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State Power Investment Corporation (SPIC) Henan, China

Diagnostic center reduces maintenance costs and increases asset availability for 8,060 MW fleet

More than
> 400
modeled assets

More than
>1000
models

The Fleet

SPIC Henan is one of the biggest power generating entities in China. The energy provider operates eight power plants with an installed capacity of more than 8,000 MW in the Province of Henan.

The Task

China power companies face a challenging market. Due to increasing demand for energy driven by a growing manufacturing industry, Chinese utilities need to focus on reliability to ensure the growing power supply. In response to this, SPIC created a vision to collect all relevant data and perform asset diagnostics remotely from a central location.

This provides the basis for early anomaly detection and available generation, which is crucial for a market with an increasing demand of energy. Collecting and processing this data would increase transparency not just on machine or the plant level, but across the entire fleet, enabling benefits such as improved risk management, increased availability and decreased maintenance costs.

The Solution

To put the vision into practice, SPIC Henan decided to centralize all their diagnostic activities in a Diagnostic Center, which continously monitors the entire fleet consisting of several power plants from ONE central location. As a result SPIC Henan knows about the conditions of all their assets, which helps them to detect anomalies at an early stage and thus helps to prevent outages and to maintain availability. All this became possible with Asset Diagnostics, part of the Omnivise Fleet Management solution suite.

The Diagnostic Center bundles expert know how and makes it available for the whole fleet. Transparency is increased across the fleet, making it possible to optimize the use of scarce resources.

A set of applications which is fully dedicated to asset diagnostics, provides deep insights into the assets. Through the use of machine learning algorithms for early fault detection, detect arising failures long before absolute limits are reached.

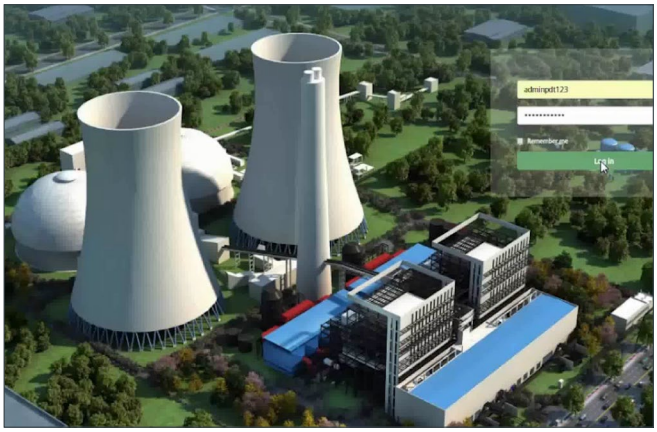
Being able to detect deviations from normal plant behavior and reveal potential malfunctions at an early stage can help change maintenance strategy from periodic to predictive: With continuous condition monitoring and the knowledge of where failures may arise, maintenance can be undertaken proactively and maintenance budgets can be allocated more efficiently.

Anomaly Monitor, part of Omnivise Fleet Management, performs condition monitoring of plant assets and processes to cut maintenance costs and ensure availability. The Siemens Energy solution learns normal plant behavior defined by existing sets of parameters and archived data and compares it with ongoing real-time measurements. This early indication of anomalies enlarges the time window for the experts to initiate measures enabling maintenance measures and maintenance budgets to be invested where they are most needed.

Data centralization, secured data quality and data mapping are the prerequisites to leverage synergies across the fleet. To ensure diagnostic experts have time to focus on root cause analysis, all diagnostic information follows a workflow principle: Alarms visualize anomalies and put them in relation with the normal behavior which sets the basis for first level asset diagnostics. Second level diagnostics involves experts performing root cause analysis of alarms and events. Omnivise Fleet Management is scalable and independent of the original manufacturers of the power generating infrastructure. For SPIC Henan the Diagnostic Center was rolled out in three phases and now covers 8,060 MW installed capacity.

“Asset diagnostics is backed up with Siemens Energy’s trustworthy expertise and resources in power domain, which makes it very reliable and sustainable.”

Hongbiao, Lv, SPIC, Technical Director



The Result

- **Improved transparency across the fleet:** Centralized monitoring and remote diagnostics of single assets, plants and the entire fleet
- **Increased availability:** Condition monitoring of plants, assets and processes to ensure availability
- **Increased efficiency of maintenance budgets:** From preventive maintenance to predictive maintenance through exact awareness of asset condition

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