply increases the reliability of the communications
- Moxa´s railway Ethernet switches support PoE, which enables customers to add devices to their existing network infrastructure without purchasing more power cables or reorganizing the original network design.
- Moxa's service package and high cost-effectiveness convinced the customers