

Mipro renews signalling systems on the Estonian railways

New traffic management system and signalling system for the Lääne–Harju track section

Mipro Oy and AS Eesti Raudtee (Estonian Railways Ltd.) have agreed on a collaboration project to renew the signalling system on the busy Lääne–Harju track section. Mipro will deliver a new traffic management system

and signalling system for approximately 80 kilometres of track section running west from Tallinn. Both commuter and freight traffic volumes on this section of track are strongly growing.

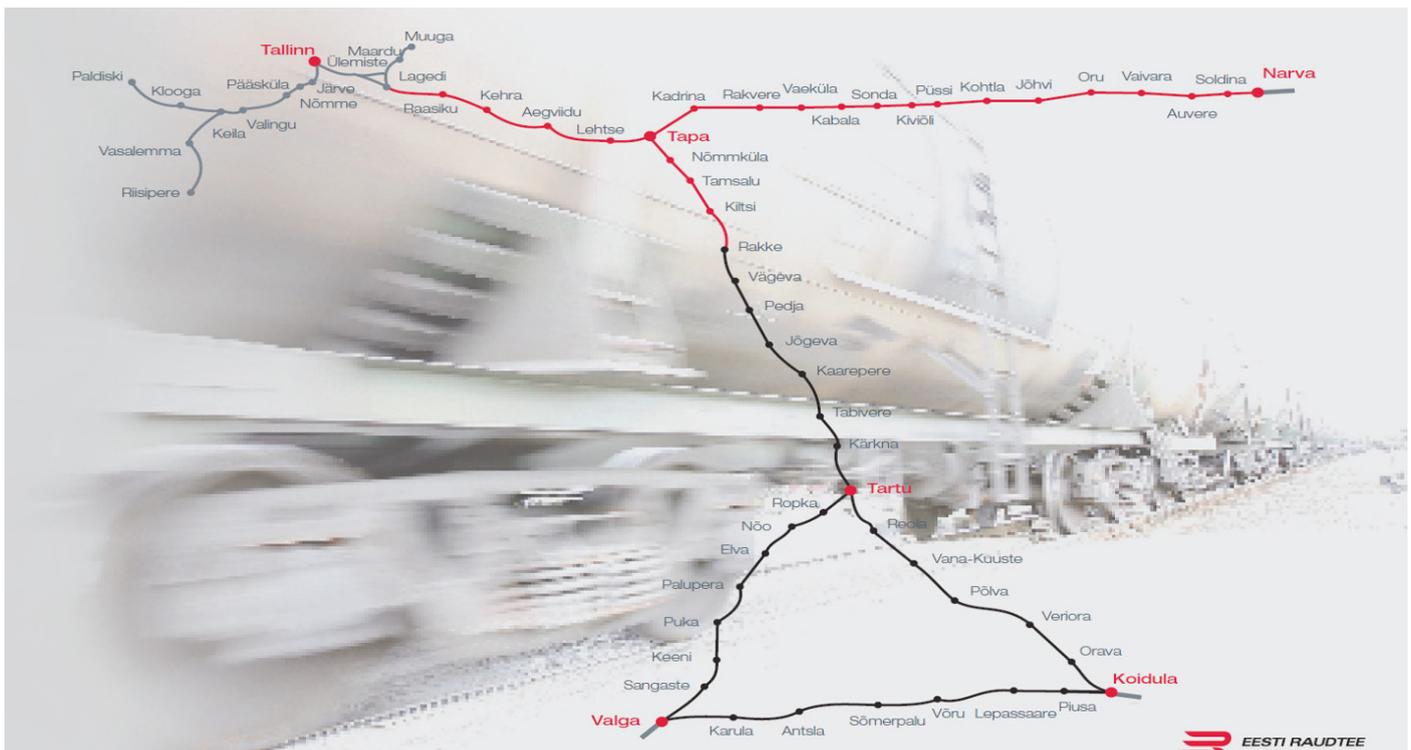
More safety and efficiency for the track sections

The project contract entered into by Mipro and Eesti Raudtee on 29th June, 2018 is based on the FIDIC (Yellow Book) model contract. The contract covers the renewal of signalling and traffic management systems on the track sections Tallinna-Keila-Paldiski, Klooga-Kloogaranna and Keila-Riisipere, and the related cabling, installations and possible demolition work. The systems will be built and commissioned in stages, one station at a time, during 2018–2020. Furthermore, the contract includes the installation of 21 level crossings delivered by Eesti Raudtee in the track sections. Part of the level crossings are interlocking system dependent.

