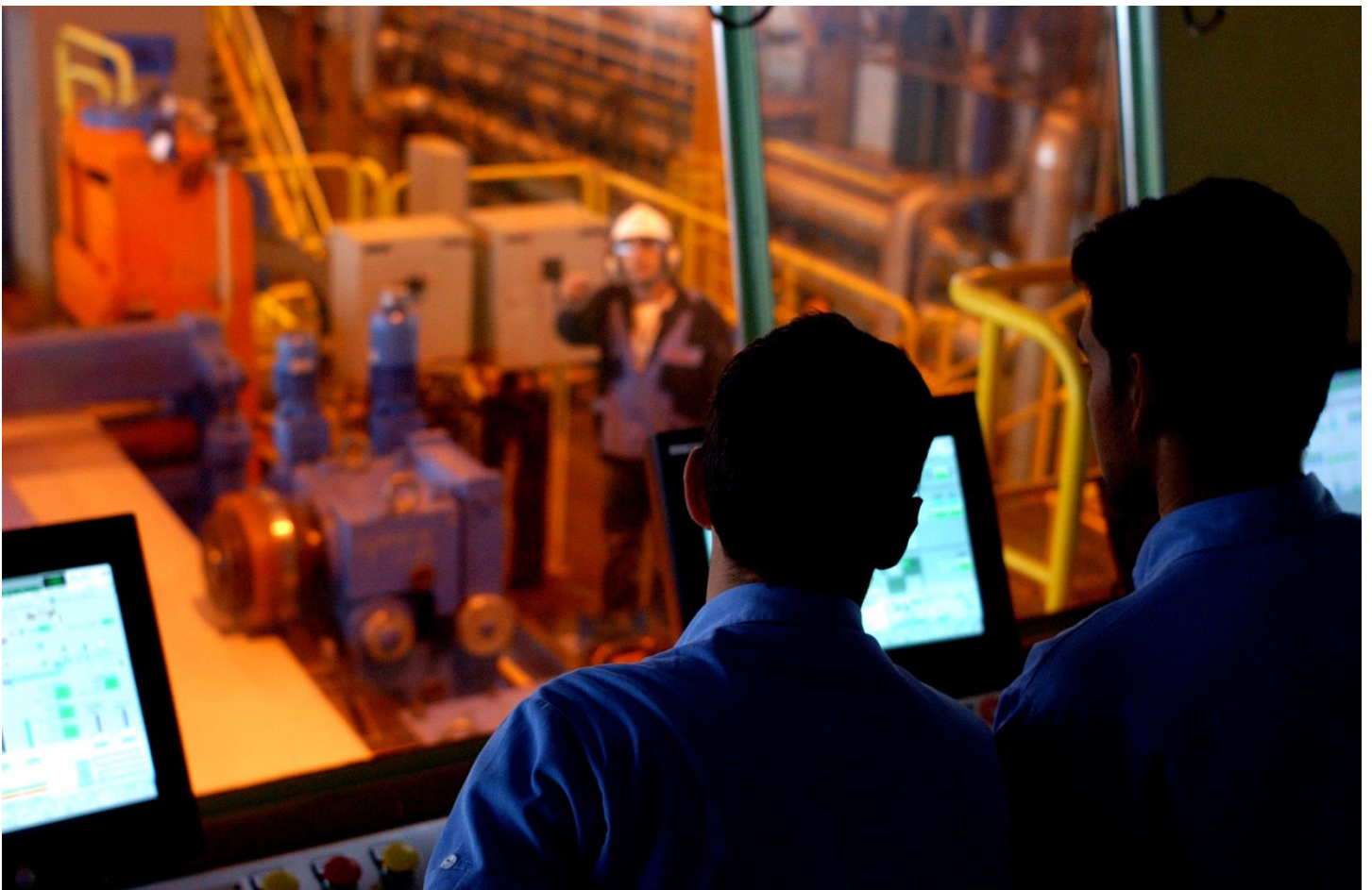


Increase Equipment Uptime Through Robust Enterprise Asset Management



With economic and market pressures from both domestic and international competition, manufacturers need to maximize their asset performance and control their maintenance and operations costs. Even if your company is not operating at full capacity, your equipment needs to be available to meet customer demand with high quality products and on time delivery. Whether you operate in the Food & Beverage, Chemicals or other Industrial sectors, ensuring the availability and maximizing the capacity of your assets is critical to success. Many assets are also part of more complex and larger networks of equipment, and appropriate maintenance may rely on efficiently managing shutdown projects and/or remotely identifying asset health and condition. The Manufacturing industry must also operate and maintain their assets to the highest standards to ensure Environmental, Health and Safety (EH&S) compliance, and their asset management programs are critical in supporting those key efforts and initiatives.

