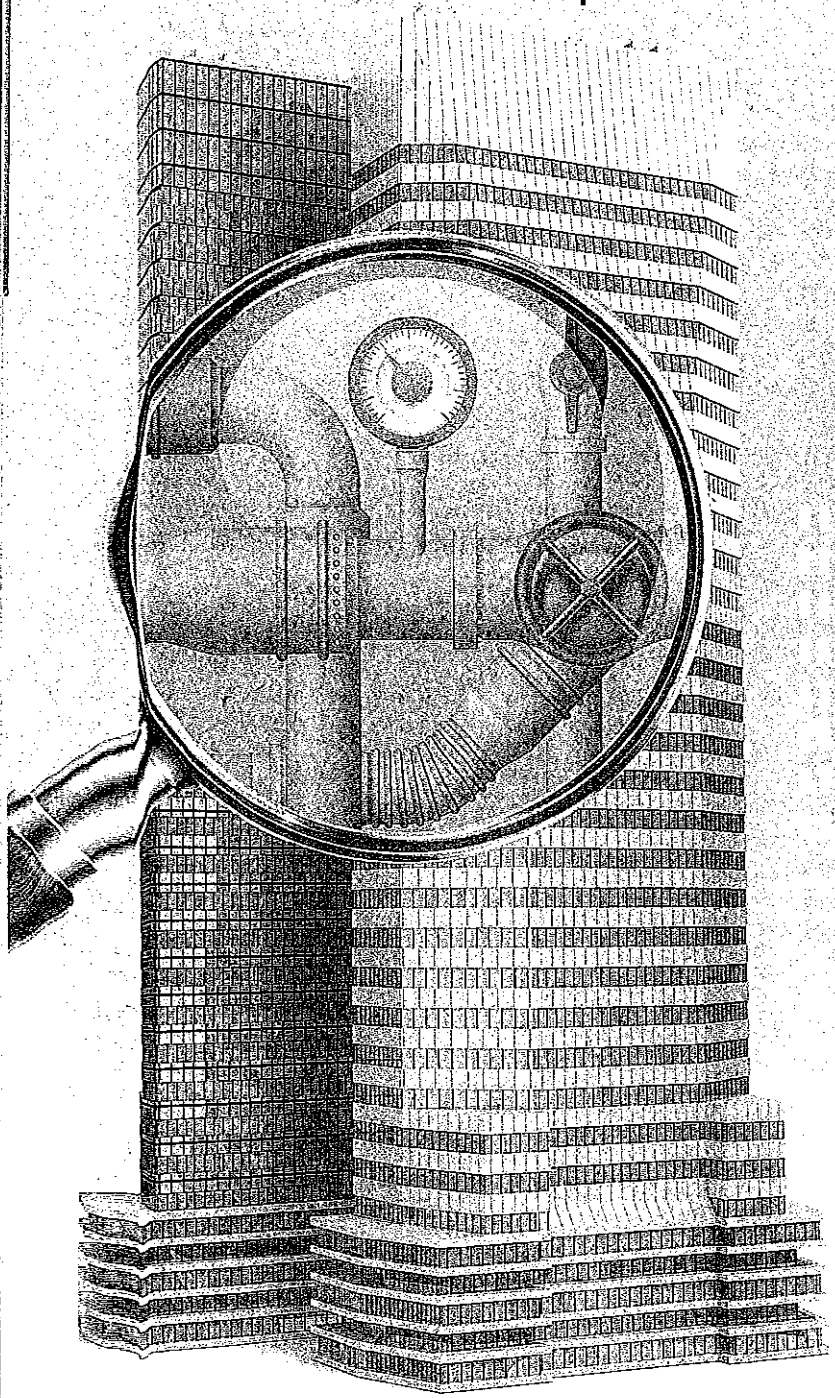
Taking Stock for Safety

To protect occupant health in the COVID-19 era, a comprehensive inventory of facility systems is essential



By Adam E. Lucido and Brian Cowperthwaite

An accurate inventory of facility-related systems and assets creates a cycle of influences in institutional and commercial buildings. By accurately accounting for assets, maintenance and engineering managers can implement effective maintenance strategies. An efficient maintenance program drives down time and labor costs and extends equipment life cycles. In turn, life cycles affect capital planning and reinvestment via facility condition assessments.

