

Production vs. downtime

What is your plant's "Fault Tolerance" level? Fault Tolerance is rated by operational percentage of up-time vs. downtime. What can and should you be doing to create a larger percentage of Fault Tolerance? What does it cost to have your system or parts of your system down for an hour, a day, a week? What is your standard acceptable downtime in a day, week, month, and year? Does your downtime exceed your standard?

In recent years, this industry has seen a new wave of automated technology. Faster production times and fewer FTEs are not luxury items, but necessities in this competitive environment. With automated technology and tracking have come added responsibilities for the maintenance personnel. That's why maintenance managers are looking for ways to improve the efficiency and production of their maintenance team, cut costs and ensure a greater effectiveness

The direct approach

Maintenance Activity Tracking is a data-collecting tool designed to gather the information you need to manage your staff time and equipment costs. It is a very direct approach: you put the yellow brick road within the software, and this gives a path to follow the same way, which yields the same form of report each time. Analyze this data and you have your answers.

Today's surge of automated equipment—especially when mixed with equipment that is very old (compared to current standards)—can cause maintenance people to pull their hair out! Putting out fires is not a good way to run a plant. Without a software tool, the complexity of equipment, the increasing staff cost, and the need for measurements can overwhelm the current maintenance methodologies used by many plants. Under such conditions, it is difficult, if not impossible, to improve productivity or maintenance plans to help reduce downtime. Preventive maintenance software programs are an important tool for cutting costs.

Cost of Ownership: The Value of Maintenance Activity Tracking and Verification

Automated systems upkeep maximizes washroom productivity—while minimizing downtime

By Jean Bartelt

of their maintenance plans. So what is the maintenance plan to keep you up and running, and meeting your standards?

One switch

With the long-term goal of being a fully automated, "one-switch" operation, we could reach Nirvana! But when the "one switch goes out," you are not just down; you are down and out. Kind of reminds you of the feeling you get when looking for the one bad light bulb on a long string of Christmas lights and after you've checked them all, it still doesn't work. But you can't just go buy new equipment, and you can't afford to be down.

Scheduling, measuring, verifying and tracking maintenance data

Laundry operations have a significant amount of capital invested in equipment that is critical to the production process, and they have a maintenance staff that is responsible for sustaining that equipment. The investment in equipment reaches into the millions of dollars, and the maintenance staff may have a budget in the hundreds of thousands in the costs of labor and repair parts. Yet there is often no way to quickly and accurately measure equipment performance and maintenance standards that would point to the fault tolerant solutions for the automated systems.

To show how these software tools work, we will use examples from **PM Plus Preventative Maintenance Software**, which was developed specifically for the textile maintenance industry. **Note:** This software is industry-specific because a lot of equipment used in plants today are already entered into this system, including most of the major brand names.

PM Plus provides detailed information in the following key areas:

- Equipment maintenance history
- Equipment operational history
- Spare parts inventory
- Spare parts usage
- Maintenance staff utilization

The information gathered by PM Plus works as a tool for you to use in answering the following questions:

- How much total downtime occurred last year? Due to what?
- What pieces of equipment experienced the most downtime?
- How long was production impaired due to equipment breakdowns?
- Do you have the right level of maintenance staff?
- Is your equipment being maintained properly?

- Do you stock enough of the right spare parts?
- Do you have the correct information to implement a planned parts replacement program?
- How will additional equipment affect the workload of your maintenance staff?

An important consideration for any software purchase is the value that its use adds to your business in terms of increased efficiency or the ability to supply information that will allow you to make educated changes to your processes. The value of Maintenance Activity Tracking is in the information it will provide. It measures, so you can better manage.

PM Plus was designed for easy use. Here is a walk-through of



the initial setup and use:

Entering data

PM Plus's maneuverable structure and automated data entry screens make setup easy. Simply enter the customer, equipment, repair parts, personnel and frequency information, and you are ready to begin using the program.

