CASE STUDY

MicroSCADA Pro enables Slovnaft refinery to take remote control of every substation.

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Improved efficiency, modified automatics and better control of load shedding for a state of the art oil refinery.

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01 Slovnaft oil refinery

The predecessor of Slovnaft started out in 1895, as “Apollo” - an oil refinery in Bratislava. Even then the operation was at the cutting edge of technology supplying the most-valuable distillates including aviation oil and artificial ice. Now part of the MOL Group, Slovnaft continues that tradition, focusing on the production of low-sulphur diesel and polypropylene, with the help of ABB.

Project

These days Slovnaft can take in six million tonnes of crude oil every year, turning it into consumer grade petrol and diesel, polyethylene, polypropylene, and numerous other products. The refinery is a significant operation, covering more than five square kilometres and employing more than two thousand people. With all the latest technology installed it rates 11.5 on the Nelson Complexity Index; an industry measure of how much value can be added to crude oil entering the facility, making it one of the most complex refineries in Europe.

All that equipment requires a lot of electricity to keep it running, and at Slovnaft that power comes from five electrical generators, 70 transformer stations, and 12 110kV transformers, all managed through ABB’s MicroSCADA Pro. To keep a better eye on the infrastructure Slovnaft wanted faster servers, more workstations, and improved interfacing, all of which ABB was able to provide.

Customer need

Investment in the plant has continued apace, with more equipment constantly improving the quality of the products produced, but placing increasing burden on the underlying infrastructure. To manage the expanded operations Slovnaft needed a wholesale upgrade to the monitoring and control systems, including servers, automated systems, power regulation, and workstations. The new system was expected to manage the expanded infrastructure, with greater operational visibility and distributed management. Improved efficiency, modified automatics, and better control of load shedding all came within the project requirements.

ABB solution

Following years of piecemeal upgrades Slovnaft has been left with more than 70 substations scattered around the site, so bringing them all under a single management system was a key objective for the project.

Three new substations supported IEC 61850, but integrating with the rest required the use of LonTalk. ABB is firmly committed to IEC 61850, and has representatives on the specification board, but interconnection with legacy equipment can rarely be avoided which is why support for protocols such as LON remains equally important.

For the substations supporting IEC 61850, Protection and Control IED Manager PCM600 was used for IED configuration, allowing Slovnaft to have one dedicated tool for configuration and disturbance recording evaluation for all IEDs from ABB's Relion® product family. Additionally, Integrated Engineering Tool IET600 was used for the IEC 61850 system configuration and Integrated Testing Tool ITT600 for diagnosis and testing.

MicroSCADA Pro itself was upgraded to the latest version of SYS600, but the work also involved reconfiguring the existing power lines and modification of systems including Automatic Switch-off Unit, Isolated-network Automatic and Substation Automatic Switching. This reconfiguration brings greater management clarity, and flexibility, to the network. For resilience a Hot Standby is maintained – a separate system which constantly echoes the status of the primary and stands ready to take over in the case of system failure.

With 20 workstations now distributed around the site, and across different departments, everyone can contribute to balancing the needs of the facility. More than 900 ABB's relays keep everything under control and with remote management now extended to every substation, the 12 110K transformers, and the five generators, Slovnaft has greater visibility, and control, than ever before.

Customer benefits

The introduction of a new interface to MicroSCADA Pro aligns the application with the paradigms used in the latest version of Microsoft Windows, providing an intuitive interface which can be customised by individual users. Faster servers ensure that data is presented promptly and completely, allowing operators to make accurate judgements and, thanks to the interconnections across the site, to quickly implement those decisions.

The large screens, and innovative interface design, was what attracted Slovnaft to the latest version of MicroSCADA Pro. 20 workstations now display that high-quality information to managing staff across the site, and the migration was performed without any disruption to the operation of the refinery, or its supporting infrastructure.

MicroSCADA Pro can now be used to remotely manage the entire electrical network, and with support for the latest industry standards it ensures that Slovnaft can maintain the technical lead that has served it so well for more than a century.

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Contact your local service and sales support team to discuss your requirements further.

For further information visit:
www.abb.com/microscadapro

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