Before March 2020, this cycle of influences shaped managers' ability to provide a comfortable, safe and efficient environment. But in the COVID-19 world, an accurate, a detailed asset management program provides something completely different.

Identify critical assets

When COVID-19 struck, states implemented stay-at-home-orders. Only critical personnel went to work. Many facility executives trying to prioritize their organizations' resources and activities asked managers, "Which systems are critical to life safety and need to be maintained?" Shortly after, the Centers for Disease Control and

Prevention provided recommendations for facility systems to help mitigate the spread of the disease and other potential facility-related issues. Immediately, facilities and campuses began reviewing the details of their systems and assets to answer these questions or made plans for a makeshift inventory.

Depending on facility age and condition, managers can choose from several approaches to accurately inventory, categorize and account for equipment and assets. A one-size-fits-all application does not exist. Maintaining accountability of assets presents uncommon challenges. Some buildings and systems are long-past their intended useful lives while others maintain a high-tech footprint that represents a focus on the future.

Regardless of the complexity and mix of buildings and equipment, institutions now understand the importance of leveraging processes that track and maintain systems in order to ensure optimal working conditions.

The keys to maintaining facilities and equipment center on a system of maintenance — preventive, predictive or run-time based, but most often reactive. To build a successful maintenance program, managers have to understand the systems and equipment they have and identify the specifications or classifications of the equipment and systems. Then they need to actively execute a system to monitor and maintain readiness. One critical early step to achieve this goal — often overlooked and commonly assumed to be adequate and even more challenging to successfully execute — is verifying and accounting for equipment and assets.

Planning and executing a campuswide inventory of systems and equipment can be overwhelming. The starting point lies somewhere between determining must-have information and nice-to-have information. Managers who plan to send data-collection teams through buildings to verify maintenance systems and equipment need to capture the information on the first pass.

Verifying the location and existence of capital assets is cursory and does not provide much more than validation, but if data-support systems — CMMS, facility condition assessments, etc. — provide robust functions based on data input, a successful inventory can yield a treasure trove of useful data that managers can apply in crisis and non-crisis situations.

The most challenging part of an organization-wide CMMS asset inventory is the preparation and discussions held long before anyone accounts for the first piece of equipment. A successful inventory should include setting a goal, assembling the team, defining opportunities, and then implementing the plan.

Set a goal

The intent of a CMMS asset inventory is to gather data that will be useful to the specific processes within the organization's asset management program. With the right data, a CMMS can support many different organizational processes and aid policy-based and performance-based management decisions.

Unfortunately, a one-size-fits-all approach to an asset inventory typically results in valuable resources spent on an abundance of unnecessary data or, worse, not enough relevant data to benefit the intended process. To avoid this type of blunder, managers need to invest the time to fully understand an organization's current asset management processes and future processes. In other words, begin with the end in mind.

Assume the general goal of a CMMS asset inventory is to develop an efficient, scalable maintenance program within a CMMS that has a maintenance staff operating and maintaining many diverse assets in many buildings.

Assemble the team

Next, a large-scale asset inventory requires collaboration and support across multiple departments and includes key individuals at various occupational levels within those departments. Identifying these key individuals has a large impact on the asset inventory's outcome.

Frequently, these individuals do not wear business attire. Instead, they wear work clothes and carry tools. Managers need to consider that these front-line technicians have job responsibilities that consume their workday, none of which consist of performing an asset inventory. Throughout the process, managers need to appreciate the fact that they need technicians more than technicians need them. The message is that the end results will benefit the technicians.

The most crucial step during the asset inventory is assembling an inventory team to achieve complete collaboration that taps into the knowledge of key individuals. Managers can streamline the buy-in process by ensuring that the inventory team appreciates the assets they are inventorying and the way to service the assets and that they can give on-the-spot advice to support maintenance activities.

