



Evolution of MOD 300 control system to Industrial^{IT}

PKN ORLEN upgrades its blending plant's control and optimization systems with ABB's Industrial IT technology.

Client: PKN ORLEN

Location: Plock, Poland

Scope of Work: Evolution of MOD 300 control system to Industrial IT

"It's very easy to extend the ABB system. Even if we're doing a big step-change, we (seldom) have to replace hardware, which doesn't happen with other vendors. Industrial IT speeds up decision-making for our management and enables us to prepare advanced and optimization software. Not only is product important, but also the relationship between companies and people. We've found a very good relationship with ABB."

Waldemar Nagórko
Manager, Process Automation Department
PKN ORLEN



With market share rising, Central Europe's largest refiner of crude oil and ethylene was keen to increase capacity and obtain quicker changeovers between products. PKN ORLEN recently called upon ABB for an upgrade of their blending plant's control and optimization systems to achieve higher production and shorter time to market.

Background

PKN ORLEN is Poland and Central Europe's largest refiner of crude oil and marketer of world-class petroleum and related products. It accounts for approximately 10% of Poland's state budget revenues. It operates a network of approximately 1,900 petrol stations in Poland and around 500 outlets in Germany.

ORLEN's integrated refining and petrochemical production complex in Plock, Poland is one of the most advanced & efficient facilities of its kind in Europe, with a total nameplate throughput capacity of 17.8 m tons.

ORLEN is a very big company, with over 50 control rooms. Initially, the policy of the company was that they should not rely on only one distributed control system (DCS) vendor. It was decided to add two control system products, with each running approximately 30% of the control. So ORLEN added ABB, as one of the leading companies in the market. "We've had strong results with ABB and so, over time, we have increased the size of the ABB control installations throughout the company. ABB now controls over 60% of our processes," ORLEN's Manager of Process Automation, Waldemar Nagórko, tells us.

"ORLEN's blending story is 10 years old. This is a good example of step evolution from a very, very traditional control system up to a very advanced one. We started in 1994 with a single node ABB MOD300 Distributed Control System (DCS), for controlling jet fuel and gasoline with alcohol production."

Soon ORLEN decided to extend this system to enable production of a full range of gasoline. ABB presented the best offer, and so ORLEN's first blending control and optimization system was successfully commissioned in 1998. Adding SC controllers and Advant stations to the existing single multibus node extended the DCS. On and off line optimization and planning were done on an Advant IMS station.

Integrating Information for Improved Visibility

Nagórko again: "We are utilizing the open environment of the ABB product. For example, on our blending plant, we introduced Advanced Blend Control (ABC) from ABB. It is actually incorporated in our company network; so all process engineers have access to the optimization software from the office without visiting the control room. Every ABC user has different access privileges to keep the whole system secure. Additionally, command coming remotely (from Advanced Blend Control to DCS) is always confirmed by the control room operator. For safety reasons, the system is such that if the control room operator doesn't react in a pre-programmed amount of time, the DCS software will make the safest decision for the process."

Investment Enhancement Through Evolution

"ABB systems protect our investment very well. There are many examples in the company where we started from a very small, single node, just for monitoring and measurements, and then migrated to the huge control systems. The ABB system is well suited to this. In many places we expanded from a very small system to a huge control system, in order to have better product and higher production. For example, in our blending project, we started eight years ago with a very small, multi-bus based, one-node system. Then we added controllers, then other stations, and most recently migrated to the Advant platform with Advanced Blend Control and Optimization."

Engineering for Maximum Performance

"The ABB system is very friendly. On the Advant platform, we can use many engineering tools, which are making our job much easier. We can pass project design data through the tools directly to the system database, reducing mistakes. We've found that the ABB system offers very user-friendly engineering tools for application preparation."

Reducing Time to Decision and Action

"Industrial IT products speed up decision-making for our management and enable us to prepare advanced type of



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Why Choose ABB?

- Integrating information for improved visibility
- Investment enhancement through evolution
- Protect your intellectual property
- Reducing time to decision and action
- Measurable results impact ROI

software and optimization software. But that story is just beginning.

"All our control systems are connected to our refinery information system. It enables us to deliver information from the plant floor to the management desk. It's used later to analyze and for strategic planning.

"Industrial IT products (Optimize IT Advanced Blend Control and Regulatory Blend Control) are helping us to prepare on-spec-type of products. It reduces the need to re-blend, and lowers production costs."

Measurable Results Impact ROI

"We achieved *all* our targets with our ABB control system upgrade. The most important targets were: optimal use of more components, optimized costs, elimination of re-blends, very good prediction and control of more product properties, reduced production costs and reduced giveaways (i.e., "giving away" a higher-spec product at a lower-spec cost, because matching spec exactly would require a re-blend. Re-blending typically means higher production costs and reduced profit.)

"We also gained access to actionable knowledge, allowing us future modification and system extensions. For example, in order to gain greater flexibility to allow usage of components directly from production plants instead of only from storage tanks, we are going to install a new analyzer system which enables properties measurement on product and component lines. The DCS and the Advanced Blend Control software can then be adapted to receive those values and use them to correct recipes online."

The Future

"The most recent upgrade of the control system was to extend our ethylene production in order to produce more plastics, such as polyethylene and polypropylene. This was needed when ORLEN began a joint venture with another large company. When the extension of ORLEN's ethylene unit is finished, it will be one of the largest in Europe."

For more information on ABB open control systems, either call us at: 1.800.HELP.365, or at: 1.440.585.7804, option #5, or log on to www.abb.com/control systems.

For more information on how ABB's Industrial IT technology can be employed to solve your chemical processing issues, visit us at www.abb.com/chemical.