One of the many advantages of PM Plus is that there is very little data entry required after the initial setup procedures. Once the support files are set up, you can begin using the features of the maintenance menu for daily operations. These features include automatically generating batches of maintenance work orders based on frequency schedules, manually creating individual work orders for breakdowns, assigning parts and personnel, and closing work orders.

PM Plus user walk-through

Work orders are pre-scheduled and printed (if desired) before maintenance personnel arrive for work in the morning. Handheld units can be incorporated, if desired. The maintenance department manager will assign certain people to certain tasks, depending on levels of skill and certifications.

As maintenance tasks are performed, the maintenance person

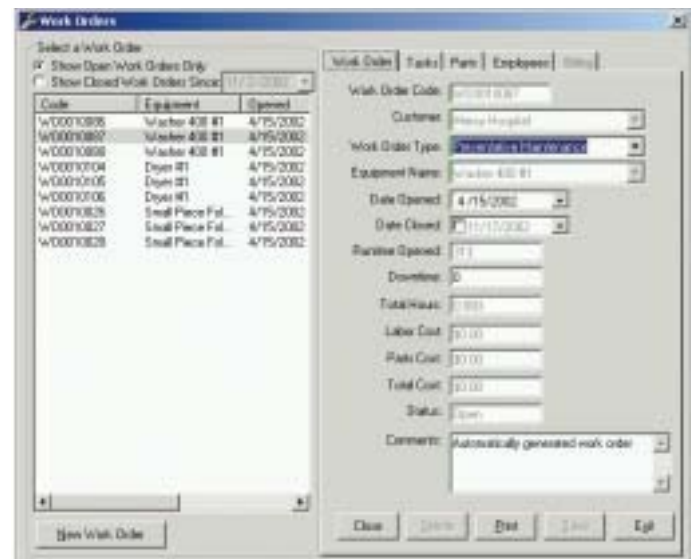
fills out the work orders. The information to fill out on a work order includes:

- The person performing the task
- The date the task was performed
- The number of normal, overtime or double-time hours required to complete the task
- The parts used
- Any comments the person deems relevant

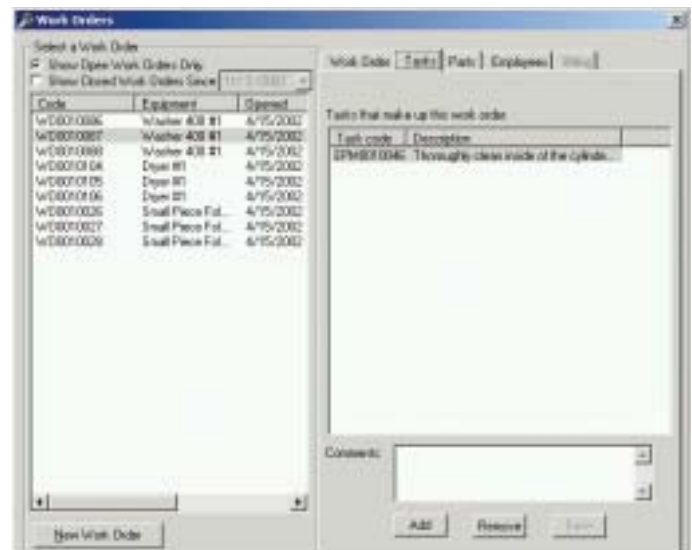
After all work orders are turned in for the day, they need to be closed in PM Plus. To close work orders in PM Plus:

- Select Work with Work Orders from the EasyPath window
- Select the work order you want to close from the list

On the Work Orders tab:



- Enter the date the work order was completed
- On the Tasks tab:



