Manage contracted maintenance work as if it's your own

Use software to create a seamless integration of outside MRO services.

By Mike Bacidore, chief editor

On the first of every month, work orders are generated for all periodic preventive maintenance (PM) tasks that are due before the first of the following month at the Toyota Industrial Equipment Manufacturing (TIEM) plant in Columbus, Indiana. "By using this monthly bucket approach, we can easily, on the first of every month, plan out the required man-hour assets, including overtime and weekends if required, in order to be able to complete all tasks within the given month," explains Wendell Crouch, senior manager of production engineering, maintenance, and facilities at TIEM (www.toyotaforklift.com). "This also makes it easy to adjust the plan if unscheduled repairs come up during the month which requires man-hours that were originally scheduled to perform PM tasks. A report is generated at the end of every week and graphed every month to track PM completion to ensure that each monthly bucket of tasks is completed."

The PM tasks that print out every month at the plant are all required scheduled tasks for all departments or groups, including maintenance, facilities, manufacturing autonomous maintenance, fleet, robot group, and contractors. "The outside contractor PM tasks that are on manufacturing equipment are assigned to the TIEM maintenance supervisor, and the outside contractor PM tasks that are on the facilities are assigned to the senior facilities engineer," explains Crouch, whose plant uses asset management software from Infor. "These are all assigned electronically and not printed out. The maintenance supervisor and the facilities engineer then coordinate with the contractors to complete the work."

The actual PM task sheet is only printed out if it's determined there are specific instructions on the task that the contractor needs. "The senior engineer and maintenance supervisor then take the completed work orders from each contractor, usually on that company's unique form, enter any required information or data into the system, and then close out the PM task all electronically," says Crouch. "There are about 50 contractor PM tasks of varying periods from monthly to every five years."

When maintenance functions are performed by contractors, instead of internal employees, software's role can morph a bit. Whether it's helping with the management of assets, operations, maintenance, finances, or people, software's use and effectiveness can change in light of contracted employees. But the integration of data and systems can create a seamless affiliation with contracted workers that appears transparent.

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The benefit of a unified, integrated software strategy, as opposed to stand-alone solutions, is that the maintenance manager has a lot more information available and can leverage information and expertise in other departments, explains Mike Auer,

implementation manager, IFS North America (www.ifsworld.com). “It makes a lot of sense to integrate maintenance with the manufacturing schedule, so you can see the uptime required of each piece of equipment out to the time fence — as far in the future as your production schedule allows,” he says. “Then you can plan maintenance activities and schedule contractors accordingly.”

Integration between maintenance and finance will help make the strongest business case with senior management for either contracting or hiring necessary staff, offers Auer. “But the most attractive efficiencies for managing maintenance contractors come when maintenance is integrated with human resources and with purchasing,” he says. “Within an enterprise-wide solution such as ERP, the maintenance manager gets visibility into human resources data, such as staff schedules, skill sets and certifications. He can schedule manpower, see capabilities and certifications, and compare those capabilities with the demands of the maintenance schedule. He is also in a position to work more closely with the human resources department to advocate for additional skills training or additional hiring to close capabilities gaps.”

Integration with the purchasing component of an enterprise application relieves the maintenance manager of purchasing responsibility, says Auer. “All the maintenance manager needs to do is place demand in the system through his work order and let those who specialize in purchasing and negotiating contracts do what they do best,” he explains. “Purchasing integration also helps ensure the materials that contractors need are on hand at the right time or that contractors are supplying materials according to the contract. Once again, demand is driven in the purchasing system directly by the work order.”

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All equipment repairs and associated costs from outside contractors at Grassland Dairy (www.grassland.com) are managed by it computerized maintenance management system (CMMS), explains Jim Hills, assistant maintenance manager at the private dairy foods producer in Greenwood, Wisconsin.

