Success Story Predictive Maintenance

Gas Turbine

Background

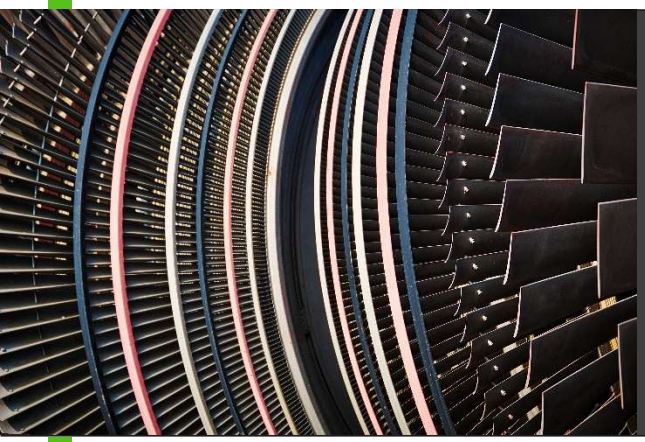
Gas turbines are considered the cleanest and most efficient fossil fuel power plants. In addition, they offer an incredible variety of possible applications: from cogeneration to vehicle propulsion. Gas turbines can be a component of complex machines whose high efficiency depends on the optimal condition of the entire plant. Modern data evaluation methods can detect even the slightest changes in machine behavior.

The Case

- During peak and medium load operation, power plants must respond quickly to fluctuations in demand in the grid. Different power levels are passed through within a short time
- Due to the large power bandwidth, the characteristics of a gas turbine can vary greatly. The reactions of the plant, e.g. with regard to the vibration patterns that arise, are complex
- In this case a crack in a turbine blade led to small but noticeable change in the dynamic vibration behavior
- Unnoticed, this damage can lead to a break-off and thus result in a long maintenance shutdown

Highlights

- The aging state and maintenance history mean that each turbine develops its own unique signature, which also changes over time.
- The combination of all available operational information, such as fuel flow and environmental data, as well as the manual intervention of operators, allows for better forecasts of the vibration behavior
- Even the smallest deviations in behavior become visible, long before critical vibration values are reached
- The early detection of damage allows a protective intervention in the operation, as well as a timely maintenance planning



Intervening at an early stage in the case of a damage tends to lead to smaller repair measures. However, if no timely response is made, avoidable secondary damage is likely to occur. Repair costs can increase tenfold and downtimes can grow from hours to days. In a trade-off process, continued operation with a reduced load can also be considered. Thereby the monitoring with the solution of **mi Solutions** can be adjusted to the relevant system areas and to an even higher sensitivity. A report is generated to estimate the remaining time to run.

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About Us

It is our passion to improve existing methods of creating value and to pave new ways by using state-of-the-art mathematics. Data helps to make objective decisions on a solid basis.