

CMMS: It Takes a Whole Plant

Written by Mike Trimberger, Mirro Co.
Sunday, 01 June 1997 14:12

On the third try, cookware plant gets CMMS up and running, and increases overall equipment uptime to 95 percent. Their sights are now set on 97 percent.

Before the Mirro Co. became serious about using a computerized maintenance management system (CMMS), our maintenance department was the world's greatest fire department. We continually moved from one fire to another, never really getting a handle on anything, never able to get ahead of the game. In spite of working tremendous amounts of overtime, we never seemed to catch up.

The push to automate the maintenance function came from top management several years ago. Unfortunately, not everyone concurred with the idea, and the necessary effort and money were not devoted to the project. No one understood the implementation process the amount of work involved, the time required, the commitment needed. When management tried to revive the maintenance computerization effort, we got half way up the hill again and determined that it was easier to fight fires than to combine fighting fires with pushing the preventive maintenance (PM) program uphill.

With my transfer from engineering into the maintenance department, one of the first things we did was to review the CMMS efforts. It was clear that the previous efforts failed for two reasons. First, the program's intent and importance really had not been explained to everyone. As a result, no one understood what it was supposed to accomplish, how it was to be accomplished, or what the benefits might be. Second, it would require far more work in the short term to institute the programs, databases, and procedures than anyone previously had anticipated.

Mirro already had invested in the Eagle Expert Maintenance Management system for Windows (WEMM). We rejected taking the "clean start" approach to computerizing maintenance management. There was neither the time to investigate the features and benefits of the many programs available, nor the confidence that management would invest in another system when we already had one. Upon examination, WEMM appeared to be user friendly, and it presented on screen all the information we would need. It had sufficient reporting capacity, and by adding the Crystal reports feature we could customize our reports.

Top management received a briefing re-emphasizing that this program, once implemented, would save the company a tremendous amount of time. That implementation, however, would

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entail an inflated overtime budget and perhaps other expenditures. Not only would we have to continue performing regular maintenance activities, but at the same time we'd have to gather data, build databases, learn how to use the CMMS, and begin using the system in parallel with our daily responsibilities. In other words, everyone would have to be committed to the effort and recognize the challenge ahead of us.

There was another faction, however. Although the "buy-in" moved the program ahead more easily, people on the floor still expressed discouragement. The constant pressure to fight fires, and also to implement new or revised procedures and guidelines, prompted criticism from the mechanics centering on our potential inability ever to "see the light of day."

Initial goals

After the two previous false starts, the only goal we set for ourselves was to get the system up and running and to use it consistently. Establishing the process was the only goal; management reports or justifications would follow naturally. We needed to concentrate on the foundation. We couldn't let ourselves fall behind in the gathering of history, because we had no history on any equipment except that in the heads of the mechanics. If you didn't know which person had the knowledge, you couldn't get it. Now, everything our demand maintenance work orders, our PM work orders is entered into the system. When we need to know something, we can search by date, equipment number, or department.

Our first priority was building a history file. Next we would begin equipment PM to get ahead of the process. We knew it could be several months to a year before we would realize significant results from the efforts; it took about a year and a half. By then, however, we had enough history to set further goals.

The first signs of real progress came many months into our third restart. The tedious start-up tasks of entering history and closing work orders began yielding sufficient accurate history for tracking events. We produced our first CMMS graphs, showing the number of monthly PM tasks. One process we had initiated and were tracking a "PM Save" program showed impressive, immediate results. Under the PM Save process, whenever a mechanic performs a PM and finds a situation requiring more than half an hour to repair, that is considered a PM Save. It may have saved that amount of time from production the following day or in the future, if the event might have caused a breakdown during a production run. Tracking PM Saves quickly highlighted the potential results through our CMMS efforts.

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The real goal

Having accurate maintenance history then permitted us to set the real goal: to reduce No. 1 priorities by 10 percent during the following year. That goal was to raise overall equipment uptime from 90 to 95 percent, and ultimately to 97 percent. Today, after reaching the 95 percent level, our sights are set on 97 percent.

