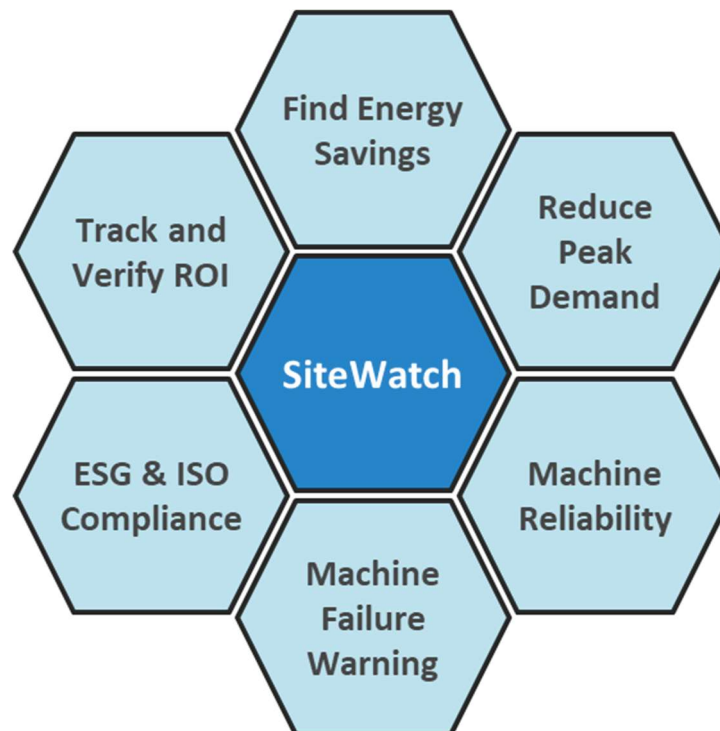




# SITEWATCH IOT

SIMPLE | AFFORDABLE | WIRELESS  
OPERATIONS & ENERGY MANAGEMENT

## The Value in Real-Time Monitoring of Energy, Water, Gas, and Other Parameters



# Why Real-Time Monitoring?

In an increasingly interconnected and dynamic world, the ability to closely observe and track processes, systems, and activities has proven to be highly valuable.

Real-time monitoring provides vital insights and enables informed decision-making and early detection of issues while allowing for proactive responses. The SiteWatch solution empowers individuals, companies, and organizations to mitigate risks, optimize performance, and strive for continuous improvement. In an era characterized by data-driven insights and rapid changes, the significance of monitoring becomes even more pronounced.

**Enhancing Decision-Making:** Monitoring guides decision-makers. By providing real-time or periodic information, monitoring assists in assessing the effectiveness of strategies, policies, and initiatives. It enables stakeholders to make timely adjustments, optimizing outcomes based on evidence rather than assumptions.

**Identifying Trends and Patterns:** Monitoring allows for the identification of trends and patterns that might otherwise go unnoticed. Whether it's studying the interaction of air compressors or observing when exhaust fans operate, monitoring helps uncover insights that lead to reduced energy costs or developing predictable usage profiles.

**Risk Mitigation and Early Warning:** In machines where potential failures can have profound consequences, monitoring offers an early warning system. Real-time monitoring of motors can indicate imminent failure, while excessive cycling in chillers or compressors can indicate non-ideal system settings which could lead to early equipment failure.

**Performance Optimization:** Monitoring allows fine-tuning of systems by providing a valuable feedback loop. Sites can monitor production lines or support systems, overlaying production output to assess efficiency and compare similar equipment or operations across an expanded portfolio of sites.

**Accountability and Transparency:** Increasingly there is a need for tracking energy input for production, whether in terms of kWh, cubic feet of gas, or simply equivalent tons of carbon. Openly accessible data can be provided to various stakeholders for reporting or tracking needs, internally, for customers, or for governing bodies.

**Resource Allocation:** Capital planning relies on accurate and up-to-date information. Monitoring assists in identifying where resources are most needed and whether they are being used efficiently.

**Global Portfolio Management:** Growth through acquisition can require standardized data collection between sites that employ various methods for controlling and managing measurements. Solutions such as SiteWatch can work alongside other controls or data systems to provide universal access to data, allowing global energy managers real-time access in a cost-effective way.

