

AI Use Cases for Asset Failure Prediction

J. Möller

Siemens AG, Digital Industries, Bremen, Germany

With the constant pressure to increase plant efficiency and uptime in a highly competitive environment, condition-based maintenance - as much as needed, but as little as possible - becomes more and more important for a plant's economic success.

The Siemens Predictive Analytics (SiePA) is a practical and robust tool that integrates human experience/ know-how and machine learning capabilities to extract relevant information on equipment and process status.

The information is summarized in an intuitive graphical user interface for ease of use by plant operators and maintenance staff.

Additionally, the application offers data analytics capabilities, including pre-processing of data sets, data training and updating of the unit model. Through the embedded diagnostics module, SiePA stores all the relevant diagnostics information entered by the users and offers a complex knowledge library, which enables a better root-cause analysis.

SiePA allows early detection of changes in the equipment behavior and enables more solid and reliable decisions regarding the operation of the process and required maintenance work. The most important benefits for users are the increase of the plant uptime, the improvement of the operation efficiency and the safety of the plant.

SiePA has been deployed in various industries for different asset types, e.g. rotating equipment in OGP plants. It has proven that it can detect performance deviations multiple days before actual failures of those assets.

The created models will have the focus on:

Equipment and plant availability, by pre-alerting on failures

Production efficiency and quality, by correlating different quality and efficiency indicators available in DCS/historian systems

Correlation of equipment status and process performance.