

# Orbit Magazine

---

## Case Study :: HVAC Phenomenon

Date : February 25, 2015

### CUSTOMER SUCCESS STORY :: HVAC Phenomenon

Condition Monitoring, in conjunction with a Supporting Services Agreement (SSA), leads to early detection of an HVAC Cooling Water Pump Cavitation Phenomenon.

The M&C Services team in Middle East has a long-term SSA with a major power plant which includes three combined cycle plants. As part of the SSA, GE has provided a year round, onsite resident engineer to support the customer's condition monitoring program.

#### PROBLEM

Direct vibration on a HVAC Cooling Water Pump started to increase considerably on the pump. The increase in vibration triggered proactive software alarms, alerting the site lead to abnormal machinery behavior.

The mechanical team was informed of the increase in pump vibration levels during the daily morning meeting. The mechanical team then promptly checked the position of the valves and kept the machine under close observation. The data was simultaneously being monitored closely by SSA Site Lead.

Since the direct vibration continued increasing, it was agreed to carry out a visual inspection to check the inlet differential pressure for abnormalities including noises and leaks, etc. An increase in pressure after the inlet strainer, measured by a local gauge, was observed. An abnormal noise in the pump that sounded like stones hitting the impellers was also heard.

#### SOLUTION

Based on the waterfall plot analysis and the audible noise, the SSA Site Lead immediately alerted the customer to the presence of cavitation in the pump. The machine was stopped and the inlet strainer was checked. During the strainer checkup, some metal particles and debris were found inside. No damage was found to the internals of the pump. After the strainer was cleaned, the pump was reassembled. A couple of days later the unit was started and ran continuously with no abnormalities.

#### PAYBACK

Because System 1\* was properly configured with proactive software alarms and daily alarm and event management was in place as part of the SSA, it was possible to identify the cavitation in

# Orbit Magazine

---

a timely fashion and plan for maintenance checks. This avoided major damage to the machine components which would have negatively affected the availability of the unit. The cooling water pump returned to operation after minimal delay with vibration amplitudes at acceptable levels. With the right technology and processes in place, machinery malfunctions such as cavitation can be identified early, avoiding failures, major damage on the machine components and costly downtime.

## **BENEFITS**

- Avoided costly unplanned downtime: having the SSA in place and leveraging the support of an onsite engineer to promptly resolve the problem without any unnecessary downtime.
- Early detection of the machinery malfunction: having System 1 properly configured and the site lead available led to immediate detection of the phenomenon.

Copyright 2015 Baker Hughes, a GE company, LLC ("BHGE") All rights reserved.

Bently Nevada, Orbit Logo, ADRE, Keyphasor, Promimitor, Velomitor and System 1 are registered trademarks of BHGE in the United States and other countries. All product and company names are trademarks of their respective holders. Use of the trademarks does not imply any affiliation with or endorsement by the respective holders.

The information contained in this document is subject to change without prior notice.

1631 Bently Parkway South, Minden, Nevada USA 89423

Phone: 1.775.782.3611 [Bently.com](http://Bently.com)

