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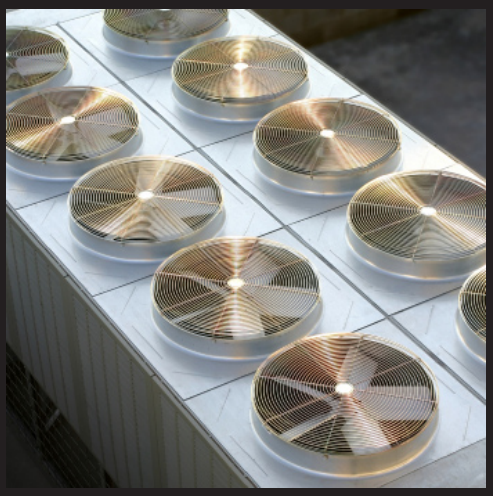

Apply an "Asset Management Strategy" to Optimize Performance & Economic Benefits of HVAC Systems

Indiana Society for Healthcare Engineering

Apply an "Asset Management Strategy" to Optimize Performance & Economic Benefits of HVAC Systems

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Managing heating, ventilation and air conditioning (HVAC) projects as major capital assets – rather than as large maintenance expenses – makes good management and accounting sense.

HVAC upgrades, which will likely remain in place for 20 to 25 years or more, are (1) capital investments made within a Board's fixed asset management program, (2) considered "mission critical" operating systems to a hospital's ability to maintain its quality of care, and (3) on the average, HVAC systems not comprise approximately 45 percent of a typical hospital's energy use.

Utilize a "Life Cycle Cost" Analysis

Traditionally, bids for HVAC upgrades are solicited on a "first cost" basis. In these cases, the Requests for Proposals (RFPs) ask vendors to present their lowest possible pricing for the initial acquisition of their recommended equipment. Using a "first cost" basis to determine the bid outcome on the purchase of supplies or commodities is fine and acceptable.

But a major HVAC project is a capital asset: The installation will likely see some five decades of service, represents a substantial investment of funding, and the upfront cost of HVAC components often represent only 5% of the overall investment in terms of total cost of ownership over 20 or more years.

Rather than base the bid process on a "first cost" RFP, a more strategic and long-term asset management-based alternative is an RFP requiring each bid to include a Life Cycle Cost (LCC) analysis.

The Life Cycle Cost of an asset is "the total discounted dollar cost of owning, operating, maintaining, and disposing of a building or a building system" over a period of time, according to The National Institute of Standards and Technology (NIST) Handbook. An LCC analysis examines a capital project's total costs of ownership by comparing initial, maintenance, repair and operating costs over the life of the system.

Bid processes incorporating an LCC analysis helps administrators determine the best value for its dollars among the alternatives. Factors to include within an LCC analysis are:

- **Utilities:** Address various existing utility schedules
- **Energy consumption and demand:** Optimize for efficiency to reduce energy costs
- **Installation and commissioning:** Integrated solution, standardization from one provider, and a robust system to accommodate for varying in-house skills, staff turnover
- **Long-term reliability:** Operate at peak efficiency throughout lifetime, eliminate system shutdowns, and use non-corrosive materials for use in harsh environments

- **Annual maintenance, repair, operations (cost, frequency, preventive maintenance) including:** Non-labor intensive system tracking and monitoring, option for cost effective outsourcing, service calls and parts and a provider availability of skilled technicians

- **High performance environment factors including:** Indoor Air Quality (IAQ), Filtration, Pressurization, Airflow, and Acoustics

- **System controls integration and flexibility including:** Centralized command & control; Precise temperature & humidity control; Ease of changing settings; Control of critical core functions such as laundry, pharmacy, security; and Ease and efficiency of testing & balancing equipment

- **Modernization and necessary system upgrades**

- **Financing costs**

Optimize for Best Efficiency

Upgrading existing or installing new HVAC and control systems allow hospitals to meet new regulatory standards, implement the latest innovations in technology, and improve environmental conditions for the benefit of patients and caregivers -- especially in the two key areas of IAQ and acoustics. Importantly, HVAC improvements can also be designed to yield significant economic savings in terms of energy, resources and money.

Web-based building automation systems are a sound investment. They manage daily operations like reporting on status of buildings, systems and equipment, scheduling by room, building or enterprise, data collection and analysis, troubleshooting and alarm management. They also provide a common view of energy use patterns across multiple structures or hospitals, enabling better decision making, increasing performance, and easing integration.

New developments in HVAC systems using open, standard communications and browser-based user interfaces offer increased flexibility and tighter energy management. These systems easily integrate into existing Local Area Networks (LAN) to streamline a hospital's approach to energy management.

The "Asset Management Strategy" doesn't just apply to the design, selection, and installation of a new HVAC system. As 24x7 mission critical systems, the strategy applies to its continuing operation and maintenance as well.

Once the new HVAC "asset" is installed, benchmark and monitor its performance – utilizing the tools mentioned above – in order to gain a better understanding its "real world" operation. In addition, employ a "reliability management" program of preventive maintenance operations and diagnostic testing to ensure that the system is operating, and will continue to do so, at optimum performance and efficiency – as well as to address the operating performance and maintenance documentation and reporting requirements mandated by the Joint Commission and other state and regulatory agencies and boards.

Such "proactive" approaches will minimize both planned downtime and unexpected shutdowns and reduce lifetime repair costs and the possibility of catastrophic failure.

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