

SiteWatch and Condition-based Monitoring

Applying SiteWatch to Condition-based Monitoring (CbM) programs

Condition-based monitoring (CbM) is a strategy to continuously track the condition of assets using different types of sensors and applies the data to real-time analysis. CbM enables failure detection before a functional failure. Operations personnel can plan repairs or other interventions, such as oils changes, bearing replacements, or general maintenance, prior to full failure

Why use CbM

- Ensure assets remain available
- Decrease service loss and improve equipment uptime
- Decrease planned maintenance intervals
- Enhance smart replacement strategies

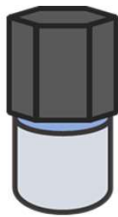
Components of CbM

Data Acquisition

Data Collection

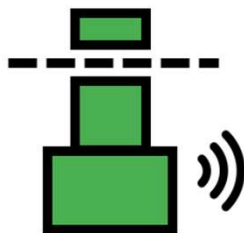
Data Analysis

How is Data Acquired and Collected?



Vibration and Temperature

Long-life, replaceable battery, magnetic or post mounting



Energy

Wireless, self-powered CTs clamp to machine or panel wires

Through wireless sensors, self- or battery-powered, data is collected on key parameters: electrical current, vibration, and temperature. Sensor data is transmitted through LoRaWAN to a cloud-connected gateway, then transmitted to online servers and presented on **SiteWatch 360**



LoRaWAN Gateway

Links sensors to cloud-based server using Wi-Fi, wired LAN, or cellular



Dashboard

View data, schedule reports, create alerts, add users

SiteWatch and Conditions-based Monitoring

How is Data Analyzed and Applied to CbM

- SiteWatch 360 views into data through time series plots and heatmaps
- Scheduled reporting summarizes energy use, average, minimum, and maximum peaks in vibration readings, and temperature
- Alerts created based on maximums or averages exceeding thresholds, changes in temperature, vibration amplitude, and/or electrical current
 - Set priority levels based on thresholds - slightly more vibration or higher temperatures may not indicate anything while significant changes may indicate a critical condition
- Data applied to machine learning - cycling, run hours, other calculated parameters

The screenshot shows the 'Reports' section of the SiteWatch 360 interface. It displays a 'Custom report' for 'Industrial Demo' covering the period from 08/06/2023 to 08/12/2023. The report title is '74fe48ffff690633 Vibration Sensor Vibration Velocity (X-axis)'. The report shows a table of statistics for the sensor, with columns for 'Statistic' and dates from Sunday, August 6th to Saturday, August 12th. The report also includes a table for 'Element: Table' and a 'Summary Data' section.

