

# SLOVNAFT

## Automation solution drastically reduces operating costs at a major refinery and petrochemical company



The Slovnaft petrochemical refinery

Slovnaft Plc is one of the biggest refinery and petrochemical companies in Central Europe, occupying an area of 520 hectares on the southeast border of the Slovak Republic's capital, Bratislava.

The refinery processes approximately six million tons of crude oil annually, the majority of which comes from the Russian Federation via the Druzba pipeline system to Bratislava.

Slovnaft delivers a complete range of refinery and petrochemical products and plastics, with approximately 60% of its output exported to the Czech Republic, Germany, Hungary and Italy.

### The Challenge

Slovnaft's legacy SCADA system had become obsolete. They decided to replace it while preserving the existing telemetry devices of various generations and poor quality metallic communication lines.

In planning for the upgrade, the following objectives were set:

- The new control system was to be tightly integrated with the client's existing information system.
- The existing telemetry link (including instrumentation, land lines, communication system and RTUs) was to be preserved.
- Existing SCADA extensions, such as the leak detection, pipeline integrity checking and custody metering systems, had to be incorporated.
- During system changeover, downtime had to be minimized to maintain pipeline operation and liquid product pumping.
- Flexibility, open standards and scalability were required to facilitate future growth.
- The existing operation and control procedures were to be respected as much as possible.
- In order to reduce maintenance costs, simple configuration and maintenance was required.



### The Challenge

To replace Slovnaft's aging SCADA system with a new control system that could integrate tightly with the client's existing information system. Furthermore, Slovnaft needed to preserve its telemetry devices and minimize downtime during the changeover.

### The Solution

A WAN-based, multi-layer CitectSCADA system that communicates with the various custom protocols and optimizes throughput on the low bandwidth. The critical leak detection system was also upgraded and integrated with CitectSCADA and Slovnaft's Geographical Information System (GIS).

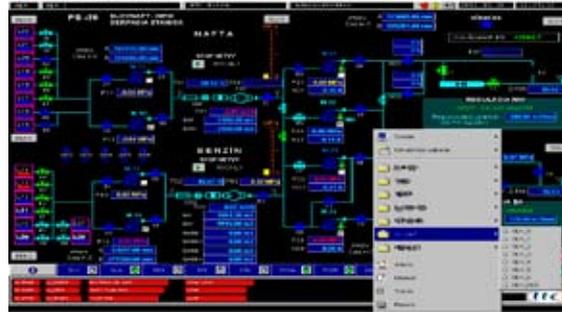
### The Benefits

By integrating a highly scalable, reliable CitectSCADA system throughout the pipeline, Slovnaft has reduced costs by minimizing the level of manual operations in the control rooms. The solution has increased the functionality of the existing system and can easily grow to meet the company's future requirements.

# Increased functionality and easy growth



Topographical image of the pipeline



Screen shot of the refinery system

## The Solution

To ensure a smooth transition between the two control systems during the changeover period, both were run simultaneously. Particular attention was given to the alarm, trend, and I/O servers for the low speed WAN.

The distributed load and optimized inter-server communication abilities of CitectSCADA were fully employed with the final design consisting of six alarm servers, five trend servers, five report servers and five replicated Microsoft SQL servers.

The archive stores SCADA data such as historical trends, reports and alarms for a one year period. The data is organized in week units, allowing operators to attach a particular trend for any historical week, enabling management to pinpoint operational troughs and maximise output throughout the year.

Using an application, based on the CitectSCADA API, the SCADA data is also exported to the SQL database, which serves as a gateway for intranet access. Tag values, alarms and system events can all be exported and disseminated across the intranet for timely operator responses.

As the pipeline at Slovaft runs through an environmentally sensitive area, in addition to the usual natural and technical hazards, it was important to integrate a leak detection module into the system. The module, PipeDec, interfaces with the customer's Geographical Information System, providing a display map with the leak location directly onto the CitectSCADA screen.

## The Benefits

The open standards offered in CitectSCADA allow Slovaft to extend existing functionality in many areas. As such as a result of the new automation system, the following project extensions were implemented:

- Monitoring remote tank farms within a 200km radius.
- Cooperative data exchange of SCADA tag values between the Slovak and Czech pipeline operators.
- Publishing of SCADA data in the customer's management information system.
- Easy connection and configuration to another section of the pipeline.

By extending their existing functionality, Slovaft increased their visibility and improved the pipeline automation; they optimized human resource allocations which reduced operating costs at control sites and centralized the control system.

The tight integration of CitectSCADA with the existing information system exceeded Slovaft's project objectives. By implementing a highly scalable, reliable CitectSCADA solution, Slovaft has increased its return on assets by reducing operating costs and improving productivity. The solution has already increased the functionality of the existing system and will easily grow to meet the company's future needs.

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