Define opportunities

Defining a detailed action plan sets the tone for the project. An asset inventory is a long process, so it is crucial that the team collects, identifies and inventories the essential information. Often-overlooked inventory opportunities to consider in this plan include these:

Respect the investment. The institution made investments to buy the

Using Data To Drive Maintenance

Completing a CMMS asset inventory gives maintenance and engineering managers countless directions in which to drive a maintenance program:

- Use the data collection to prioritize the importance of systems and focus maintenance resources.
- Associate asset-specific job plans and instructions with preventive maintenance records.
- Use knowledge of manufacturer models to curtail asset downtime by identifying equipment spare parts and stocking them ahead of time.
- Reduce repair costs by leveraging asset warranty information now readily available in the CMMS.
- Apply condition-based maintenance practices by comparing design performance with actual operating conditions.

— Adam E. Lucido and Brian Cowperthwaite

assets and has invested resources to maintain them. Documenting asset warranty information often can lower the cost of repairs and ensure the institution receives all the benefits warranted by the investment. Document warranty information, and determine a way to make it easily accessible to those who need it.

Respect assets and equipment. Most mechanical assets can be grouped by a standard classification, but this does not mean they have the same functions, importance or maintenance requirements. For example, a shell-and-tube heat exchanger and a plate-and-frame heat exchanger can perform similar functions, but their maintenance tasks are much different. Give the equipment the respect it deserves, and collect the relevant information pertaining to the type and function of the asset within each standard classification.

***Adam E. Lucido** is maintenance program manager with operations and maintenance at the University of Chicago.*

***Brian Cowperthwaite** is senior director with operations and maintenance at the University of Chicago.*

Respect the location. A large institution has critical and non-critical locations. Some assets, such as eyewash stations, are considered bounded assets, meaning they demand a certain level of regulatory maintenance and inspections regardless of location. Managers need to consider the location of non-bounded assets when determining their importance, the level of asset data collected and the allotted maintenance resources. Prioritize the location of assets in relation to their importance to the overall mission of the institution. If the institution were to encounter a crisis in the future, it would help to have equipment and assets separated into categories such as life safety, critical and non-critical, along with a location priority hierarchy.

Empathize with technicians. Often, the inventory team does not have to maintain the assets, so have respect for the individuals who operate and service them. Record information that is useful to someone performing preventive or corrective maintenance. General information such as manufacturer, model, and serial number is mediocre. Detailed information, including asset specifications and design, equipment spare parts and the functional description of the initial system design, is more beneficial. Inventory details such as cubic feet per minute (CFM), CFM per square foot, which air handling unit serves which room and available filter options have proven priceless amid the pandemic's challenges.

The criteria for each type of asset should be organized so the data can be easily recorded during the physical inventory. Managers should consider creating standard asset templates specific to each equipment type that allow the team to record data on a tablet while in the field.

The next piece of the puzzle is to determine the way data collected is added to the CMMS. While manual data entry is an option, loading the data directly to a database saves an enormous amount of time and effort. The construction of templates for loading asset information is critical. The templates should be vetted by the information technology (IT) team, and the dataset should be configured to seamlessly update the CMMS database. Managers should discuss these options with the IT group to determine a plan to take the data on the tablet and update the database.

Implement the plan

Now that the inventory team has a clear direction and can share project expectations with stakeholders, the next step is identifying where to begin and how to track progress. Use location information to work with the individual departments to establish a schedule.

Determine when and in what quantities to update and validate the CMMS with the asset data. When batch-loading the data, perform the data transfer regularly throughout the project. If manual input is the option, enter the asset data regularly. By evaluating the data immediately, managers can closely track the quality and progress and adjust before the process is too far along.

One successful tactic is to conduct a one-building beta test. Complete the asset inventory on one complete building, evaluate the effectiveness, ensure it uploads and updates the CMMS as expected, and adjust before moving on.

Before managers can effectively maintain and grow a successful maintenance program, they need a clear understanding of installed systems and equipment. Regardless of the organization's situation, focus on completing one initial goal, plan to spend far more time on planning and organization, and input and use the data immediately to create small wins along the way.