A robust Asset Management system will help organizations in all sectors of the Manufacturing industry with specific needs while maximizing asset performance. You should implement a Computerized Maintenance Management System / Enterprise Asset Management (CMMS / EAM) solution that will help you:

- Maximize asset performance through analytics and dashboards that quickly show KPIs, including the health of your assets, maintenance costs, equipment availability and performance, with drilldown capability to spot areas of concern and quickly assess proper corrective actions
- Manage maintenance costs through effective work planning and scheduling, easy review and approvals of work orders, projects, integrated spare parts inventory management and streamlined online vendor catalog requisitioning and purchasing that leverages your organization's negotiated pricing
- Improve operations by analyzing equipment breakdown information, tracking PM program compliance, facilitating planned maintenance and improving communications between maintenance and production personnel
- Ensure regulatory and EH&S compliance through comprehensive event tracking and manage follow-up activities from events, such as safety audits, accidents, emissions and spills
- Pre-plan work for shutdown activities, conduct “what if” scheduling scenarios and handle shutdown material requirements, including long lead time items with integrated purchase order tracking software

Having a well-organized approach to maintenance execution will help you avoid unplanned downtime. Arm your workforce with the proper tools, procedures and instructions so they can perform work safely, effectively and efficiently. By implementing a robust Enterprise Asset Management solution, designed for the Manufacturing industry with maintenance best practices, your company can achieve increased equipment uptime, and your workforce can:

- Execute up to 30% more work with the same staffing level
- Optimize your maintenance backlog to facilitate planning and scheduling
- Increase equipment reliability 30% - 50%

Your Approach to Maintenance Will Change Whether You Manage It or Not

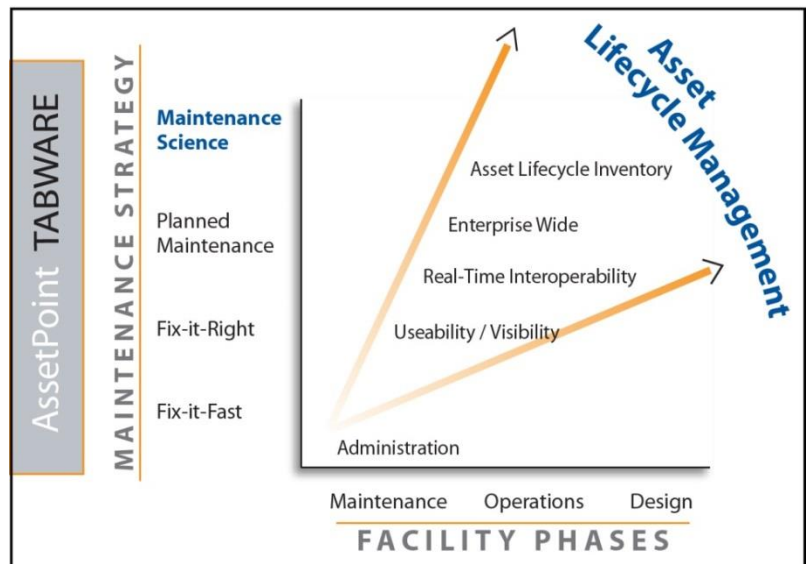
Doing Nothing Will Cause Changes

Increasing demands on your maintenance staff raises stress levels and opens the door for short-cutting, hurried work and increased overtime. The result can be catastrophic. While it may be appropriate for some equipment to run to failure, your maintenance strategy should be a proactive one. When the maintenance team is constantly reacting to equipment breakdowns, they typically cannot spare enough time and attention to PM's and proper procedure-based maintenance. Today's neglected PM's become tomorrow's emergencies, and this process leads to a more and more reactive environment. You must focus on maintaining your assets and performing the right maintenance tasks at the right time.

