

CUSTOMER CASE STUDY

The PI System™ helps Qatar Power reduce costs, improve safety, and conserve resources

Qatar Power - www.qatarpower.net
Industry - Power and water utilities

Goals

- Optimize operations and maintenance

Challenge

- To provide reliable energy and water in a climate that causes high fluctuations in demand, to improve plant efficiency and safety issues

Solution

- The PI System
 - Asset Framework
 - Notifications on

Result

- Seawater margins are up \$1.3 million (USD), \$1.4 million (USD) savings in fuel efficiency per year, added safety for workers

Qatar Power (or Q Power), an independent power and water producer in the State of Qatar, aims to improve plant efficiency and safety amid many challenge – global warming, high fluctuations in demand due to extreme climate, and increased population growth. Qatar Power also needs to monitor heat stress to avoid health, safety, and environment (HSE) incidents.

Since implementing the PI System, Qatar Power has been named Power and Water Utility of the Year within the Gulf Cooperation Council for the years 2012, 2013, and 2014. It was also, in 2014, the first Middle Eastern company to receive a Commended Electricity Industry Sector Award. Parshu Borkar, senior engineer in commercial and performance, explained how his company has leveraged the PI System to optimize operations and maintenance, reduce resource consumption, and improve worker safety.

Supplying reliable power and water to a growing population

Qatar Power's ability to make power and water available to its citizens has become more difficult because the water demand has grown "exponentially," Borkar said, to support population growth, changing lifestyles, and life expectancy. Qatar Power faces an additional challenge because its plant is configured to maximize flexibility in water availability and reliability. "Any HRSGs (heat recovery steam generator) or any GTs (gas turbines) in service, we can always produce the water," Borkar explained, but it is difficult to optimize the performance of the plant because it is so integrated.

The desert climate exacerbates these challenges. Every day, the load fluctuation is more than 45 percent, and during the summer, weather conditions are adverse. The relative humidity rises to more than 90 percent at very high temperatures. Data is required to navigate this business environment and to operate the plant efficiently.

Optimizing O&M through the PI System

The PI System has provided that data. Borkar showed a snapshot of gas turbine cycle efficiency, compressor efficiency, operator efficiency, and the inlet and outlet conditions, along with environment monitoring. Because the plant has three identical gas turbines, there is a great advantage to monitoring the performance of all three, he said. "With these PI ProcessBook reports, real-time reports can be generated, which can be compared with the other gas turbines," he said.

Borkar and his team review these reports every morning to optimize the plant processes. If there are deviations, they have to take action.

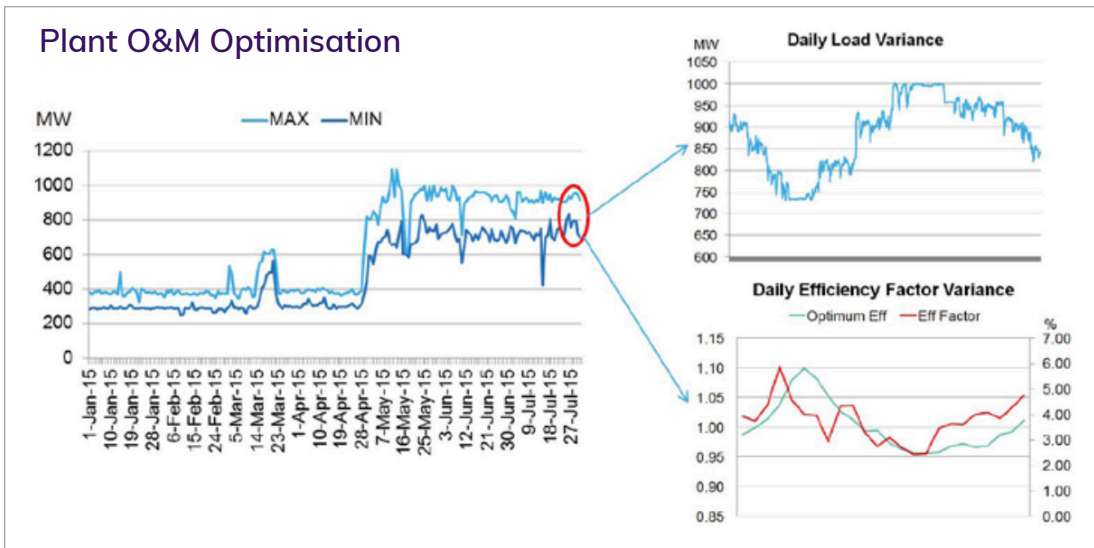
ROI through reduced seawater and fuel consumption

As it has optimized operations and maintenance, Qatar Power has reduced its consumption of fuel and seawater, the main resources for power and water generation. Because water is scarce in the region, seawater must be purchased and represents a substantial overhead for the company, which uses almost 90,000 cubic meters per hour. Through the PI System, seawater margins have been improved by \$1.3 million (USD) in the last two years. In addition, Qatar Power has improved the fuel efficiency factor by nearly 10 percent, which has resulted in \$1.4 million (USD) savings per year. These reductions in fuel and seawater consumption equate to a strong ROI. Qatar Power spent almost \$300,000 for the PI System, and within a short period, it recovered that amount, Borkar said.

"At Qatar Power, we are using this PI System not only for operations, but for maintenance and for the well-being of people who are working in extreme conditions."

- Parshu Borkar,

Senior Engineer in Commercial and Performance



Qatar Energy uses the PI System to improve optimization in operations and maintenance.

Improved worker safety and HSE compliance

In addition to O&M efficiency and ROI, Qatar Power has improved worker safety in conditions of high heat and humidity. Initially, it was difficult to monitor the heat index because the company was using a conventional method. Now, Qatar Power uses Asset Framework to calculate the heat stress, and Notifications for heat-stress index categories of yellow, brown, and red. In the last three years, Qatar Power did not have a heat stress-related incident, even with the high humidity and the extreme working conditions within the country. The company went three years without LTA (lost time accidents) due to heat, Borkar said.

The future of the PI System at Qatar Power

Qatar Power has clearly improved efficiency with real-time data and analysis. The business impact after implementation of the PI System showed the following benefits:

- Improvement of HSE performance
- Availability and reliability
- Fuel efficiency
- Reduction of seawater consumption, improving seawater margins

In the future, as the company and the region strives to provide reliable energy and water amid increasingly stringent global environmental initiatives, Qatar Power plans to add Event Frames and to develop the displays in PI Vision, work that will help it to “create value for the stakeholders,” Borkar said.

For more information about Qatar Power and the PI System, [watch the full presentation here.](#)