

Maintenance pilot makes an impact

US-based Impact Technologies was contracted to develop a remote monitoring system for dockyard cranes for the US Navy in Portsmouth that could potentially eliminate the need for time-based crane inspections altogether. Cristina Brooks reports.

The solution Impact developed was a remote monitoring system retrofitted to existing cranes throughout the naval shipyard.

Federal regulations in the US require two-week crane maintenance and inspections every year for all cranes, regardless of how much the cranes have been used, but this is not the best form of maintenance, Impact says.

It takes a lot of money and effort to perform maintenance where there is no objective evidence of need.

"The goal is to evaluate the health and reliability of a given crane asset and schedule all repairs inside normal scheduled maintenance availabilities," said Aaron Spak, manager of technology deployment at Impact.

Impact claims that it is more efficient to conduct inspections and upgrades only when its sensors measure a danger of failure, since a damaged crane fixed early

is cheaper to repair, and operating costs due to downtime are prevented.

Impact outfitted a Navy crane with sensors, integrating them with IBM's enterprise asset management software and a secure wireless network. Impact's system feeds data to IBM Maximo software to flag up erratic machinery behaviour.

Sensors on the cranes measured the actual usage of each crane component and the load applied to the hook.

Additional sensors can measure mechanical vibration, levels of metal erosion in lubricants, errors in electrical systems and send data to an alarmed computer as well as to a trained offsite operator, to catch failure before it occurs.

Sensors feed data to Impact's SNAP2 device, which is connected to a crane cab display. The display transmits the data through the network to a centralized datastore. It is designed with embedded



data processing, ensuring that the system economises bandwidth.

Partnered with Davy Systems, a Sheffield based weighing specialist, Impact deployed a new wireless load-weighting sensor within the hook, which gives it accuracy within 1%.

This load weighing hook is more accurate than traditional load measurement systems, Spak said, because it measures the load indirectly. With traditional systems friction and other mechanical losses affect the accuracy. Most load indication systems are accurate only at full load and less accurate with a smaller load.

Future sensors could include fuel efficiency monitoring for diesel engines and provide data to predict the onset of performance issues like injector coking.

Impact globally supplies sensors, monitoring equipment, diagnostics and prognostics for uses ranging from heavy construction vehicles to military vehicles through its designated OEMs and directly to end users.

The system for dockyard cranes, which has been in development since 2006, was presented for the first time at the 16th North Sea Offshore Cranes Conference this April, for its potential for monitoring costly oil-rig assets.

Upon completion of the pilot phase for monitoring system in September 2011, the system will be considered by the Navy for installation at Federal facilities. ■

