

JOIN THE GREEN REVOLUTION

BY PAUL LACHANCE CTO

To some, Tom Barnes, chief engineer at the Colorado Convention Center, is a fanatic when it comes to improving operational efficiencies at the 2.1 million square-foot meeting facility, located in downtown Denver, Colo. One example: Barnes is currently implementing an \$870,000 project to install more than 20 variable-frequency drives (VFDs), used for controlling the frequency of the electrical power supplied to HVAC motors. Barnes anticipates a three-year payback on the project.

A major cost savings to the convention center will be replacing fluorescents with LED lamps throughout the complex using a lutron control upgrade for programming, so lights only run when needed.

Monitoring and preventative maintenance of operations equipment is equally high on Barnes's list of priorities. "One of the best ways to save on energy consumption is by getting to equipment before it breaks down," said Barnes. In fact Barnes generates 600 PMs (preventative maintenance requests) a month using a product from Bigfoot CMMS, a Meredith, N.H. company that offers robust, comprehensive operations and maintenance software.

Barnes's passion paid off in May 2010, when Colorado Convention Center earned the U.S. Green Building Council's LEED®-EB certification for existing buildings. A key factor in obtaining the certification was the points earned in the Energy & Atmosphere category, one of the nine key areas measured by the green building certification system. Their CMMS software was instrumental in monitoring energy use and the efficiency of appliances, systems and lighting — two of the strategies evaluated in the LEED-EB Energy & Atmosphere category.



Two photos (different views) of the Colorado Convention Center, Denver, Colo. Photos courtesy of Bigfoot CMMS



CMMS Comes in Green

For those who understand the value of CMMS, it has long been recognized that automating preventative maintenance activities on operations equipment improves the bottom line through improved labor efficiency, enhanced asset effectiveness, certification assistance with government agencies and certifying organization (such as ISO, OSHA, JCAHO, FDA and DOE), liability protection and more.

A well-conceived CMMS software package, written by software programmers, who take the time to understand the needs of facilities maintenance and operations professionals, can be a fundamental contributor to energy efficiency and supports green practices.

Energy and Utility Optimization

According to the U.S. Department of Energy, buildings use nearly 40 percent of the energy and 74 percent of the electricity produced each year in the United States. Likewise, energy costs are one of the largest line items in an organization's budget, in some cases approaching as much as a billion dollars a year for large multinational manufacturing companies. Given the financial impact this can have on an organization, it is little wonder that many facilities managers and energy engineers stay awake at night thinking of ways to trim these costs wherever possible. Installing alternative energy systems doesn't necessarily equal energy efficiency unless the equipment is monitored and necessary action taken when the equipment is found to be operating at less than peak efficiency.

CMMS monitors a variety of meter readings, including pressure, temperature, voltage and hours run, and also helps operators identify energy peaks and spikes. Improved PM planning can drastically improve the energy efficiency of facility assets. Most leading CMMS software packages, including Bigfoot, interface with commercially available technologies to correlate energy consumption with specific asset performance levels and identify "energy hogs." Then PMs can be set up based on hourly run times instead of ex-



The lower screen shot shows the 'Asset Life Cycle Analysis' tool. It features a table with columns for 'Name', 'Status', 'Grade', 'MRO Cost', 'MRO Hours', 'MRO Parts', 'MRO Labor', 'MRO Material', and 'MRO Total'. The table lists various assets with their corresponding grades and costs. The 'XYZ' logo is visible in the top right corner of the interface.

Upper screen shot: A customized dashboard helps a manager or technician quickly see a snapshot of the “maintenance health” of his operations. **Lower screen shot:** Asset Life Cycle Analysis “grades” equipment based on historical work orders. Photos courtesy of Bigfoot CMMS

tended calendar periods, ensuring PMs are completed at optimal times. This results in a more efficient use of staff, reduced downtime and lower maintenance costs.

Tracking and monitoring an asset’s utility consumption can also help trigger appropriate corrective and preventative action. For example, if an asset is “running hot,” based on thermal readings or spikes in utility consumption, this might indicate a potential maintenance issue. A CMMS software package can capture warnings, chart a trend and trigger a PM. The result is optimal equipment operation and reduced energy consumption, which translates to increased profitability.

Improved Efficiency

For a manufacturer, a finely tuned operation of production equipment creates more product output with less waste, and less waste equals fewer raw materials used. Improved utilization and reduced downtime equal consistent production. CMMS automates the preventative maintenance plan for all plant floor equipment.

For facility maintenance, strong asset utilization can equate to less asset usage and less energy consumption. For example, if an HVAC system is operating efficiently because of comprehensive PM work managed by CMMS, facilities managers use less heating from boiler X, when boiler Y and Z are running efficiently.

Find out why a computerized maintenance management system, also called, CMMS, software package is important to maintaining a cost-effective, eco-friendly facility.

Interfacing CMMS with building automation systems allows operators to capture alarm data, display trends and automatically trigger work orders. For example, an overheated air handler generates an alarm ticket, which creates a work order. The cause is diagnosed as a slipping belt. The belt gets replaced and now the unit requires less energy to operate. Over time, operators can observe energy spikes on a particular air handler unit and become proactive about scheduling work orders for those peak periods.

CMMS can also track equipment history and grade performance over time. Instead of automatically projecting capital expenses to replace old equipment, CMMS software

identifies which assets are poor performers by ranking every component. Surprisingly, a newer asset could be consuming more energy by failing frequently and costing more to repair over time. An asset would be retired or replaced based on several factors: frequency of failure, energy consumption, frequency of work orders, cost trends, etc. Using CMMS software a facilities manager can be proactive about his maintenance plan and reduce capital expenditures.

If your mission is to find new ways to improve efficiencies, Barnes noted, don’t miss the obvious opportunities, including catching problems before systems break down or need repair using a comprehensive CMMS software package, such as Bigfoot.

Another added bonus: increasing energy efficiencies and environmental sustainability is good for marketing. “LEED certification at Denver Convention Center is bringing us more business,” Barnes said. **FEJ**

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