



## ABB Control System Modernizes Largest Czech Ethylene Plant

The most extensive open control system in Europe: ABB's Advant system for Chemopetrol a.s. accesses 3000 inputs and 1150 outputs, monitored through 15 operator and engineering workstations, to control production of 450,000 tons of ethylene annually.

**Client:** Chemopetrol a.s.  
**Location:** Litvinov, Czech Republic  
**Scope of Work:** Advant Open Control System

*"ABB achieved one of the most progressive solutions to process control in the industry."*

Radomir Prochazka  
Business Development Manager  
ABB Czech Republic



**Process control begins with process monitoring, but ABB knows that's only the beginning. The ABB Advant system records, filters and stores data (including alarms and events); generates customized reports; and provides managers with the information they need to keep ahead of industry trends and in control of the entire enterprise.**

Control system modernization has many benefits, as Chemopetrol a.s. discovered in their Litvinov ethylene plant. Chemopetrol is the biggest petrochemical company in the Czech Republic, providing ethylene, propylene, polyethylene, polypropylene and other products for use within the Czech Republic and for export.

With 450,000 tons of ethylene to produce annually at the Litvinov plant, Chemopetrol had four goals:

- Gather more information about the process
- Provide that information throughout the enterprise to everyone from operators to supervisors, as needed
- Optimize operating parameters
- Ensure continuous, stable operation

For Chemopetrol, ABB configured an Advant control system with two independent distributed control networks, connected with routers. The first

network controls the hot and cold parts of the ethylene unit. It includes 11 operator stations, eight controller subsystems, an engineering station, two stations for recording historic data and one optimization station. The second network controls the boiler room, the demineralization unit and the pilot plant for di-cyclo-pentadiene. It includes three operator stations, two controller substations and one station for recording historic data. Each workstation is powered by its own UPS.

Authorized users obtain real-time information on every aspect of production and can reach all parts of the plant from the various stations. Information is available to operators, engineers and managers in the form and quantity that they need, with accuracy they can rely upon. They receive no more and no less than the data appropriate to each task they perform.

The 14 operator stations let operators access 1,000 graphic displays, print out historical reports and communicate with alarm PCs that filter and store historic data on alarms and events. Because the engineering station is based on ABB's AdvaBuild software, a Windows-based engineering tool, Chemopetrol's own engineers can configure the data base, operator environment, graphic displays and diagnostic messages. They can choose from three methods for process configuration, using pre-defined modules (template builder) and/or high-level structured programming language (TCL builder) and/or high speed graphical "ladder logic" (TLL builder). Management has at their fingertips the information needed to make balance computations and prompt, accurate decisions. Yet, all this information is safeguarded by, for example, three access levels (supervisor, engineer and operator), each with their own permissions to view and manipulate data.



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## Benefits

- Modernization on control system, without making existing equipment obsolete
- Customizable reports, trends, graphics, alarms, diagnostics
- Real-time dissemination and protection of data
- Optimization of operating parameters

The optimization station uses an Oracle data base program, ABB AdvaInform, C++ and Fortran, to record historical data and enable optimization of operating parameters. Optimization allows Chemopetrol to improve the plant's productivity and economic return.

The entire MOD300 Advant system encompasses 2700 analog inputs, 800 analog outputs, 300 digital inputs and 350 digital outputs. The controllers and communication channels are fully redundant and incorporate an emergency shutdown protocol, to ensure continuous, trouble-free operation. Because the system is truly open, the choice of HIMA and PLC equipment was based, not on the vendor, but on reliability, ease of maintenance and return on investment.

With the ABB Advant control system, "ABB achieved one of the most progressive solutions to process control in the industry," according to Radomir Prochazka, Business Development Manager at ABB Czech Republic. Chemopetrol's control system reflects ABB's commitment to cost and risk reduction, while providing the most reliable, consistent and innovative equipment and technology.

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