Ethernet in rail transport: new thinking in network technology

Rail transport is in the midst of a transformation to Ethernet-based communication. The challenges for train manufacturers and rail operators are enormous - good thing there are the new Ethernet technologies from Selectron Systems AG.

A few years ago, Ethernet technology was mainly used for functionalities related to passenger comfort, such as multimedia applications. In modern rail vehicles, Ethernet technology is now also standard in the control-relevant sector.

However, the merging of train control and management systems (TCMS), operational deployment systems and comfort functions places high demands on network technology. Conversely, this means that efficient network technology is an important key to improved train performance, rapid time-to-market and lower operating costs.

Minimal effort for vehicle configuration

"Until recently, vehicle manufacturers had to run their own cables in the vehicle for most customer requirements that deviated from the standard network architecture. Each device required its own configuration," explains Roberto Bonomi. The engineer has spent a large part of his professional life developing on-board network technologies. Today, he is in charge of sales and business development for Italy and the entire Asian region at Selectron Systems AG, where he contributes his expertise.

Specializing in control, network and communications technology for virtually all types of rail vehicles, the company is one of the world leaders in this field. Medium-sized flexibility coupled with the capabilities of the Knorr-Bremse Group make it an excellent technology partner.

Bonomi sends the customer benefit explanation up front to duly frame the actual news: "Anyone who relies on Ethernet network technology in rail vehicles saves a lot of effort in vehicle configuration and maintenance." Bonomi immediately follows the customer benefit with a reference to his company's system solution - typical of an experienced expert in this field.

Attractive two-in-one package

Train Backbone Switch (TBS) is one of these innovative products. For the first time, it combines the train bus coupler (Ethernet Train Backbone Node) and the Ethernet Consist Switch in one device - in accordance with the railroad standard for communication architecture. The TBS not only saves the vehicle manufacturer space, but also a lot of time and money. "Importantly for the background," says Bonomi, "the entire TBS and Consist Switch network can be configured automatically with a single configuration file. This not only minimizes the effort required for commissioning enormously, but there is also virtually no

additional configuration effort in the event of a device replacement. This is an important factor that should not be underestimated, especially with regard to life cycle costs."

The Selectron Advanced Network Designer (SAND) takes care of the configuration. Behind the tool is an advanced graphical application for multi-platforms with a clear customer focus, freely following the motto: "Configure the entire network and not the individual devices!" It allows customers to organically and coherently design, configure and operate their entire network with Selectron devices.

By using the SAND application, customers can save time and resources by designing and managing their network more efficiently and effectively. Another important additional benefit for customers is that Selectron's Ethernet products are protected against attacks in accordance with the IEC 62443 standard with Security Level 2 (SL2), thus providing additional cybersecurity. www.selectron.ch

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About Selectron Systems AG

Specializing in control, network, and communications technology for all types of rail vehicles, Selectron Systems AG is a world leader in its field. The flexibility of a medium sized company, coupled with the performance of the Knorr-Bremse AG, make the company an excellent technology partner.

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