

TBOX HELPING TO KEEP RAILWAYS RUNNING



THE CHALLENGE

In cold climates, and during winter months, the build-up of ice and snow on rail track, switching points and signals can cause severe disruption and worse, accidents or derailment. This is why operators of networks that endure such conditions invest heavily in heating systems and labour to maintain the operational integrity of their track.

Traditionally, heating systems would maintain the track and points at a constant temperature a few degrees above freezing, or teams of people would work on call around-the-clock clearing snow and ice. The most susceptible parts of rail track to ice and snow build-up are switching points, which in turn can cause signalling systems to malfunction resulting in major disruption. Point heating systems help avoid this by:

- Preventing the moving rail from freezing to the fixed rail
- Preventing the moving rail from freezing to the side plates
- Preventing the build-up of compact snow and ice between the switch and fixed rail

Contingencies that require teams of people to work around-the-clock or systems that are working constantly to maintain track temperature, irrespective of the weather or outside temperature are clearly inefficient practices and a waste of valuable resources.

There is an alternative; by using remote telemetry technology operators can reduce their energy consumption and labour costs while improving their service through minimising disruption.

Using Ovarro's 'TBox range of remote telemetry units to automate, control and monitor their track and point heating system operators remove the need for an unnecessary 'always on' solution.

This is exactly what SAN Railway Systems, a partner of Ovarro has been doing consistently for major operators throughout Europe



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TRANSPORT



MONITORING & CONTROL



RTU'S



THE SOLUTION

The TBox range of remote telemetry units (RTUs) are currently used in many installations to monitor and automate railway heating systems that prevent build-up of ice and snow. Normally employed at electrical switch points, these systems ensure the safety and reliability of many major networks throughout Europe.

In addition to providing safety and reliability, automated heating systems provide major savings in energy costs. Using a programmable device like TBox provides significant savings compared to older techniques in which the heaters are either constantly on for the entire winter or operated by a thermostat.



“TBox has helped rail operators achieve savings of up to 70% compared to traditional methods.”



SAN Railway Systems, an Ovarro integration partner in Denmark, has installed systems that use TBox RTUs at remote locations, as part of their System Blue Point, which has helped operators make savings of up to 70% compared to traditional methods. TBox RTUs do this by controlling the power to heating elements based on parameters set by the operator including but not limited to current weather, weather forecasts and rail temperatures so that the heating elements are working only when required.

TBox RTUs simultaneously collect and store data about power consumption and performance. The historical reports, which are important for switching locations, include a variety of information of on-site conditions and are used for maintenance purposes and improvements in operations. Operators require timely notification of failures in heating equipment, temperature sensors, and weather stations as well as timely notification of changing live conditions, particularly weather-related. The TBox alarm management system informs operators and escalates reporting if acknowledgement does not come through in a user-configured time.

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For maintenance, equipment run time and weather condition data are combined into maintenance reports and that allow the TBox devices to notify maintenance staff of an approaching milestone. This has helped operators realise further savings by reducing the number of site visits conducted for maintenance and inspection purposes. Historical information has proven invaluable for modifying operations in order to increase efficiency. SAN Railway Systems optimised settings based on historical information and took this capability a step further by employing on-line tuning of individual control parameters. With the instant status provided by the communications network, users can view the live status across the entire system and change settings in a matter of seconds.

The TBox programmable automation solution has allowed SAN Railway Systems to provide standard applications with user-configurable parameters. Their intelligent, pre-programmed RTU application uses input from cold and heated rail temperature sensors and a weather station. It controls up to eight switch points and provides energy-optimised temperature settings and four weather modes.

The variety of communications interfaces in TBox has proven very important in railway applications. Installed systems are using Ethernet, RS-485, GSM, and GSM/GPRS communications. In case of communications failures, the TBox-based remote system operates independently as a stand-alone controller.

KEY DELIVERABLES

Automated rail track heating systems provide a number of tangible benefits to operators, the most important of which are the additional safety and reliability of their service:

Improved safety

Operators have a responsibility to provide a safe network for their passengers. The build-up of snow and ice on key parts of the track can cause accidents or derailments if it goes undetected.

Increased reliability

Disruptions and delays to services cause significant reputational damage to operators. Automated track heating systems prevent problems occurring and therefore increase service reliability.

Energy savings

TBox automated heating systems have been shown to reduce energy consumption by up to 70% when compared to traditional systems which are always on or operate by thermostat. A significant saving for operators which provides a quick return on investment.

Maintenance savings

TBox devices log data and provide reports for equipment run time and weather condition data to notify maintenance staff of an approaching milestone. This saves operators money by reducing the number of site visits conducted for maintenance and inspection purposes.

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