Monitoring serves as a vital tool, offering a range of benefits across various sectors. The ability to provide real-time or periodic data, insights, and early warnings empowers individuals, companies, and organizations to make informed decisions, optimize processes, manage risks, and drive continuous improvement

## What SiteWatch Provides

SiteWatch provides a reliable, cost-effective, simple to deploy system for acquiring data from new sensors and/or existing measurement devices. This system provides a flexible, affordable, and fully supported platform. Monitoring may begin with views into electrical energy at a panel and machine level. Virtually any type of measurement can be included in the monitoring system.

Natural Gas Flow	Pressure	Motion/acceleration
Water Flow	Level Sensing	Proximity
Air Flow	Vibration	Pulse Counters
Temperature	Differential Pressure	Run Time
Humidity	CO/CO2/Emissions	Visible light
4-20 mA / 0-10 Vdc	Occupancy	Infrared light

SiteWatch allows a plant, building, school, commercial property, or other type of building to view collected sensor information in an easy-to-access and easy-to-use platform, **SiteWatch 360**. The system uses hardware provided from SiteWatch while allowing connections to other platforms and non-SiteWatch hardware. This allows data from multiple systems to be viewed in a common location.

What exactly does SiteWatch provide?

**Energy Monitoring Systems:** Wireless devices that collect data on electricity, gas, water, and even thermal energy consumption.

**Data Collection and Analysis:** Collected energy consumption data is processed and presented in several forms, including time-series plots and heat maps. Data is fed into reporting used to identify consumption patterns, peak usage times, and areas of inefficiency. Data analysis can also help identify anomalies that might indicate equipment malfunctions or waste.

**Real-Time Insights:** Users access a dashboard that displays current energy usage, allowing informed decisions about adjusting energy-consuming activities to minimize costs.

**Energy Efficiency Recommendations:** Based on data analysis, actionable recommendations to improve energy efficiency or reduce energy use are made during review meetings with a site. Suggestions range from adjusting usage schedules to upgrading energy-intensive equipment to more efficient alternatives. By implementing

these recommendations, sites can reduce their energy consumption and associated costs.

**Cost Savings Analysis:** Quantify potential cost savings resulting from energy efficiency measures by comparing current consumption patterns to projected savings after implementing suggested changes, giving a clear understanding of the financial benefits.

**Carbon Footprint Reduction:** Focus on environmental impact by calculating and presenting the carbon footprint associated with energy consumption, providing insights into how operations and energy-efficient actions contribute to sustainability goals.

**Customized Reporting:** Reporting that caters to different stakeholders, such as facility managers, sustainability teams, and executives. Reports can include key performance indicators, consumption trends, and progress toward energy efficiency goals.

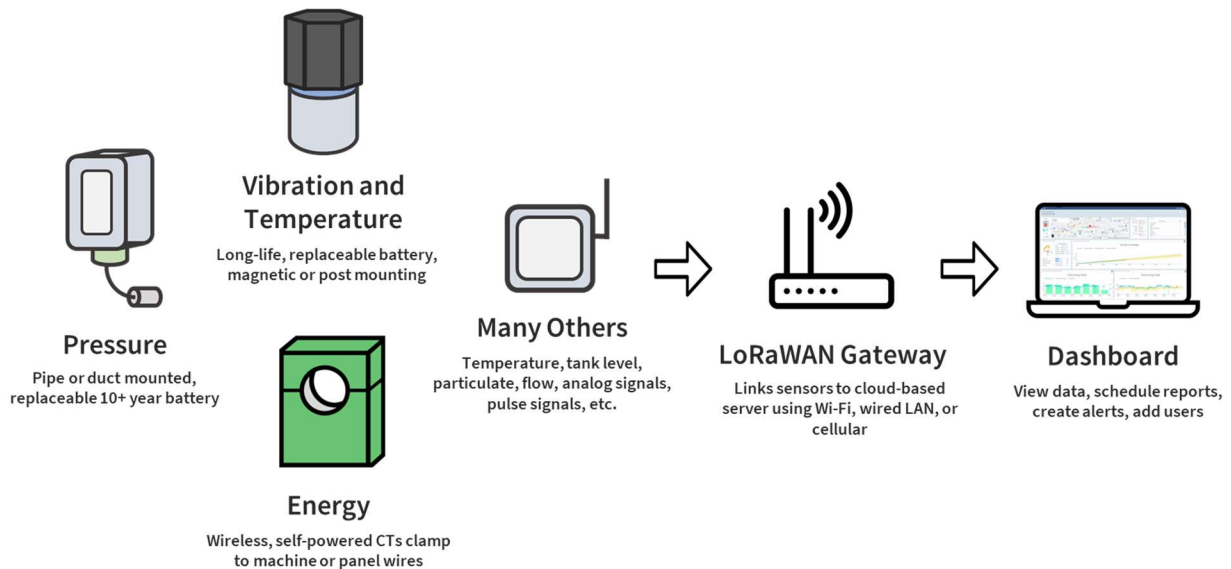
**Training and Support:** Active support to ensure the monitoring solution is fully utilized by training and educating users about the system's features and functions. Ongoing support is provided for troubleshooting and addressing technical issues. SiteWatch does not charge by user seats, so *each site can have as many active users as needed at no additional cost*

