

OneWireless Equipment Health Monitoring Protects Assets and Plant Operations from Unscheduled Downtime



Industrial facilities contain hundreds of rotating equipment, such as pumps, compressors, and motors, which currently are monitored using personnel walk-arounds or are not monitored at all. As an example, a 200k bbl/day refinery may have hundreds of pumps with no installed instrumentation which are only monitored monthly using mobile handheld devices. While these walk-arounds are effective in tracking gradual equipment degradation (such as aging of bearings and wirings), they are not suitable for tracking faults that can lead to failures within days or hours. Such equipment if monitored using handhelds may fail unexpectedly as handheld rounds look for failures once per month. This is common with pumps, which may cost from \$100K to \$300k. Although they may have redundant backups, a pump failure may cause temporary downtime resulting in loss of tens of thousands of dollars and repair costs range from \$25K to \$100K.

An alternative option is to install an online monitoring system. However, an online monitoring system costs up to \$4,000 per point to instrument and deploy, totaling approximately \$20K per asset. Moreover, instrument cabling is difficult to install without disrupting the working assets. The other option that a customer has is to increase the frequency of portable rounds. Increasing monitoring frequency may result in increased costs and some assets may pose a safety risk to monitor under certain conditions, making it impossible to get consistent data.

Need for a Fast, Cost Effective Approach to Condition Monitoring

Let's take an example of a major refinery. Suppose a refiner has 5 pumps that serve the tank farm. The tank farm needs 4 primary pumps to operate at any time, so if one of the primary pumps goes down, the backup pump goes online automatically. The primary pump spare parts have a long lead time and can not be stocked locally. Moreover, the secondary pump does not have the same capacity as the

primary, so if the primary is down for more than a week, it would impact the overall throughput. The tank farm is 0.5 miles from the refinery with obstacles in between, making it impractical to install a wired online system.

In this example, the estimated cost to deploy an online system includes \$500K for cabling. The other alternative is to weekly monitor the equipment. Employees are engaged in other activities, and to re-deploy someone could cost over \$2,000 per month in travel time, data acquisition, and control room data recording. In addition, it's best to monitor the equipment when it is completely loaded, which is difficult to achieve with operator rounds.

OneWireless EHM Solution Improves Asset Management

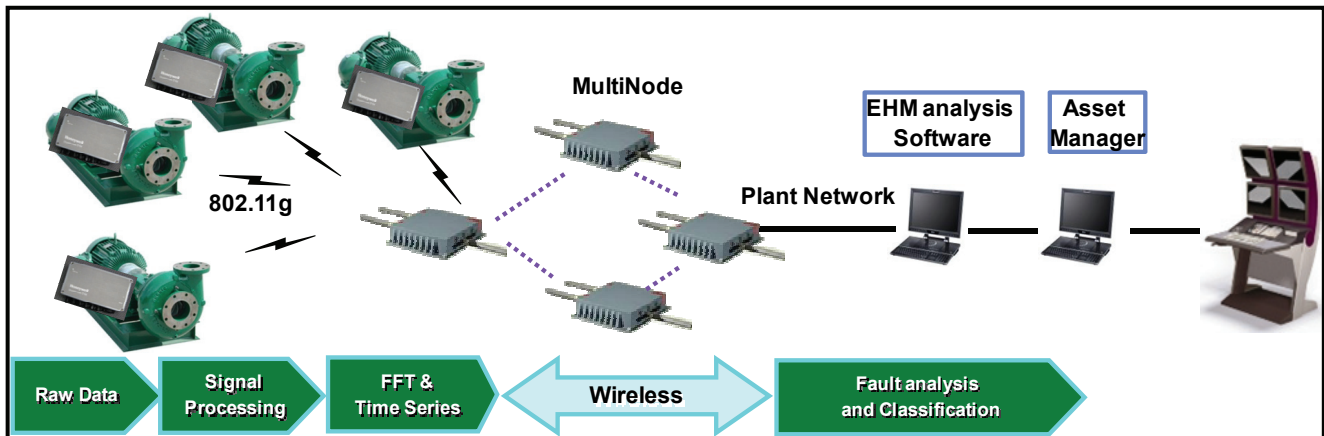
Honeywell offers a complete solution to help solve this common problem. The OneWireless™ industrial wireless network supports multiple applications and can extend asset management into remote areas. With one network, OneWireless transmitters can be used for tank farm automation, measuring tank levels and detecting valve positions.

This value extends with a vibration monitoring solution for improving rotating equipment management. The OneWireless Equipment Health Monitoring (EHM) solution includes intrinsically safe accelerometers with integrated temperature and the hardware needed for efficient data acquisition and transmission. It is battery powered and enables end-users to obtain multiple Fast Fourier transform (FFT) spectrums at various load conditions during the day. The data can be collected in the Honeywell Uniformance® PHD database and the analysis performed in the EHM machine suite. This trends vital pump statistics to detect equipment health through conditions such as energy spikes and vibration.

Honeywell's OneWireless EHM delivers the following benefits:

- **Ease of deployment:** A system can be operating in less than 4 hours, reducing interference with daily pump operations.
- **Cost effective deployment:** The entire system including IS accelerometers, cabling, data acquisition devices, the OneWireless multinode and the analysis software costs less than the alternatives.
- **Simple and powerful solution:** The EHM analysis software provides sophisticated capabilities to deduce bearing defects, misalignment, pump cavitations, and impeller wear. It's intuitive to understand, not requiring a trained specialist to review the data. The high bandwidth sensors provide sufficient data and the software is intelligent enough to translate that data to alarms. The alarms can be configured to appear both in the DCS and in the Honeywell asset management suite.
- **Reliable, secure and scalable infrastructure:** Honeywell's OneWireless infrastructure transmits process and maintenance data efficiently over the same network. The network has integrated security features that include intrusion detection, denial of service attack prevention, and device authentication. The integrated infrastructure substantially reduces the cost of deployment with no additional infrastructure components required.
- **Integration with the DCS:** The solution readily integrates with Honeywell distributed control systems to support the ability to configure alarms intended for operations.

Honeywell's OneWireless Equipment Health Monitoring solution provides an efficient solution to protecting assets and plant operations from unscheduled downtime. The data brought into the DCS and asset management systems provides operators and maintenance personnel with the knowledge they need to schedule maintenance, manage inventories and support efficient workflow scheduling.



More Information

For more information on any of Honeywell's wireless solutions, visit our website www.honeywell.com/ps/wireless, or contact your Honeywell account manager.

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SO-07-27-ENG
April 2009
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