Use a Light Reliability-Centered Maintenance (RCM) Exercise to Set Strategy Quickly

If you have not already, you should consider a light RCM exercise to set the appropriate maintenance strategy for each piece of equipment.

Reliability Engineering is the applied science of understanding how asset health deteriorates, efficiently identifying and detecting failure modes and then mitigating the impact on production. A healthy asset delivers its required function and is expected to meet the needs of production without interruption.



Use Criticality to Drive Maintenance Strategy

Starting with your entire list of equipment, assign a criticality rating to determine where to focus your RCM methodology. Criticality studies should include evaluating equipment in regards to the following (at least):

- Environmental, Health and Safety (EH&S)
- Production impact
- Maintenance costs

Equipment Criticality should have enough granularity to help effectively manage your maintenance backlog. Criticality rankings of 1, 2 and 3 will not help delineate a backlog of hundreds of work orders per week; however, a simple 1, 2, 3 rating scale may help quickly determine where to perform an RCM variant or Failure Modes and Effects Analysis (FMEA).

Once failure modes are identified for critical assets, it is time to evaluate your PM program. Are your PM tasks adding value? Could the failure modes be detected by production personnel or an automated system? Could the failure mode be negated through proper SOP's? Is the PM task capable of detecting or preventing known failure modes? Is the PM task regulatory in nature? If the answer to the last two questions, key questions that should drive your PM program, is "no" the PM task should be eliminated.

Consider Predictive Maintenance (PdM) techniques to provide early detection of failure modes and to identify the root cause of the defect. Where appropriate, some assets may be left in a "Run-to-Failure" maintenance strategy; however, "Run-to-Failure" should be a decision based on the asset assessment, not neglect in appropriately operating and maintaining the asset. Your PM program should address specific failure modes of equipment with inspections, wear part replacement and early detection of pending failure.

Normalize Your PM Program for Critical Equipment

Beginning with the your most critical equipment, do a brief review of their PM programs to understand what is being scheduled, how often and why. Look at the equipment failure history (if you have it) and adjust the PM frequencies accordingly. For equipment with a history of failures, reduce the PM intervals to less than the failure intervals (MTBF). Analyze failures to identify the root cause and develop procedures and processes to mitigate the underlying cause. RCM methodologies or an FMEA to assess failure modes of specific assets should be used to establish PM tasks. RCM and FMEA have been proven to reduce or eliminate equipment failures over time. *Research has proven that only 10%-15% of all equipment failures are age related.*

Re-prioritize and Re-sequence Your Existing Work Order Backlog

Armed with Equipment Criticality Ratings, review your existing work order backlog and insert the criticality rating for the equipment on each work order (keep in mind that a good CMMS / EAM solution will do this automatically when the equipment records are updated). When all of the work orders have Equipment Criticality Ratings, sort and group the backlog by equipment criticality. You can then assess work demands relative to equipment criticality and assign appropriate work priority. This approach quickly provides you with a focus on the most important work to pursue. Also, consider the risk of not performing certain work in order to help adjust priorities.

Plan Your Work and Work Your Plan

All work is planned in one fashion or another. Even when equipment breaks down, the work plan is created on the spot (in-situ) with parts, tools, procedures and skill requirements determined, located and then brought to the point of performance. This is most inefficient, and time is wasted in determining what is needed, the correction process to follow and then traveling to various locations (such as storerooms and tool lockers) to secure the needed items. And, because the job wasn't planned with adequate lead time, materials and other resources may not be available. Production is being lost during all this time.

Review your work order backlog and be sure there is a job plan (skills, spare parts, tools, safety and work instructions, Lock-Out/Tag-Out, permits and protective equipment) specified for each work order. If your work backlog is huge, then start with the highest priority work orders and proceed downward as time permits. Taking the time to assess the job plans can save you over 50% of cost and time to execute the work, so this is a critical step that you should not ignore. The gain in work efficiency means more wrench time. With limited resources, increasing wrench time is the most effective way of offsetting reduced staff. Effective planning, with a dedicated planner, can increase wrench time by as much as 50%.

Corrective Work and Breakdown Response Work Can Be Planned

For your critical equipment, you can pre-plan the work, integrate spare parts and material needs with inventory and schedule your resources. This removes travel time, ensures the proper parts, tools and skills are brought together with safe maintenance practices and procedures at the right time to do the job efficiently. Pre-planning work is a major improvement factor in eliminating time delays and improving wrench time.