Retained history

Mirro's CMMS tracks maintenance requests and issues PM work orders for about 1675 pieces of equipment throughout the complex. Other locations also use the WEMM system, but the sites are not integrated through client/server technology or any other communications capabilities.

In addition to the plant-floor manufacturing equipment, the CMMS tracks other ancillary, facility-related items like blowers, makeup-air systems, air conditioners, fans, and heaters.

Computerization gives us the tool to take the maintenance program to the next step. In the coming year, our own maintenance personnel will be available to start a vibration analysis program. This work previously was performed yearly by an outside contractor.

Our staff will also conduct steam trap surveys, using an infrared thermometer to indicate when traps are open or closed. Although yearly surveys were worthwhile, a functional steam trap might fail the day after the survey. Then it might remain nonfunctional for 364 days until the next survey. Now we have time to perform the survey routinely, regularly. The CMMS notes the time for each trap's survey and prints the work order directing personnel to check that steam trap.

A balancing process

For maintenance purposes, the complex is broken into segments consisting of various machinery classifications. Within each classification such as that for the nine large automatic washers, each of which is 120 ft long we stagger the PM tasks so they do not all come due in the same month. The plant's nearly 8 miles of conveyors are handled similarly. The CMMS issues about 300 monthly PM work orders organized to present a consistent routine. Each month we try to balance the number of PM hours on conveyors, washers, and nine enormous ovens, each also about 120 ft long.

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The two-building, original facility was built in the early 1960s as a stamping department and a finishing department. To connect those buildings in 1982, a 900 x 60 ft addition was built, and it also became a manufacturing facility. Today it is home to the washers and some ovens. Another 110,000 sq ft, added in 1989, provides a complete manufacturing facility from stamping through packaging. Most recently Mirro added another 115,000 sq ft facility that has the added capability of applying an exterior coating to cookware.

Within the CMMS, each facility is identified as a department. Reporting is possible by department, equipment type, or any other delineation. For example, all washers have a common asset number, and we can search for all the washers using that number. Then we might study these histories to identify any recurrences across the asset type. This capability simplifies identifying probabilities and improving the PM cycles and procedures.

The primary CMMS report used is the Demand Maintenance Work Order Report. Using the PM history file, we also report the average hours to complete both mechanical and electrical jobs. Another report tracks the PM Saves hours. Uptime statistics are available on line from another computer system, through a company-wide network that integrates various computerized applications.

The integration is the result of efforts of the information systems department and an outside vendor, Bearing Headquarters of Chicago, which supplies our storeroom inventory management system, B.Dot. The CMMS currently is being linked to that storeroom management system. At the same time, the maintenance area is being remodeled. Tools will be kept in the stockroom. Then the storeroom can anticipate maintenance's needs for tools. When a PM work order comes up, a copy will be sent directly to the storeroom and the necessary tools will be gathered and kept ready for the mechanic.

Determining maintenance intervals

The regular issuance and closure of PM work orders builds the necessary foundation to review and revise PM routines. By periodically reviewing them, we might find, for example, that frequently nothing needs attention. When that occurs routinely, we extend the PM interval by 2 weeks. After several cycles, if we see the same results again, we might push out the cycle another 2 weeks. Eventually we should notice maintenance needs beginning to occur, and we can leave the cycle as is. If we see things continually happening, needing lots of work, we can shorten the cycle by 2 weeks. Actually, we are just getting a feel for the process and are using this iterative process to help arrive at a good procedure.

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It may be a hackneyed phrase, but especially with good software, what you gain from it will be commensurate with the effort you put into it. Like a good CAD/CAM or spreadsheet program, plant and manufacturing software must be viewed as a necessary tool. It must be clear that using and understanding this tool is part of the job description, the performance appraisal process, and the ongoing training requirements.

Because CMMSs function increasingly better as their history databases expand, the uphill effort seems tedious and unforgiving. Only when the peak is reached will some employees begin to appreciate the downhill aspects. Fortunately, that also is the time when the financial, productivity, and reporting aspects of a good CMMS start revealing that the results are worth the efforts. **MT**

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