A MODERN APPROACH TO FACILITIES MANAGEMENT IN HEALTHCARE

Modern building management systems can offer improved staff and patient experiences while also reducing costs

Healthcare facilities are complex to manage: They typically rely on systems that support a wide range of use cases, such as administration, patient wards, labs, operating theatres, emergency rooms, specialty clinics, radiology, and more.

By their nature, each of these groups has different needs, different capacities, and even different operating hours. Some are used part time, some at specific times of the day, and others need to be available 24/7/365. These requirements would put considerable constraints on any building management system, even before considering the added complexity of managing multi-building healthcare complexes, where structures may have been built over a span of several decades.

Complex and aging healthcare environments are often fraught with inefficiencies that drive up operating costs. In addition, as healthcare organizations focus more on environmental sustainability as a business objective, aging and inefficient physical infrastructure can make it difficult to achieve sustainability-related goals.

But there is good news. Building management systems (BMS) are evolving to address these challenges. When used in older facilities, a modern BMS can quickly uncover hidden issues in heating and air-conditioning systems, resolving problems that may lead to significant costs. The more data collected via sensors, the more facility managers can measure and control. While retrofitting sensors to older systems and buildings may add additional expense, modernizing systems is essential to provide the data needed to operate highly localized environmental services.

MODERN MANAGEMENT SYSTEMS FOR MODERN RESULTS

Early smart building systems controlled the overall environmental state for a whole building or a floor. More modern solutions operate with significantly higher granularity, controlling a single room or a space within a larger facility. Leveraging machine learning (ML) capabilities, this approach is better suited for healthcare which requires an adaptive response at a room-by-room level. If sensors or registration software identify an unused patient room, for example, then heating and air-conditioning resources can be reduced or minimized. By comparison, traditional management systems would apply additional cooling to the heated room or heat to the over-cooled location, managing for expected conditions and masking the underlying failures – often at considerable expense.

Effective building management tools can help reduce energy consumption by running HVAC (heating, ventilation and air conditioning), lighting, and other systems more efficiently. These systems also can help manage suppliers to confirm if energy is obtained from renewable sources such as solar and wind, where available, and switch between different external energy providers to minimize carbon usage.

A modern BMS for healthcare facilities must be adaptable and responsive, capable of working efficiently as buildings are repurposed or operational needs change. Hospitals often need to quickly shift from general operations to critical care, and their facilities must be able to respond in the same way.

In a healthcare setting, a BMS must also be reliable and efficient so that rooms remain available. Many facilities operate near their capacity limits, and any change in conditions will force clinical staff to make decisions about care. If an operating room or a clinic is unavailable due to a systems failure, patients may be moved to

waiting lists, increasing the risk of delayed treatment, poor outcomes, or elongated treatment plans.

Another critical issue for healthcare management is compliance. Building management systems can't add risk to already complex systems. Differing global and regional regulations make it harder to deliver a one-size-fits-all solution. Any healthcare BMS must be co-developed with experienced control systems engineers. This produces software and systems that can be tuned to deliver better results for a facility's specific requirements.

Facility managers must also balance capital and operational expenditures. Healthcare service budgets typically focus on patient care, which puts significant constraints on capital for facility management. Capital expenditures must be strategic, creating a foundation for long-term savings, while operational spending must be optimized to fit within budgets while still delivering the essential resources needed to support the facility. It's a difficult balancing act, but one that modern building management technologies can help operations teams achieve.

DELIVERING THE MODERN BMS

Honeywell Forge provides near real-time analytics and visibility into the energy, space, and comfort performance across a facility. These capabilities help address many of today's facilities management challenges, including compliance, cost management, reliability, efficiency, and sustainability.

Honeywell Forge is a cloud-based, software-as-a-service (SaaS) solution that helps drive energy efficiency which can translate into significant cost savings and lower CO_2 emissions. In a healthcare environment, Honeywell Forge's machine learning tools help manage and run HVAC systems as part of a larger set

of smart building services designed to balance comfort and costs. By focusing on consumables like energy, facilities professionals can manage a significant portion of their budgets more effectively.

Using modern management systems and sensors, organizations can take a data-driven approach to environmental controls. The environment can be tailored for patients and staff alike, providing an enhanced patient experience while also improving conditions for staff.

Dynamic controls aren't dependent solely on what's happening in a building – they also take advantage of micro-weather forecasting tools, for example, to optimize in-building conditions based on actual local weather conditions or they can change energy providers using current utility prices. In-building sensors equipped can count people in a room and provide additional information to help predict demand, or they can show how busy the facility is, how often the lobby doors are opening, or how many people are using elevators.

Unlike more traditional control systems, which use boundary conditions to keep operations within set limits, Honeywell Forge continuously improves building models that control sensors and other devices directly, improving occupant experience while reducing costs. In this way, continuous optimisation has a considerable advantage over manual estimations and stepped changes.

Specific capabilities include:

- Centralized control and monitoring system, using dashboards, metrics, and visualizations to monitor performance.

- Building models for creating a basic control model for the building. These track building inputs and outputs, settings in HVAC systems, and additional data from climate sources.

- Machine learning model that gathers essential data to determine costs, energy usage and tariffs, along with predicted and historical pricing, to automate functionality. With this in place, facility managers can either directly control systems based on real-time sensor, weather, and pricing data, or construct a set of managed and adjustable settings.

KEEPING CHANGE TO A MINIMUM

Healthcare's constraints make it difficult to deliver environmental controls using traditional means. Upgrading sensors and other devices can help, but often at considerable expense and disruption. Honeywell Forge uses open APIs and on-site gateways to bridge cloud and edge environments without disrupting operations. Where possible, existing sensors and controls can be brought into the platform, adding additional Internet of Things (IoT) sensors where necessary and piggybacking on existing IT and facilities infrastructure.

Helping to manage sustainability and optimize energy usage may be the biggest advantage of a modern building management system. Sustainability isn't only about consuming resources; it's about managing the resources already in place. By avoiding scrappage, facility managers can identify if underlying systems can maintain and optimize occupant experiences and meet energy efficiency goals. Honeywell Forge make tens of thousands of adjustments a day across an entire facility, providing millions of data points a year, for a far more accurate model to help meet sustainability goals.

THE BOTTOM LINE

Healthcare facilities are resource-intense and capital-constrained. A modern BMS can help facility managers continue providing high-quality patient care, stay compliant, remain reliable and efficient, and meet sustainability goals, especially when mixing old and new buildings and different generations of heating/cooling systems.

Technologies such as Honeywells Forge use cloud services and machine learning to deliver adaptive control models. By providing a granular control layer, Honeywell Forge helps facility managers optimize for the many different use cases in a healthcare facility. In this way, facility managers can support patients, medical staff, and administrative workers, while providing an optimum occupant experience and delivering on essential environmental impact and sustainability requirements.

At a time when healthcare organizations face many challenges, including dwindling resources, technologies like Honeywell Forge can help reduce the gap between the demands on services and available budget – while also supporting the delivery of top-notch patient care.

buildings.honeywell.com

THE
FUTURE
IS
WHAT
WE
MAKE IT

Honeywell