BP Marl

Increasing Styrene Production while Reducing Utility Consumption

"With Rockwell Automation's software, the BP Marl site has been able to increase production rates while reducing utility consumption and improving product quality. Rockwell Automation's advanced process control solutions and their implementation team have performed to a very high standard and delivered what they promised, which means better, faster, and more sustainable results for our business."

Steve Pollitt,
Technology Manager for
ethyl benzene and styrene
BP Marl

Key Benefits:

- Maintained product quality closer to specifications
- Dynamic adjustment to product quality and production rate variables
- Improved stability of ethyl benzene and styrene distillation towers.
- Enhanced operator control of the process with shifting production constraints.
- Maximized production and profit across the entire production lifecycle

The Challenge

Maximizing and optimizing production capacity is key to maintaining profitability and competitive advantage in the volatile petrochemical industry. The many uncontrolled factors in the process, like changing demand and seasonal conditions, also affect production goals. The BP polymer operation in Marl has a clear understanding of the value advanced process control (APC) solutions generate – allowing the plant to respond and make decisions regarding these changes in a cost-effective manner.

In addition, petrochemical products typically have tight specifications set by customer contracts. If plants overachieve the specifications, there are additional production costs incurred in making the products with no additional revenue. BP has long recognized the benefits of APC solutions to predict and control the wide array of variables that affect production cycles, yield, and profitability. BP Marl specifically wanted an APC solution that would control and optimize its ethyl benzene and styrene reaction distillation systems to raise production capacity while lowering operating costs.

Rockwell Automation: A Positive Reaction

BP turned to Rockwell Automation, with whom it has a global strategic alliance, to install an advanced process control technology. BP deployed the Rockwell Software Process Perfecter® solution, from Rockwell Automation, at the Marl site to control ethyl benzene and styrene reaction and distillation systems that produce more than 350,000 metric tons of styrene per year.

BP Marl

As one of the three largest integrated energy companies in the world, BP serves 10 million customers every day. BP's main activities are exploration and production of crude oil and natural gas; refining, marketing, supply, and transportation; solar power and manufacturing and marketing of petrochemicals. BP operates in 100 countries on six continents.

BP's Styrenics Business is responsible for the production and marketing of styrene monomer, polystyrene, and expandable polystyrene for applications such as household appliances, medical articles, toys, food, and other packaging. Styrene monomer is manufactured in Europe and the US and is used as feedstock for the polymers businesses or sold on the merchant market.

BP's polymer operations in Marl, Germany employ approximately 270 people and include the production of ethyl benzene, styrene, polystyrene, and expandable polystyrene. The site is located on the ChemiePark Marl, which was originally established in 1938 as Chemische Werke Hüls. It is the third largest chemicals production site in Germany.

Specific project objectives included increasing production rates while reducing utility consumption and costs.

Process Perfecter combines steady-state optimization with model predictive control to reduce product variability and more easily change production targets, improve reactor stability, and maximize rawmaterial efficiency. Because of its high flexibility, Process Perfecter can optimize single processes, lines, or an entire plant production system, and can easily interact with plant scheduling and other manufacturing process software.

Optimizing Production and Lowering Costs

The fourteenth BP site to deploy Process Perfecter in three years, BP Marl uses Process Perfecter to continuously control the many variables that influence product quality and to maximize production and profit across its entire production lifecycle. The Rockwell Software solution has also given operators the confidence they need to operate closer to the process constraints, worrying less about specific variables and spending more time on value-added activities.

Rockwell Automation and BP formed a strategic alliance in 2000 to deploy the Rockwell Software advanced process control solutions to BP's polyethylene facilities, their joint venture organizations, and their licensees worldwide. In the first three years of the alliance, BP and its affiliated organizations have successfully deployed fourteen projects with Rockwell Automation.

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