Orbit Magazine

Case Study - Online Condition Monitoring

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Online Condition Monitoring

AN EXAMPLE OF HOW GE HELPS CUSTOMERS IN THE SHIPPING INDUSTRY

GE Condition Monitoring Proves Indispensable to New Zealand Shipping Port.

“The online vibration process is a critical online surveillance system that provides essential real time data for performing predictive maintenance. Continued critical asset reliability is paramount to the successful operation of the Port and the vbOnline system helps deliver a high level of availability.”

– Bob Smillie, Otago Port Maintenance Manager

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Problem

Port Otago is a major deep water port located on Otago Harbour, on the South Island of New Zealand. Located a great distance from suppliers and vendors, the port depends on online condition monitoring of critical mechanical drive components to maintain reliable operations.

Port Otago utilizes two large ship-to-shore cranes in its daily operations. Each crane is capable of lifting two 40-foot containers at once. The distance and cost present challenges to storing or sourcing large drive components that comprise the cranes, such as main hoist gearboxes and motors. In addition, the crane operating cycle presents a challenging window of opportunity to capture data. Boom operation can occur at any time, and the hoist and cross slide are only in operation for a limited time.

Solution

Port Otago turned to GE to develop and deploy a condition monitoring program using the vbOnline system and Ascent condition monitoring software. The GE team recognized that measurement recordings controlled by dynamic criteria were needed to take measurements from the cranes, given their intermittent operation. These criteria-based recordings monitor speed and direction prior

to capturing data, which allows analyzing and trending capabilities to be recorded during the exact same operating conditions of the cranes.

Every hour the vbOnline system records velocity, acceleration and demodulation. It initially checks that the crane is in operation and then monitors its predetermined collection criteria. If these conditions are not met, the system waits to capture data until the parameters fall within the desired range. GE's Ascent software allows analysis of bearings and gear mesh frequencies, potential misalignment, and unbalance of the drives and associated components.

Payback

GE's innovative condition monitoring technology has proved invaluable for the Port Otago team. As maintenance manager Bob Smilie explains, "With sufficient warning time and sound strategies based on real- time condition monitoring data, outages can be a planned activity within managed timeframes. The vbOnline system identifies trends and changes in drive condition and component behavior over time and has the ability to notify key personnel via emails and text messages, providing real-time communication that a possible failure event is developing."

Benefits

- Reduced costs. The remote location of the port made sourcing and storing large drive components difficult and costly. The deployment of the condition monitoring program enabled the port personnel to plan for repairs and equipment needs.
- Increased reliability and less downtime. The condition monitoring program deployed at Port Otago drove asset optimization and allowed for condition-based maintenance.
- Real-time information. Behavior changes in assets are delivered via email and text—providing easily accessible, real-time communication
- Data identifies trends and changes in drive condition over time and unusual spikes from changing failure mode behaviors that are not always known.

1631 Bently Parkway South, Minden, Nevada USA 89423
Phone: 1.775.782.3611 Bently.com