Periodically, Hills will contract for equipment repairs or order parts. Previously, it wasn’t uncommon for his team to lose track of vendor or service provider information, but the company now uses Bigfoot CMMS to track equipment and vendors by assigning a code to each one. It also helps for interfacing with accounts payable when a purchase order (PO) is cut for outside contractors, explains Hills. First, he contacts the contractor via email to explain what’s needed, and then he sets up an in-house visit. If the work proceeds, the software creates a work order (WO) for the outside contractor; the contractor sends an estimate for Hills to approve. He also creates an electronic PO with the WO number added to the PO and sends it to the contractor with the estimate.

Electronic documents, such as estimates and brief work descriptions, are then associated with the PO along with associated equipment or project numbers.

Finally, Hills sends a hard copy of an electronic PO, original quote, and invoice, after work is completed and marked satisfactory to accounts payable. A hard copy invoice is also mailed to accounts payable by the contractor so the invoice from the contractor can be aligned with the WO, PO, and copy of invoice and then reconciled.

Between repairs and part orders, Bigfoot allows Hills to track monthly expenditures per vendor or contractor, and it gives him reports that show him where he can negotiate prices with vendors and trim costs.

However, there's still a long way to go for automated management systems that are able to integrate all of the aspects needed, warns Joe Van Dyke, vice president of operations, Azima DLI (www.azimadli.com). "If you have inspection results that dictate the levels of spare parts that you have, you need a knowledge of the types of problems in your plant that will drive a feedback loop," he says. "Inspection technology integration could be improved in asset management software. Plant managers need a way to reduce the number of unnecessary maintenance actions or uncorroborated actions by being able to affirm the results of the initial diagnostics, whether it's with oil or infrared or vibration testing. If vibration comes up with a possible gear wear, maintenance staff should first perform an oil test before cracking open the gear box."

Different, but the same

Software isn't used differently when a plant contracts MRO services, says Paul Lachance, chief technology officer at Bigfoot CMMS (www.bigfootcmms.com). "The process is very similar," he explains. "Outside contractors typically do not have access to CMMS software, although Bigfoot will allow authorized limited access by granting security permissions to trusted outside vendors, which we recommend, so they can pull up their WOs, research repair history, and, in some cases, close them out when work is completed."

Most of Lachance's customers treat outside contractors much like non-core maintenance staff. "They are clearly labeled, including name, address contact information, and type of equipment contractor," he says. "Contractors are assigned work much like any in-house maintenance staff member." Plant and maintenance managers can use the software to analyze a contractor's workload, related costs, hours, and late or overdue repairs.

Another idea would be to use the system to help to manage contractors based on the maintenance aspects they're performing and entering data on, suggests Azima DLI's Van Dyke. "Various aspects of the software could be opened up to contractors, and you could assign portions of that management system to various contractors based on their expertise. For spare parts, you could assign an aspect of the software to a certain contractor."

If the software is divided up into logical sections, that could be used as a framework to determine which functions are needed out of contractors. "Use them to serve particular functions," says Van Dkye. "Split the team up based on the software needs, rather than based on historical needs of the plant."

The bottom line is that the software needs to be utilized differently based on the vendor or contractor, says Perry Nordh, manager, Lifecycle Services at Honeywell Process Solutions (www.honeywellprocess.com). "Most systems are inherently becoming more

complex and interdependent," he explains. "Finding a specific problem can require significant effort and experience in a complex system. Many users are now employing the IT Infrastructure Library (ITIL) — a framework for managing services in a consistent way. This framework is used hand in hand with remote services to help plants monitor and maintain assets, through the use of performance monitoring and fault models, in an effort to avoid or at least reduce the impact of any incident."

In many cases on-site maintenance and asset management software are not connected to the asset or process and are therefore driven by time schedules and usage information, explains Nordh. "As technology in sensors and algorithms improve, more systems and software are capable of raising a flag when maintenance is required, even strictly mechanical systems," he says. "It's critical for the contracted vendor to be able to provide information to the plant on performance along with any recommendations for improvement and optimization."

