CUSTOMER CASE STUDY

Reducing the cost of cement production with real-time data and the wind

CEMEX Energía - www.cemexenergia.com
Industry - Power generation

Business value

- Operational Visibility
- Alarm Monitoring
- Data Sharing
- Dashboards
- Performance Optimization
- Warranty/Service Performance Monitoring

CEMEX, famous for producing cement, has also been in the power industry since 1998. In 2014, the subsidiary CEMEX Energía was created with the dual purpose of reducing electricity costs and CO2 emissions for cement production through renewable energy and allowing CEMEX to take advantage of opportunities in the worldwide energy market. At the 2017 OSIsoft Users Conference, Roberto Carlos Medrano discussed how CEMEX Energía is leveraging the PI System and OSIsoft Connected Services to support cement production; improve wind farm operations; increase visibility into wind farm power production; and track performance for warranty and service contracts.

CEMEX Energía builds power plants and provides asset management services to other companies. They are currently working on over twenty projects worldwide. CEMEX Energía also owns and operates three power plants (two wind and one thermal) with a total capacity of 1GW in Mexico. The CEMEX wind farms in Mexico are two of the largest wind farms in all of Latin America and each supplies over 250MW of power. They are also critical to CEMEX's cement operations. "The performance on all the wind turbine generators impacts directly on our main KPIs – technical, contractual, and economics – so our challenge is [the] maximization of all the wind resources available in the wind farm," explained Medrano. "We needed as well data management to support our Energy Operational platform in all the CEMEX Energía division enabling a reliable asset management strategy to comply with all our contractual obligations."

CEMEX's solution was to use the PI System™ and an OSIsoft Connected Services agreement to "create a specialized and reliable analysis tool which measures the deviations of the real performance versus the warrantied performance behavior in real-time," said Medrano. He went on to give examples of how four key features of the PI Server: Asset Framework (AF), Notifications, Event Frames, and High Availability are being leveraged to improve turbine operations.

Real-time wind farm management

CEMEX Energía has simplified data presentation for wind farm management into a few key screens. A Google Maps image overlaid with PI System data and combined with animation provides a live action overview display for the wind farm showing, in real-time, which turbines are running, which aren't, and which have faults. The display also shows daily production, monthly production, ambient temperature, capacity, and wind speed. Operators can double click on any individual turbine to view details, use AF navigation to move between turbines, view an alarm panel page, and even drill down to circuit breaker details. "Without AF I think this could not be possible," said Medrano.

Preventing lost production and failures

CEMEX Energía has also created detailed event and operational spreadsheet reports using Event Frames and PI DataLink. The reports track key metrics for each turbine and help users analyze failures in context. As Medrano explained, "this allowing [us] to focus [on] the assets with high frequency of failures, to establish action plans immediately with the operators." To further improve operations, Notifications have been created for: turbine trips, circuit breaker operations, communications issues, wind sector management, ambient temperature above safe operation, reactive power, data freezes, and power curve performance. The notifications show personnel not only what is happening in the turbine but what actions need to be taken to correct issues. "The result is the avoidance of lost production due to inefficiencies in turbine performance," said Medrano.

> "We have a lot of turbines. So a lot of turbines means you need the capabilities of an Asset Framework – such as the templates – you can create just one template and spread among all the turbines."
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> **Roberto Carlos Medrano**
> Operation and Maintenance Manager

Information in context

As a result of all this information, CEMEX Energía has a clear picture of their operations. “We are counting every minute, every second how was operating the turbine,” said Medrano. Looking forward, CEMEX Energía plans to integrate additional electrical parameters from their cement plants into the PI System so they can manage grid compliance and they are evaluating the PI System for future metering projects.