Are all maintained/maintainable assets recorded in your site's CMMS? If so, are they organized into asset systems?

13 Questions Define CMMS Success

Computerized maintenance management systems will deliver as advertised, but must be properly configured.

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THE STATISTICS PAINT a dismal picture: The generally acknowledged failure rate for CMMS (computerized maintenance management system) implementations easily exceeds 50%. Some estimate it to be as high as 80%. Moreover, the number of companies claiming to use all functions and capabilities of their CMMS was recently reported to be a paltry 6%. Could it be that many of today's articles and discussions on CMMS implementations put too much focus on factors beyond the functionality of the software itself, including lack of management support, failure to change business processes, and training?

Rather than belabor those negative points, Bob Wilson, CMRP, of Performance Consulting Associates, Duluth, GA, prefers to concentrate on how configuring a CMMS can contribute to implementation success and, ultimately, improve a facility's level of asset care and reliability. "A CMMS is a highly sophisticated tool, with many variables, and a wide impact," he said. "Organizations need to treat these systems with respect if they hope to achieve the goals for which they're designated."

Elaborating on his approach to CMMS configuration, Wilson outlined the following process. It requires users to first have a basic understanding of the important components and capabilities, then ask themselves 13 questions about their organization's ability to leverage this functionality.

Proper configuration of a CMMS can contribute to its successful implementation and, ultimately, improve a facility's level of asset care and reliability.

The Q & A Approach

As with most endeavors, success is enhanced when involved parties start with the end in mind. "In the case of a CMMS," Wilson said, "that means establishing why you bought (or upgraded) your current system and what it can do for your operations."

Keeping track of equipment-maintenance needs is a basic requirement in plants and facilities. The asset hierarchy is a key component of any CMMS: It forms the backbone of the system, gives it structure, and provides hooks on which to hang work orders, parts, labor and contractor costs, and root causes of failure. The system also allows comparisons across multiple assets with common components.

With these points in mind, ask:

1 Are all of the assets you must maintain recorded in your system? Have you included facilities, structures, fire-alarm systems, cranes, and rolling stock?

2 Are these assets organized into systems? Are there appropriate parent-child hierarchies?

CMMS users typically want to capture and manage the work to be done, conduct preventive maintenance (PM) on a regular basis, track work by type, and understand where the maintenance money was spent. According to Wilson, these things are easy to accomplish with today's sophisticated systems—and users report high levels of satisfaction in achieving those goals.

Still, he cautioned, a business or industry (or its regulators) may have special record-keeping requirements, such as chain-of-custody, replacing like-for-like parts, or certification of calibration results. A successful CMMS must be configured to meet all of these needs. Today's systems have a variety of codes to identify work type, priority, work status, delays encountered, reason for failures, and equipment criticality.

With these points in mind, ask yourself (then double-check the system):

3 Are there sufficient codes to allow the necessary slicing and dicing of your data to meet these reporting needs? Do you have a work-type code "From PM" to identify work generated from a PM, TPM, or predictive (PdM) inspection?

Spare-parts inventory management is another key CMMS objective. This process begins with a master catalog that contains the necessary part-description parameters. According to Wilson, those who configure a CMMS should remember there are two audiences for good part descriptions: The first is the person working on a piece of equipment who wants to know that he/she is getting the correct part to complete the job. The second is the purchasing agent or buyer, who must describe the part to an OEM, vendor, or distributor.

The CMMS master catalog also includes information on economical purchasing quantities, minimum-maximum and lead times to maintain reasonable stock levels, and unit costs. Typically, this catalog contains all parts for a specific piece of equipment—regardless of whether they are stocked at the CMMS user's plant, on consignment, or maintained by a vendor or distributor.

Transaction data indicate when and how many parts the site uses, and, for example, if they are installed in pairs or other multiples. Usage is also tracked to the specific assets upon which the parts are used, by issuing them against a unique work order.

With these points in mind, ask yourself:

4 Does your system's master catalog contain all parts required to maintain all production and support equipment and facilities? Are purchasing parameters reviewed and updated on a regular basis (min-max levels and lead times)? Are all active parts associated with specific assets through bills of material?

Is your CMMS configured in a way that lets a maintenance planner easily determine the level of maintenance resources available for upcoming work?

Managing preventive- and predictive-maintenance activities throughout a plant—for on-the-run PMs and those performed only during planned shutdowns—is another major CMMS function. "With the growth in Lean and TPM initiatives across industry," Wilson observed, "more and more of these activities are being delegated to equipment operators."

Most CMMSs allow a variety of events to trigger PMs. Such events include passage of time (inspect every four weeks), hours of operation (inspect every 200 hr.), distance (every 1,000 mi.), or production cycles or output (every 3,000 cycles or 10,000 lb. of production). Each facility must adjust the manufacturer's recommendations to match its own experience.

