Siemens technology is helping Pepsi Bottling Group increase quality and reliability in its operations delivering a high degree of manufacturing flexibility. A great example is the South Moscow plant – a state-of-the-art greenfield facility which started producing Lipton teas in June 2009. Here, Siemens and PBG worked together to conceptualize and execute an Optimized Packaging Plant (OPP) that has brought immediate improvements in training, diagnostics, maintenance and productivity.

Situation

Pepsi Bottling Group (PBG) prides itself on its clear vision and commitment to operational excellence. With annual sales of $14 billion globally, PBG’s operations extend beyond the United States to Mexico, Canada, Spain, Greece, Turkey, and Russia. In 2008, its international footprint represented 72 percent of PBG’s total growth. That means, it is critical for PBG to develop high quality manufacturing operations that are repeatable from country to country and continent to continent. Siemens technology has helped PBG increase quality and reliability in its operations delivering a high degree of manufacturing flexibility to meet its brand's strategic vision.

No matter where PBG’s customers live around the globe, they all want choice and quality at a reasonable price. And increasingly, customers want their soft drinks to be produced with as little impact on the environment as possible. Through the right technology choices and partnership with Siemens for automation technology, PBG is able to deliver.

The challenge – rapid innovation to meet demand

In Moscow, Pepsi’s biggest challenge in 2005 was producing soft drinks quickly enough to meet the demands of the growing Russian market. The contrast with a generation earlier couldn’t have been more striking. In 1974, Pepsi made its commercial debut in the Soviet Union, 15 years after Nikita Khrushchev took his first hesitant sips during the height of the Cold War. By 2005, Russian GDP was growing at 7 percent and disposable income rising 26 percent per year with demand for Western products, such as soft drinks, booming.

When PBG decided to add a new, greenfield plant in South Moscow, the company had the chance to build a showcase plant from the ground up. PBG looked to Siemens to do a comprehensive review of how they operated and afterwards, work closely with PBG to create a vision for the future.
"We started by asking Siemens to look at the way we do business and tell us what an optimized plant looks like," said Rajendra Gursahaney, Senior Engineering Director International at Pepsi Bottling Group. After reviewing several PBG plants in different countries, it was time for Siemens to come back with a formal recommendation. "We asked Siemens to recommend hardware, network architecture, and an overall package of equivalent components with equal or better functionality at an equal or better price," Gursahaney continued. PBG's goal was to standardize the equipment and ensure complete interoperability between the components based on the OMAC (Organization for Machine Automation and Control) standard.

The solution – an optimized packaging plant

Siemens’ recommendation: an Optimized Packaging Plant concept – OPP for short. PBG saw promise in the approach and over the next three years, PBG and Siemens worked together to crystallize their thinking about the OPP. What started as concept evolved into a sketch and ultimately a detailed blueprint for the bottling plant of the future – a blueprint that became reality in June 2009 when the South Moscow plant started shipping hot filled Lipton Tea.

Take something as simple as a data block. PBG and Siemens realized the power of standardizing the information going into every data block. In order for the data block to serve as a buffer between the machine and the network, it must have the right information. That’s why PBG required all vendors to standardize what goes into each data block in every controller, seamlessly collecting real-time information and aggregating it over the network.

Interoperability and seamless communications also give the South Moscow plant a high degree of visualization – the number one differentiator between it and the North Moscow plant. At any given moment, the plant manager can view each line of his operations on a computer screen with red, yellow and green colors indicating status. Touch controls on the graphical user interface allow him to zoom in on a red line, for example, to determine the cause of a malfunction, even down to the level of an individual valve on a filling machine. "The high degree of visualization really puts all of the information you need at any given moment at your disposal," said Gursahaney.

Results – improved training, diagnostics, and maintenance

The impact of the OPP blueprint could be felt throughout the South Moscow plant delivering immediate improvements in training, diagnostics, maintenance, and ultimately productivity. According to Gursahaney: “The OPP improves our operations across the board because, simply put, the information is much better.”

Training: By standardizing on equipment used by all suppliers, PBG's operators spend far less time in training. “Training hours can be reduced because you train operators on one PLC, not 16,” he said. In addition, working repeatedly on one type of equipment gives operators the opportunity to deepen their knowledge and increase their contribution to overall operations.

Diagnostics: Self-diagnostics means that troubleshooting a problem can happen as soon as an alarm goes off, potentially shutting down an entire line.

Maintenance: Significant improvements in maintenance are possible because you can track and archive information about downtime in a database. For example, if one filler is down an average of 20 percent of the time, you can look at the data and find out that the actual culprit was as simple as one jam on a transfer star or a malfunction on a single valve.

“We measure uptime through efficiency. While it’s a little too early to tell since we just started operations five months ago, I would expect the efficiency of the South Moscow plant to overtake the North Moscow plant by four to five percentage points very soon,” Gursahaney said.

Next steps? Sustainability is on PBG’s mind and they’re already working with Siemens to monitor energy consumption on large drives. Sustainability will continue to be a focus for PBG in the future and Siemens long record of supporting its customers’ desires to reduce their carbon footprint is a strong selling point here.

“Overall, we like the idea of working with Siemens and they’ve been a good partner to us. We would like to get them involved in other areas as stage two of the OPP concept,” Gursahaney concluded.