Data integrity

To be able to provide information, the contractor may have access to the software and a responsibility for the data that is entered. "In the U.S. Navy and in industry, shipboard automated maintenance management (SAMM) is utilized," explains Azima DLI's Van Dyke. "It brings together information on spare parts, personnel, and maintenance into one package," he says. "Each one of those aspects is managed by a different entity, often contractors. In those cases, you rely on having the highest quality of contractors with integrity in their specific fields to do the right things. It's a matter of selecting the right contractor and ensuring these contractors stay within a certain scope of inputs."

Giving the contractor a list of items they're allowed to input in a comments field is one method. "Or restrict them to a dropdown list of fields to limit what they can supply," says Van Dyke. "If you're a plant manager and you want your database to have integrity, you really have to have contractors with integrity. Hire contractors with good personnel control and quality control."

6 steps to completion

Use your asset management software to streamline maintenance operations related to contractors, says Paul Lachance, chief technology officer at Bigfoot CMMS, who recommends this six-step process with his company's software.

- An employee submits an automated maintenance request detailing a problem with an asset. If known, that requestor can even indicate which person or contractor should be notified of this issue, and the request is converted to a work order (WO).
- A maintenance technician evaluates the problem, determines that the work should be outsourced to a contractor, and reassigns the WO to the organization.
- Emails are routed to the contractor and originator of the request with detailed information on what needs to be done. In some cases, the contractor can review the ticket through the software.
- As work progresses, status updates are disseminated to all appropriate people inside or outside the company.
- Eventually the WO is completed, verified and closed.
- All work performed is archived by asset repaired and contractor work for historical analysis and reporting.

In many cases, the initial PM can be directly assigned to the outside contractor if they are a trusted vendor, agrees Bigfoot's Lachance. "All work should be associated with the most accurate person of record, regardless of whether they're in-house staff or outside contractors or vendors," he says. "If a PM ticket is generated on an asset every month, it can be associated with a specific staff member, a manager, or even a team, responsible for that work and then reassigned to an appropriate in-house or outside contractor."

Giving contractors access to internal systems is a good idea for two reasons, explains IFS's Auer. "First of all, as you plan maintenance work for three weeks out, if your contractors have visibility of this in your system, they can be informed of the upcoming work, schedule their people, and ensure that they have the right tools and materials available," he says. "If they're seeing that rolling schedule, they can be responsive to your needs. This also reduces the amount of time necessary to manage those outside contractors by phone and email. Moreover, if the contractor can report work activities directly into your system, you're getting real-time updates of work completed, and that eliminates the delay that results when the contractor enters the data in its own system and the data flows through reporting mechanisms within that contractor environment and back to the manufacturing maintenance team, which then has to enter that record of work back into the EAM, ERP or CMMS. That repeated entry is wasteful and increases the likelihood of mistakes."

Real-time data also can allow for tighter coordination between the contractor and internal maintenance staff or with other contractors working on that asset, says Auer. If an organization uses contractors, the work they perform needs to be analyzed and balanced alongside in-house maintenance staff — a function a CMMS can offer.

The maintenance planning and procedures built in to the preventive maintenance tool are based on a best practice for each specific piece of equipment and extend the life and trouble-free operation of each asset, explains Honeywell's Nordh. "The challenge is how a plant tracks this information if they don't contract. Self-maintaining plants must assign workers to be trained in the best practices through training courses, travel, and perhaps even hiring consultants. All of these best practices must then be manually entered into the local maintenance system." Regardless of whether a contractor is in place or not, plants still need to ensure the appropriate maintenance activities and procedures are in place, says Nordh. "If a plant has contracted out maintenance services, the contractor should be able to provide weekly and monthly reports of what was done, corrective maintenance that had to be carried out, deviations from the best practices and reasons they were performed," he says.