How Do You Plan for Breakdown Response Work?

Identify the failure modes of your most critical equipment, and then pre-plan what you need to do for each failure mode including parts, tools, skills and safe procedures to follow for effective restoration. Your Asset Management system should be capable of storing these job plans for quick access when breakdowns occur. For equipment under the control of process controllers, PLCs and/or condition-based monitoring, you should be able to receive alarms and alerts. Alarms and alerts should provide an alarm code, the equipment asset number and type of alarm along with other pertinent information. The alarm code should be cross-referenced in your Asset Management system so the pre-planned work orders are issued with pick lists automatically printed in your stockrooms. Alarm code interfacing to work management will allow faster response in an organized fashion with accurate information.

Pre-planning breakdown response work takes time but is well worth the effort. Today's documented reactive work can provide a starting point for pre-planning your future responses. Over time, you can determine the most frequent failure modes and have plant engineering look at designing changes to reduce or eliminate them. Obviously, it's far less expensive to prevent failures than to respond to them, so as you are working your job plans, take some time to see what you can do to detect and prevent failures and update your PM program accordingly. *It's much less expensive to prevent failures than to respond to them.*

Work with Production to Set Schedules

Now that you have a clear idea of the work load and identified the overall sequence, you need to work with production to match their needs with your work backlog. What good is all of your planning if production will not release the equipment to you? You should meet with production weekly to go over your work order backlog and agree on what work is to be performed, how long it will take and when it is to be done. Prior to the meeting, assess the work you can do with your available resources compared with the requirements from the job plans in your backlog. This will give you a clear picture of what work you will be

able to accomplish when meeting with production, and keep in mind that some work may have to be delayed as resources are allocated to more critical work.

The schedule should be treated as a contract between maintenance and operations with operations agreeing to make the equipment available for a specified time and maintenance agreeing to perform the work within that time frame. If you are experiencing breakdowns, allocate a percentage of your available labor to handle those breakdowns, but still be sure to accomplish the scheduled work

Arm Your Staff with Better Tools

In order to improve productivity, you need to give your staff the tools they need to do their jobs more efficiently and effectively. The use of tablets and smartphones allows technicians to receive their work orders, in the sequence you specify, wherever they are. They no longer have to go back and forth to the maintenance office to get work orders and turn in completed work assignments. Also, they can eliminate travel to stockrooms to check spare parts availability, fill out an issue request, wait for the stock keeper to find and issue the material and then travel back to the job to begin work.

By using tablets and smartphones and implementing a simple delivery process, maintenance technicians can create issue requests from their location, and the inventory technicians can get the material to the jobs quickly. You can even change assignments immediately when break-in work is required. Your existing maintenance staff can improve their productivity by 10% or more by using tablets and smartphones to receive and complete their work assignments. For a 50-person staff this could mean an additional 37 hours per day.

Aside from giving your staff anytime, anywhere access to their work orders, using tablets, smartphones and the latest technology in your maintenance operation provides an incentive to attract new employees when hiring. It is a fact that there are not enough young college or high school graduates entering the maintenance workforce to offset attrition of our aging maintenance workforce.

The Latest Technology for Asset Management

TabWare CMMS / EAM is designed for quick access to any function with information integrated between Maintenance, Operations, EH&S, Inventory and Procurement. With roots in the Manufacturing industry, TabWare helps customers maintain their vital assets that are crucial to production uptime and avoid complicated, costly and catastrophic equipment failures. TabWare was designed by maintenance professionals with extensive experience working with major Industrial organizations and uniquely combines robust functionality specific to the industry with configurability, ease-of-use and advanced technology.

AssetPoint's TabWare CMMS / EAM solution supports reliability and maintenance process improvement by providing historical data, helping control maintenance practices and providing business intelligence through TabWare Analytics. AssetPoint understands that to be effective, maintenance organizations need quick access to critical information in order to perform tasks effectively, efficiently and safely. Integrating incident tracking,

permit requirements, material safety data sheets and other EH&S concerns with your adopted reliability and maintenance strategy can lead to significant, sustainable cultural improvements.

AssetPoint has extensive experience in providing CMMS / EAM solutions to customers in the major Industrial sectors. [Visit our website](#) to find out why leading Manufacturers depend on TabWare to keep their assets up and running.