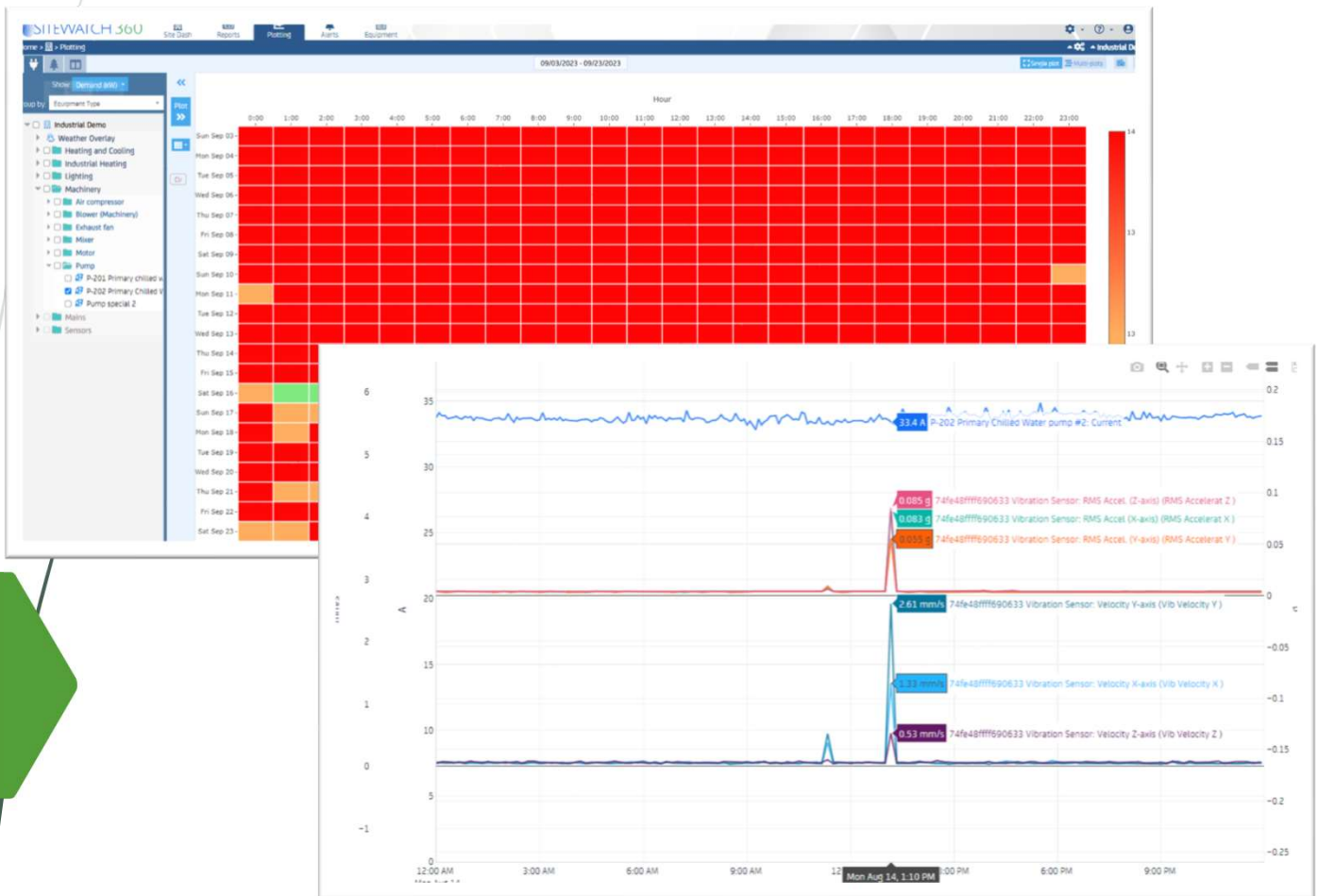
The screenshot shows the 'Alerts' configuration page in SiteWatch 360. It displays the 'Alert Title' as 'Water Pump Issue' and the 'Alert description' as 'Vibration and Temp exceed normal levels'. The 'Alert scope' is set to 'Applies to: Specific points selected'. The 'Logic' section shows two conditions: '74fe48ffff690633 Vibration Sensor > 0.1 Vibration Velocity (X-axis) mm/s' and '74fe48ffff690633 Vibration Sensor > 105 Ambient Temperature °F'. The 'Timing' section shows the alert is configured to trigger 'During Pump Sp Oper sched'.

The screenshot shows the 'Alerts' page in SiteWatch 360. It displays a list of alerts with columns for 'Alerts', 'Status', 'Currently', 'Today', 'Past Week', and 'Past 30 Days'. The alerts include 'Site data offline', 'Compressors Off #2 Plant Air Comp', 'Compressors Off #3 Plant Air Compr', 'DR Alert', 'High temp & ventilation system is off', 'Cooling Pump Running when Economizer is On', and 'Pump Sp Operating out of schedule'.

SiteWatch and Conditions-based Monitoring

View Real-Time and Historical Data

- Time-series allows overlay of single or multiple parameters
- View multiple sites within an account
 - Compare similar equipment at different locations
 - Multiple tagging options: machine usage type and groups, custom options such as production lines, physical locations, or through system hierarchies
- Heat maps for quick visualizations of measurements over a defined period



Contact us today for a SiteWatch 360 tour and quote!

Carter Membrino, PE
Director of Monitoring
cmembrino@sitewatchiot.com
(610) 864-5462

Jeff Lyon
President
jlyon@sitewatchiot.com
(610) 291-0621

Kit Gutteridge
Founder and CEO
kgutteridge@sitewatchiot.com
(484) 802 2422

5 Station Avenue
Suite 201
Berwyn, PA 19312
(484) 406-5810
info@sitewatchiot.com