

# Combined Cycle Power Plant Boosts Reliability, Lowers Maintenance Costs with Emerson's Condition Monitoring Technology

## RESULTS

- Early detection reduces lost revenue from cooling tower failures by 56%, ensuring reliable power delivery to northern Indiana
- Integrating protection and condition monitoring with the plant's existing Ovation™ control system has helped to lower cooling tower maintenance costs by 83%
- The ability to detect premature component wear before they cause significant problems has extended gearbox runtime by 55%

## APPLICATION

555-MW combined cycle power plant consisting of GE 7FA gas turbines, Vogt heat recovery steam generators (HRSGs) and a GE D11 steam turbine

## CUSTOMER

A combined electric and natural gas provider located in northern Indiana

## CHALLENGE

The combined cycle plant's run profile has changed over the years, from cycling as demand requires to continuous baseload operation with minimal downtime, making reliability extremely critical.

However, the plant's ability to meet demand was hampered by vibration issues on the fan and gearbox assemblies located within the cooling tower.

A stand-alone third-party vibration monitoring system did not alert operators to impending issues. The result was gearbox failures at a rate of approximately one per year, which reduced capacity and increased maintenance costs.



*“With vibration data visible in the control room, we can detect gearbox failures earlier and avoid poor cooling tower performance that reduces plant capacity and revenue.*”

*By continuously monitoring critical rotating equipment, we have increased the plant's reliability, which is vital to meeting our customers' demand for electricity.”*

Operations and Maintenance Superintendent at a combined cycle plant owned by a combined electric and natural gas provider in northern Indiana



### SOLUTION

To rectify these issues, the utility installed Ovation Machinery Health™ Monitor modules to fully and seamlessly integrate protection and condition monitoring of the gearboxes with the plant's Ovation control system.

The previous system required significant maintenance and a vibration specialist to understand the data, which was often inaccurate. The dramatic difference with the Ovation solution led the utility to add similar modules for monitoring the boiler feed pumps and steam turbine.

Integrating condition monitoring and protection into the plant's Ovation control system has provided more accurate data and eliminated the numerous problems and higher costs associated with their previous standalone systems.

By identifying misalignment, imbalance, looseness or other mechanical wear problems earlier on the failure curve, operators are now the first line of defense for avoiding vibration issues. Their ability to detect premature component wear before they cause significant problems has also extended gearbox runtime by 55 percent.

Emerson's integrated solution gives control room operators increased confidence in the vibration data so they can concentrate on other, higher-priority tasks. The results achieved by the utility really demonstrate that when it comes to vibration monitoring, early detection makes all the difference.