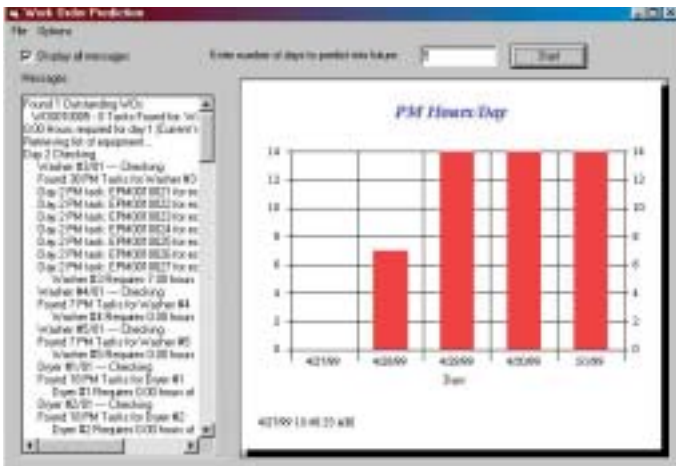
Plant Maintenance Software

- List of all repair part suppliers
- Work orders pending
- Cost of preventive maintenance
- Time spent in preventive and breakdown maintenance
- Downtime of equipment

PM Plus provides invaluable graph reports for management, allowing them not only to analyze patterns in costs and downtime with closed work orders, but also to schedule staff and control production flow. PM Plus's unique graphing feature includes a work-order prediction graph, which allows users to forecast future work based on past trends.

It isn't always easy to see patterns in printed lists of data. That is when the advantages of graphs are most obvious. By pictorially putting the numbers into perspective, graphs can be used to better identify trends, and to view subtle strengths and weaknesses over time. This graphing capability, along with many other PM Plus features, helps managers do a better job of reducing downtime and maintenance costs, as well as aiding in management presentations.

Now that we have seen how the program tracks the information, let's go back to the basics and discuss the real value of this information. The real objective is insight, not just numbers. We must



focus on the causes of our maintenance costs. Why did the equipment experience the amount of downtime it has over the past year? Was the manufacturer's suggested preventive maintenance schedule appropriate, or would modifications to that schedule help to

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improve its efficiency by reducing downtime and extending the life of the equipment? The equipment's age can have a significant bearing on frequency of PMs.

If you are able to review maintenance history, you can identify areas of high maintenance cost and analyze the efficiencies of your staff by comparing estimated maintenance times with the actual

time to complete a task. Then you can set baselines. The ways this information can be used to improve operations and reduce costs are limited only by your imagination and business process.

Of course, progressing to this stage requires monitoring of data over time. By collecting data consistently and regularly, you are able to calculate averages (means) to establish a baseline for main-

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tenance and labor costs. Also by having a range (a set of both low and high values), you are able to investigate why the variances have occurred. For example, if the average annual cost to maintain a piece of equipment is \$2,000 and the range varies between \$1,200 and \$4,000, you can investigate the periods with lower costs to find out what was done differently than at the higher end of the range. Then you can establish a new set of processes (i.e., a new preventive-maintenance schedule or new standardized supplier for parts) to try to reduce the baseline cost across the board.

You can follow the same process for actual maintenance times in order to ensure the effectiveness of your maintenance personnel. In many cases, you will find that variances in actual time to complete tasks can be attributed to a lack of training. One of the best ways to increase the productivity of your maintenance staff is to invest in their training. With the automation boom, new technologies have stretched the traditional qualifications needed for these positions. Many of these new systems are run by programmable logic controllers (PLCs) and software systems. The maintenance team needs to be familiar with how to troubleshoot and maintain these components.

The preventive maintenance software program should not be seen as merely a monitoring device. The information collected has many possible uses that can lead to a more efficient, productive and cost-effective operation. The key is to use the data continually to improve the processes over time.

Automated equipment has given operators the ability to improve their productivity and profitability, and the maintenance of these systems is paramount to the operation. The same importance should be placed on the automation of processes such as plant maintenance. Preventive maintenance software provides a powerful tool to manage and control operating expenses. **TR**



Jean Bartelt is sales coordinator for Automation Dynamics LLC, Independence, MO. Contact her at 816/461-8989 or e-mail jean@datacom.com.