According to Wilson, preventive maintenance on a particular piece of equipment usually seems repetitive when viewed from the perspective of an entire PM cycle, *i.e.,* weekly, monthly, quarterly, semi-annually, and annually. The same activity or group of activities will be repeated on every frequency, *i.e.,* change the oil, check the guard, replace the belts. "Unfortunately," he said, "several cycles will likely fall due at the same time. Consequently, one craftsperson may receive two or three sets of what, essentially, is the same PM, or several individuals will each receive a different frequency, with essentially the same activities." To avoid this confusion and eliminate the opportunity for redundancy, the various frequencies should be consolidated, or "nested," so that only one PM is issued for any time period.

With these points in mind, ask yourself:

5 Are your PM and predictive inspections "nested" so that only one work order is issued for any one time period?

Planning work before it begins is at the core of improving productivity of all resources, including maintenance. The maintenance planner is typically a CMMS power user and major contributor to improving workforce productivity.

Therefore, the system must make it easy for the planner to locate critical information to support the job at hand. Frequently, critical documentation is stored on another server or a central LAN system and directly linked by the CMMS to a piece of equipment or a specific type of machine or component. Thus, a work-order written against a specific piece of equipment will automatically be accompanied by supporting documents, such as OEM specifications, safety-related permits, drawings, or P&IDs (process and instrumentation diagrams), pictures, and standard-operating procedures.

Wilson noted that, from a historical perspective, a significant portion of maintenance at a site (usually estimated at 80% or more) has already been performed at some point. The planner's ability to access a library of completed work orders—by equipment or task or pre-planned job templates—is key to insuring job consistency, harnessing learning from past experience, and optimizing the craftsperson's chances of successfully completing the job.

A crucial part of a job package is the equipment's bill of material (BOM)—for the parts that are anticipated to be used or have been used in the past, as well as just-in-case parts where something else might be needed to complete the job. A BOM ensures that the correct part is used for a piece of equipment, and the correct part number makes it easy to obtain that item from the storeroom.

A copy of the BOM should be included in every job package. This simplifies the identification of additional parts and provides a feedback mechanism should the craftsperson want to recommend changes or add or delete items. This helps keep BOMs up to date and accurate.

The maintenance planner is also responsible for creating weekly schedules. These schedules reflect

a combination of plant high-priority items, such as safety work orders, preventive maintenance, repairs, modifications, and other jobs requested by operations or engineering. It's important for the planner to be able to easily identify jobs that are ready to schedule and those with the highest priority. The planner's ability to determine the level of maintenance resources that will be available for the upcoming work is equally important.

> If your current CMMS isn't adequately configured, your site can't take full advantage of the system's many capabilities.

With these points in mind, ask yourself:

6 Are critical documents stored in electronic form and well indexed to facilitate job-package preparation? Are these documents stored outside the CMMS (which could ease migration to a new or upgraded system, since the documents wouldn't need to be extracted from the old system and moved to the new)? Is a control protocol in place to ensure that the most current version of a document is used?

7 Does the CMMS include a library of pre-planned jobs with full documentation of the tasks to be performed, internal and external resources, parts required, estimated time to complete, and links to critical information and documentation?

8 Can a maintenance planner create an electronic pick-ticket to alert the storeroom of parts required for a scheduled job? Does the job package clearly state where the pre-kitted parts will be located?

9 Does the location naming and numbering scheme make it easy to identify other work orders or jobs in the backlog that should be scheduled in conjunction with a new work order? (Example: Several welding jobs along the path to a new work order's location may have previously been identified.)

10 Can priorities, due dates, and ready-to-schedule work-order status be easily determined? Are anticipated resource levels maintained in the CMMS system?

Management of parts and other items for maintenance/repair operations (MRO) is critical in maintaining the reliability and availability of all equipment and assets, ensuring that customer orders are completed when due, and providing high quality at optimum cost. A site's storeroom operations typically generate high volumes of transactions and the CMMS manages that inventory, *i.e.*, ordering, receiving, putting away and rotating stock, and administering and issuing warranties. Bar-code printers and reader/scanners help improve transaction accuracy.

Physical inventory management involves optimizing the use of cubic space, measuring accuracy through periodic cycle counting, implementing security measures to control open access to the physical space, and recognizing/dealing with obsolete and slow-moving or non-moving parts.

With these points in mind, ask yourself:

11 Is your current CMMS configured to classify inventory by a combination of part value and transaction volume, *i.e.*, the ABC classification scheme?

12 Does your system generate periodic cycle-count lists by randomly selecting a mixture of A/B/C classified parts?

13 Does your system support bar-code readers and scanners? Is that capability activated?

Answering these 13 questions, Wilson said, is a good start in determining if your current CMMS is configured for success. If not—or not always—he advised, your task is clear. "Update the configuration as soon as possible to help your organization take full advantage of the many capabilities these systems offer." **MT**

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- "De-Cluttering Maintenance Management" (maintenancetechnology.com/?p=3355)
- "Data Should Not Be a Four-Letter Word" (maintenancetechnology.com/?p=4929)