CUSTOMER CASE STUDY

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

Qatar Power - www.qatarpower.net
Industry - Power generation

Goals

- Meet health and safety targets
- Meet power and water demand
- Maintain higher plant capacity

Challenges

- Increased fuel and seawater costs
- Few historical data points available for plant
- Lapsed plant efficiency over time

Results

- $1.3 million savings on seawater margins
- 10% improvement in fuel efficiency, a $1.4 million USD savings in a year
- Improved worker safety

Solution

- AVEVA PI System
- AVEVA™ PI Server
- AVEVA™ PI Vision™

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 challenges: 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 environmental (HSE) incidents.

Since implementing AVEVA PI System, Qatar Power has been named Power and Water Utility of the Year within the Gulf Cooperation Council for three consecutive years. It was also 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 uses AVEVA PI System to optimize operations and maintenance, reduce resource consumption and improve worker safety.

> "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."
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> **Parshu Borkar**
> Senior Engineer in Commercial and Performance, Qatar Power

Supplying reliable power and water to a growing population

Borkar said that demand for water has grown "exponentially," due to population growth, changing lifestyles and increased life expectancy. It's difficult enough to keep up with this surging demand, but Qatar Power faces an additional challenge. Because the plant is configured to maximize flexibility in water availability and reliability, it's difficult to run efficiently. "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%, and during the summer, weather conditions are adverse. The relative humidity rises to more than 90% at very high temperatures. Borkar and his team need data to navigate this business environment and to operate the plant efficiently.

Optimizing operations with AVEVA PI System

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

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

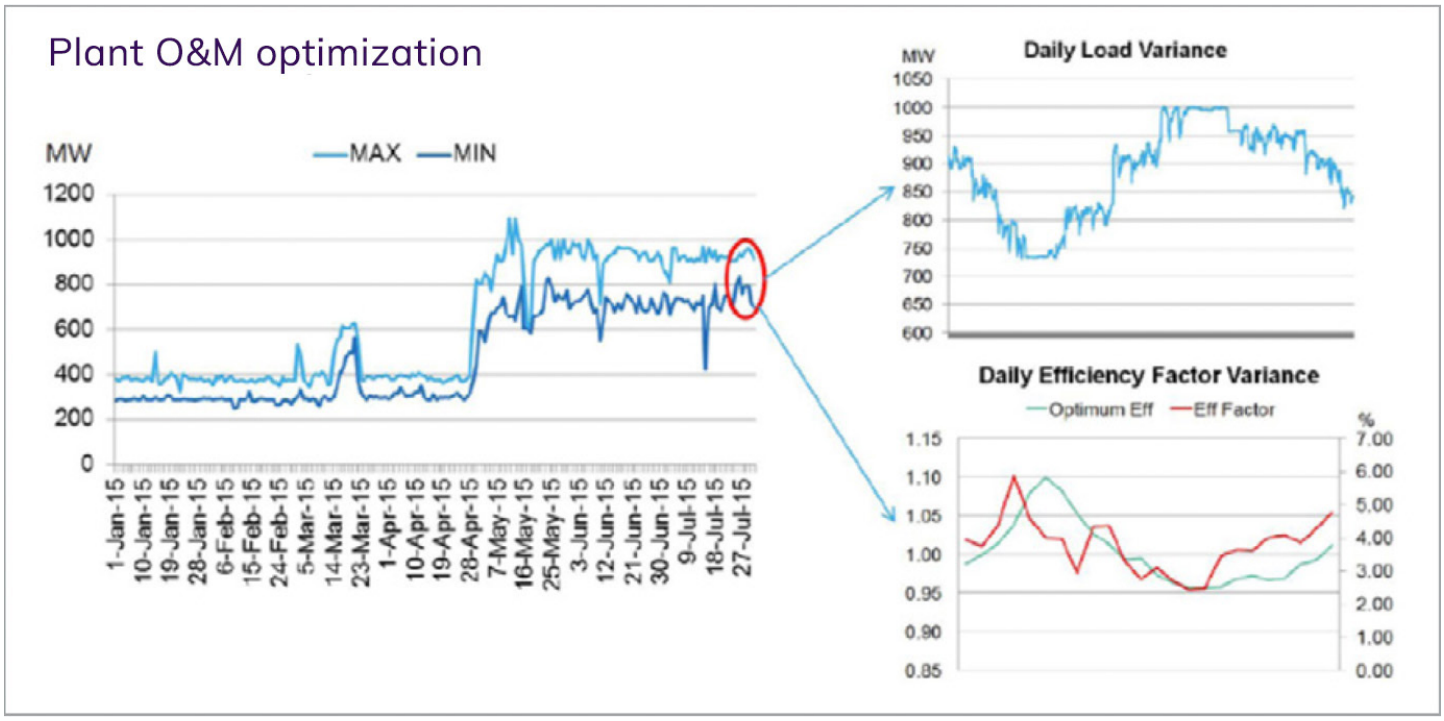
ROI through reduced seawater and fuel consumption

As Qatar Power optimized operations and maintenance (O&M), it reduced its consumption of fuel and seawater, its main resources for power and water generation. Because water is scarce in the region, the company must purchase seawater. As the company uses almost 90,000 cubic meters of seawater per hour, it's a significant overhead cost. Fortunately, AVEVA PI System has helped improve seawater margins by $1.3 million USD in the last two years.

In addition, Qatar Power improved its fuel efficiency by nearly 10%, which has resulted in $1.4 million USD savings per year. These reductions in fuel and seawater consumption are a strong ROI. Qatar Power spent almost $300,000 for AVEVA PI System, and within a short period, it recovered that amount, Borkar said.

Improved worker safety and HSE compliance

In addition to increasing operations and maintenance 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.



Qatar Energy uses AVEVA PI System to optimize operations and maintenance.

Now, Qatar Power uses the asset framework in AVEVA PI Server to calculate heat stress. The notifications function in AVEVA PI Server indicates heat-stress index categories of yellow, brown and red.

In the last three years, Qatar Power has not had a heat-stress related incident, even with the high humidity and the extreme working conditions within the country. As a result, the company has gone three years without LTA (lost time accidents) due to heat, Borkar said.

The future of AVEVA PI System at Qatar Power

In the future, as the company and the region strive to provide reliable energy and water amid increasingly stringent global environmental conditions, Qatar Power plans to use event frames in AVEVA PI Server and to develop displays in AVEVA PI Vision. That work will help the company "create value for the stakeholders," Borkar said.

Borkar, Parshu. "Optimization of O&M Efficiency within a Complex Business Environment in the Middle East."

For more information about Qatar Power and AVEVA PI System, watch the full presentation here.