The objectives of the project are to improve the safety and maintainability of the track sections and to increase efficiency and the level of automation of traffic management. There is intensive passenger traffic and heavy freight traffic on the track section.

Estonian rail network requires renovation

Much of the Estonian rail network requires renovation, with safety related equipment and technology of many track sections requiring modernisation. The current interlocking systems on the Lääne–Harju track section are relay-based and were built between 1958 and 1981.



Mipro is to renew the signalling system of the Lääne–Harju track section running west from Tallinn. The objective of the project is to improve the safety and enhance the traffic on the track section. The contract covers the track sections Tallinna-Keila-Paldiski, Klooga-Kloogaranna and Keila-Riisipere. Image: AS Eesti Raudtee.

Replacing them with an electronic system controlling the track equipment involves a considerable modernisation. Furthermore, the efficiency of traffic management will increase when the current local operating points are replaced with centralised traffic management.

Eight stations and over 100 electrically operated points are along the Lääne-Harju track section. The points are equipped with SP6-M point motors provided by Eesti Raudtee. Audio frequency track current circuits combined with the local automatic train protection system are used for train and track vacancy detection. Train detection is based on ALSN technology, which is well known in the Baltic countries, Russia, Ukraine and Belarus. The signals will be implemented in accordance with local requirements.

New traffic control centre in Tallinn

The Lääne-Harju traffic management system will be implemented by using a similar Mipro solution to the one in use in the Viinikka traffic control centre in Tampere for the control of Western Finland's rail traffic.

A new traffic control centre will be built in Tallinn and local working places in Pääskülä, Keila and Paldiski. Mipro's delivery scope includes:

- Traffic management hardware
- Video wall
- Traffic management tools
- Train route automation
- Planned and realized train schedules
- Management of time table conflicts and reports.

The delivery scope also includes a traffic control simulator that is used for the training of dispatchers to prepare for various traffic situations, especially exceptional ones.

Centralised SIL4 level interlocking solution

In compliance with the Cenelec standards, Mipro will deliver to Estonia an interlocking system that fulfils Safety Integrity Level SIL4. The solution is based on centralised architecture in which the interlocking system is centralised into the device facilities that are to be delivered to the stations. The interfaces to the trackside equipment will be implemented with Mipro's turnout controllers and signal controllers (object controllers, OC) that are also used in Finland.



Rail experts are working on the international project both in Estonia and in Finland. The representatives of AS Eesti Raudtee visited Mikkeli to participate in the planning meeting in October.

The interfaces to the existing block systems and interlocking systems in the direction of Turba, Kopli, Välke and Ülemiste will be implemented with I/O interfaces. The interface to the track vacancy detection system will also be implemented with an I/O interface.

Project implementation through international cooperation

Mipro's project team is composed of international signalling and traffic control experts. Finnish, Estonian, Lithuanian and Ukrainian rail experts are working on the project in Mipro's offices in Finland and in Tallinn. Our Estonian partners will be involved in project execution too.

The best solutions to fulfil the needs of Estonian train traffic

The Lääne-Harju signalling system will be built and commissioned one station at a time during 2018-2021. Planning of the project, site and system took place in 2018. Together with Eesti Raudtee personnel, Mipro will plan the best solutions for the needs of the Estonian train traffic. Starting in 2019 the focus will be on building and commissioning.

The Lääne-Harju signalling system project is Mipro's first railway project abroad and thus highly significant for the company's internationalisation strategy and for the export of Finnish railway know-how.

Text: Suvi Hyyryläinen

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AS Eesti Raudtee (Estonian Railways Ltd.)

Eesti Raudtee is a state-owned company operating since 1870 and responsible for railway administration related tasks. Eesti Raudtee ensures smooth operation, management and maintenance of the railway infrastructure and efficient traffic management. The company develops and maintains 1229 km of railroad, 60 stations and 129 railway platforms. Eesti Raudtee employs 791 employees and its annual turnover reached 33 million euros in 2017. Eesti Raudtee is responsible for the infrastructure, building and traffic services (traffic management, operating and railway yard work) of its own tracks.

In 2017, 12.41 million tonnes of cargo were transported on the infrastructure of Estonian Railways, 7.59 million tonnes of which came from transit. During 2017, 7.44 million domestic passengers were carried by rail, and 105,300 international passengers travelled on the Estonian Railways' infrastructure.