**Regulatory or ESG Reporting:** SiteWatch can help sites meet regulatory requirements related to energy reporting and efficiency standards, ensuring the data collected and reports generated aligns with regional and industry-specific regulations.

# How is a System Deployed

A remote energy monitoring system is deployed with a combination of hardware, software, and network infrastructure to collect, transmit, and analyze energy consumption data from a distance. The deployment process can vary based on the specific needs of the client, the scale of the system, and the type of energy being monitored (electricity, gas, water, etc.).

SiteWatch relies on wireless communications for data transmission, from sensors to gateways and from gateways to the cloud. The solution is lower cost due to quick installation, allowing hardware to be deployed without the need for wiring to connect sensors to central controllers. Additionally, hardware can be re-deployed as needed to collect information from other areas of a site, or to accommodate equipment or machinery reconfiguration.



## System Design and Planning

Understand Client Needs: The first step is to gather information from the client about their energy monitoring requirements, including the types of energy sources they want to monitor, the frequency of data collection, and any specific goals or challenges they have.

System Design: Based on the client's needs, SiteWatch designs the system architecture. This includes selecting appropriate sensors, gateways, and communication protocols.

## Hardware Installation

Sensor Placement: Sensors are strategically placed at relevant points to capture energy consumption data. Electricity sensors might be installed at electrical panels or circuit breakers, while gas and water sensors could be installed at supply lines or utility mains.

Gateways: Gateways are installed to collect data from sensors and transmit it to the cloud-based platform. These devices connect via wired or wireless networks (Ethernet, Wi-Fi, cellular, etc.).

## **Network Setup and Data Transmission**

Connectivity: Sensors communicate using LoRaWAN, a wide-area networking communication protocol used by industrial IoT devices that allows data transmission over long distances, from a hundred meters within a building to several kilometers outside with a clear line-of-sight. The site may use Wi-Fi networks, Ethernet ports, or a cellular data connection for gateway-to-cloud connectivity

Security: Security measures are used to ensure data integrity and protect sensitive information from unauthorized access. Encryption protocols and authentication mechanisms are employed as data is transmitted, and platform access requires a password-protected account

## **Software Configuration and Integration**

Cloud Platform Setup: SiteWatch 360 utilizes cloud-based servers to store, process, and analyze data. The cloud platform is configured to receive and store incoming data securely.

Data Processing: Once data is received, it is presented to align with other data sources, whether from manual uploads or API connections to other monitoring platforms. Analytical tools are used to develop insights, identify patterns, and generate reports.

User Interface: The user interface or dashboard can be customized, allowing sites to interact with the system in a personalized way

## **Testing and Quality Assurance**

Functional Testing: The entire system is tested to ensure that sensors are accurately capturing data, data transmission is reliable, and the user interface is responsive and accurate.

Quality Assurance: Quality control measures are taken to identify and resolve any issues before the system is considered fully deployed.

## **Training and Handover**

User Training: Clients and users are trained on how to navigate the user interface, interpret data, and make use of the system's features effectively.