Breaking Through the Backlog:

[How Insight-Driven IoT Can Save You Time and Money]

88% of Facility Managers say that **deferred maintenance is an issue**

The Inevitable Result of Reactive Management

As an integral part of their organizations, Facility Managers perform crucial tasks. These include maintaining aging infrastructure and managing the increasing complexity of buildings. Yet, they must execute these tasks while dealing with decreased staffing, limited budgets, and increased occupant expectations.

When Facility Managers encounter unplanned events, such as equipment failures, occupant complaints, and system downtime, all they can do is continue reacting to the immediate need. There's no time to do anything else.

Therefore, the inevitable result of this predominantly reactive posture, combined with aging infrastructure and limited resources, is deferred maintenance. And as this cycle repeats itself over and over again, the deferred maintenance backlog grows and grows.

Facility Managers know this isn't the best solution, which is why they're constantly searching for a better way.

Building Management Systems Were Supposed to Be the Solution

In their search for solutions to these challenges, some Facility Managers have turned to Building Management Systems (BMS) for answers. These computer-controlled systems run a building's mechanical and electrical equipment, including resources like heat pumps and lighting systems.

The average cost to deploy a basic BMS is at least $2.50 per square foot and can be as high as $7.00 per square foot[1].

The intent behind BMS systems was to make it easier for Facility Managers to control settings – one less thing to worry about. However, there are several drawbacks to reliance on a BMS.

For one thing, it's not uncommon for larger businesses to have up to three or four different types of BMS systems in place across their facilities. As a result, when a Facility Manager tries to analyze data on all of these facilities' mechanical systems, they can spend double or triple the time pulling together this data. Decentralized systems make it difficult to automate tasks and standardize processes, reducing the efficiency of the facility team[2].

Also, most BMS systems require a labor-intensive mapping process of their data, since there is no system standard to interpret the data[3]. Without analytic insights, it is extremely difficult to understand what the building data means.

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74% of Facility Managers feel that available **building data is not adequate** for optimum facility maintenance planning

Another issue is data loss, impacting Facility Managers' ability to analyze energy use patterns. This occurs:

- Anytime there is a power dropout.
- Anytime the device network is reconfigured.
- Anytime there is maintenance on the BMS.
- Anytime there is a change in outstation connections.
- Many BMS are powered by or backed up to one local PC or server, and often can only store energy data for a number of weeks. When the power drops or the system crashes, recording stops and often historical data is lost[4].

Finally, it is often assumed that the BMS is a lifetime purchase for a building, with no need for further upgrades. Actually, though, a BMS employs the same technologies and hardware as desktop PCs and servers. For this reason, notes Leroy Walden, LEED AP and Vice President for McKenney's, a complete upgrade should be implemented about every three years[5].

Why This Is a Problem

Unfortunately, BMS systems speak a different language than most organizations. A BMS speaks in temperatures and pressures, flow rates and kWh, not in dollar terms. In other words, it's just a data stream, with no analytics to parse out important information concerning money and time. This leaves Facility Managers to interpret the data, which is usually not an easy task[6].

The lack of long-term data in a BMS means that important systems in the facility that could be optimized are typically overlooked. Many incremental improvement opportunities that Facility Managers need to understand are therefore hiding in plain sight.

Since a BMS only allows building teams to automate control, without giving any insights into how to adjust for efficiency optimization, how can facility teams adopt appropriate initiatives and reduce expenditures? How can they break out of their deferred maintenance cycle?

The Shift to a New Technology

A more recent solution to the challenges of deferred maintenance and reactive management is the Internet of Things (IoT), machine-to-machine connection and communication that leverages data collected from wireless devices, such as sensors.

Sensors are cloud-based and gather real-time data. They can distinguish between different acoustics, detect motion, or measure PM2.5 particulate levels. This granular and targeted insight, including identifying devices that are about to fail, is the enormous value that the IoT provides, and what Facility Managers so badly need. This insight allows FM's to micro-target operational efficiency opportunities that provide immediate and measureable impact.

ROI on IoT installation in as little as 6 months.

Thus, any facility team, whether they use a BMS or not, would be wise to utilize a tool that combines IoT and analytics for processes such as fault detection, performance enhancements, data aggregation, and benchmarking[7]. Beyond a BMS, facility teams need:

- **Intelligent Data.** It's crucial for sound decision-making that facility teams have access to granular, real-time usage data.
- **Optimization Controls.** With automated optimization controls, it's much easier for facility teams to realize savings.
- **Monitoring.** Real-time data generated on an ongoing basis is key for optimal facility maintenance. Audits, while helpful, only provide information for one point in time.

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HVAC systems are most affected by deferred maintenance.

Intelligent Data is the Key

The bottom line is that Facility Managers don't just need data, they need intelligent data. Intelligent data, the combination of expert human analysis, advanced diagnostics, targeted sensor-driven analytics, and crystal-clear insights, provides facility teams with actionable direction to help them achieve their goals.

Without intelligent data, Facility Managers are drowning in data while at the same time starving for knowledge. Intelligent data acts as a life preserver that pulls them out of the hole of deferred maintenance. With this data, Facility Managers can start micro-targeting areas of their systems that most need upgrading and maintenance. Optimizing the right system can have a ripple effect throughout the facility and reduce the deferred maintenance backlog.

Responding to a facilitiesnet.com survey, Facility Managers ranked HVAC systems as the system most affected by deferred maintenance. Roofing systems were next, with building envelopes placing third[8]. In addition, half of a facility's energy usage is attributed to heating, cooling, and moving air[9]. For these reasons, it makes sense to target the HVAC system first for optimization.

Crucial Steps to Take

These are the steps for facility teams to take in identifying a collaborative facility optimization partner. First, it's necessary to discover which potential partner has the best intelligent data IoT and analytics tool:

- **Can you test the product out on a small scale and measure the results yourself?** If the product will scale easily and is relatively cheap to pilot, this may be the best path forward.
- **Can the product be integrated relatively easily into a building's operations and maintenance regimen?** If not, keep in mind how long it will take to retrain staff.
- **What are the cost savings?** Both immediate savings and total cost of ownership should be factored into the equation[10].
- **Does the product measure key performance indicators such as energy usage and particulate levels?** These are vital to pinpoint and measure total cost of ownership and indoor air quality.

Then, take these steps with your collaborative partner:

- Ensure that your partner will conduct an audit of your HVAC systems and create a report on your current state.
- Work together to determine the best alternatives to optimize your HVAC system performance.
- Identify performance metrics that are most vital to your facility's HVAC system, including particulate levels and energy usage.
- Confirm that the IoT and analytics solution measures these performance metrics, alerts you to potential problems, and provides meaningful insights.
- Work to create a long-term, mutually beneficial relationship with your partner as you refine and adjust your HVAC system optimization.

By utilizing intelligent data with a collaborative partner skilled in HVAC systems optimization, Facility Managers can adopt a predictive approach and be warned of potential issues before they become critical. With this type of maintenance, both a building and its systems last longer and perform better, and facilities can achieve the following benefits:

- A 10x return on investment
- 25-35% reduction in maintenance costs
- 70-75% fewer breakdowns
- 35-45% reduction in downtime
- 20-25% increase in production[11]

Facility Managers can therefore transform their reactive maintenance stance into a predictive maintenance strategy with intelligent data and a collaborative partner. They can then micro-target systems to optimize operational efficiency, labor hours, and occupant comfort, saving money and time in the process.

Contact your AAF Flanders representative to discuss our intelligent data tools and HVAC optimization, breaking through deferred maintenance and ensuring optimal productivity in your facility.

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