



The Eaton equipment is, without doubt, one of the essential cornerstones of this high profile project.

Gediminas Abartis, Director of the Fima UAB Energy Solutions Department

Power Train

Location:

Vilnius, Lithuania

Segment:

Industrial

Problem:

Modernization of the signalling and power systems along a rail freight corridor

Solution:

Xiria ring main units and switchgear of the SVS 08 series

Results:

Compact, reliable and cost-effective switchboards with the ability to accommodate extensive metering provisions

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Background

When Lithuanian intelligent engineering solutions company Fima won the contract to modernize the signaling and power systems along a key 112 km Trans-European rail freight corridor, the company chose Eaton medium voltage (MV) equipment as the basis of the power system upgrade.

The railway line between Kaunas and Kybartai in Lithuania – Branch IX D of International Transport Corridor IX – is a vital link in the European rail freight network and traffic on the route is growing fast. In the year 2000, Lithuanian Railways (Lietuvos Geležinkeliai AB), carried 30,712,000 tonnes of freight, but the estimated figure for 2011 is 52,230,000 tonnes, an increase of more than 70% in just 11 years.

Until recently, however, the route used signaling and power equipment from the Soviet era, which was dated, and its resources were approaching the end of their service lives. For this reason, Lietuvos

Geležinkeliai AB, with support from the European Union, initiated a major project to update the infrastructure of the 112 km route, which includes eight stations, 212 sets of points, 437 signals and 33 level crossings.

Fima, a leading Lithuanian engineering company with an outstanding track record in major infrastructure projects, was successful in winning the contract – the largest in the company’s history – for both the signaling and power upgrade work on the line. For the power section of the upgrade, the company was required to provide a new 10 kV system to distribute power to the stations and various other locations on the line, where it is reduced by local transformers to 400 V to feed traffic control systems, points heaters and other loads.

Challenges

Having analyzed the requirements for the project, the engineers from Fima found that they needed six MV ring

main units, configured as a mixture of load-break switches for incoming and outgoing power lines and circuit breakers for power transformer protection. In addition, they needed 13 MV switchboards in various configurations, typically including incoming and outgoing circuit breakers, bus section switches and fused load-break switches to supply power transformers.

Solution

The engineers then carefully examined the MV equipment offered by a number of suppliers before making a preliminary decision that Eaton products were likely to be the best match for their requirements. Before making a final choice, they visited the Eaton manufacturing plant in Hengelo, Netherlands where they were favorably impressed by the clean, well-organized factory and by the expert answers they received to their technical questions.

These were not, however, the only reasons for choosing



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Eaton Xiria ring main units and SVS 08 series switchboards for the project. Another key factor was the very compact construction of these products, which not only made them easier to handle, but also meant that they could be accommodated in smaller buildings with lower construction costs.

The decision of the Fima engineers was also favorably influenced by the use of vacuum switching technology and solid insulation in the Xiria and SVS equipment.

Switchgear based on vacuum switching devices offers a very long service life and requires almost no maintenance. In addition, because it eliminates the need to use noxious substances like sulfur hexafluoride, it poses no threat to the environment during its life or at end-of-life disposal.

Safety and metering capabilities were key

Solid insulation also provides important benefits. It is robust and resistant to damage and it greatly reduces the risk of dangerous flashovers developing, which could cause major damage to the equipment itself, as well as potentially serious injury to anyone working in the vicinity. In addition, because solid

insulation can be accurately profiled in all areas, corona discharge is virtually eliminated.

The final factor in the decision was the ability of the switchboards to accommodate extensive metering provisions. These are required for commercial accounting purposes as the switchboards supply power not only to the railway but also to outside users, and the railway operating company needs detailed power consumption information so that these users can be billed accurately.

Demonstrating flexibility

"Requirements for the safety of operating personnel were completely satisfied," said Gediminas Abartis, Director of the Fima Energy Solutions Department, "and, when we needed changes, Eaton responded rapidly and adapted the equipment for the needs of the project, thereby helping us keep our work on schedule. In short, the support we received from the Eaton team was excellent."

At the time of writing, the Eaton equipment has all been installed and almost all of it has been commissioned. Both installation and commissioning, which were carried out without interrupting the normal operation of the railway, were

smooth and problem free, and the equipment that is currently in service is meeting and exceeding the expectations of both Fima and the railway operator.

Results

Xiria medium voltage ring main units and SVS switchgear from Eaton have provided a dependable, versatile and cost-effective solution for a major upgrade project on one of Lithuania's most important rail freight links. And the new equipment is already providing the railway operator with important benefits.

"Greatly improved reliability of the railway's power network is, as you would expect, one of the most noticeable benefits," said Gediminas Abartis, "but better control over the network and enhanced flexibility are equally important. And, of course, operational costs will be low because of the minimal maintenance requirements of vacuum switchgear. The Eaton equipment is, without doubt, one of the essential cornerstones of this high profile project."



Gediminas Abartis, Director of the Fima UAB Energy Solutions Department

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April 2013

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