Machinery Management Solutions INC.

Healthcare for production machinery

Maintenance Improvement

By: James W. Taylor

7724E 1100N | Clarks Hill, IN 47930-9728 | 765.324-2302 | info@machineryhealthcare.com | www.machineryhealthcare.com

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Maintenance Improvement

Every plant should have a maintenance improvement system. In this system, the history collected is used to identify areas where maintenance can be made easier and cheaper. Unneeded maintenance or additional needed maintenance is identified. Additional training requirements, changes in logistics requirements and potential equipment redesign or modification are other results of analysis of the history. The review should not be limited to large, costly or politically visible failures. Clusters of failures should be sought out. Often several minor failures can cost as much or more than one large failure. Looking for clusters of failures and eliminating their cause will pay for itself quickly.

A maintenance improvement system should include several separate but related parts.

Planned Maintenance Optimization

Planned maintenance optimization is a formal program to review the effectiveness of the Planned Maintenance System. The review should identify those machines with too much or too little preventive maintenance (PM) or predictive maintenance (PdM). It should assess the effectiveness of the planned tasks and recommend added tasks if needed. This review will tell management where they should apply more expensive techniques such as Reliability Centered Maintenance, condition monitoring, machine modification and others.

Precision Maintenance

Precision maintenance denotes a high level of skill and training of the crafts. Such things as use of standard procedures for bearing replacement, correct preparation of foundations before setting equipment to prevent soft foot, and using vibration to verify correct installation are examples. It also encompasses using tighter tolerances than is normal. When balancing, take the little extra time to make an extra run — it will pay off in increased bearing life. Precision alignment to increase seal life, strict cleanliness to avoid later problems because of dirt, and extra care in seating surface preparation are other examples. Analysis of the history will also show where the training dollars should be spent.

Maintainability Improvement

Maintenance tasks should be reviewed to determine those that take a long time to do or that require large manpower expenditure. These tasks should be investigated to see if there are changes that can be made to make the task more economical. These might be procedures changes, special tools or jigs, or modifications to the machine. All of these improve the maintainability of the machine. Better maintainability means the machine is cheaper and safer to maintain and less problems are introduced while doing maintenance.

An example might be tasks requiring periodic checking of gear tooth wear on a gear set. Because of equipment design, the job takes three men (two mechanics and an electrician) 4 hours, a total of 12 man-hours. They have to remove an interfering motor and rig a cover plate off the casing. By installing an access plate in the gear casing, the job can be done by one man in 30 minutes.

Equipment Improvement

A history of frequent failures of a machine might lead to a design change to eliminate the problem. For example, review of the history reveals that maintenance is called several times a week to un-jam

product on the conveyer feeding the wrapper. The product is getting cocked, and following product shoves it into the rollers. Engineering redesigns the guides to prevent the cocking, eliminating the problem. The increased production and reduction in off quality product more than pay for the modification.

Logistics Improvement

The spares usage should frequently be reviewed to assess the adequacy of the spare parts allowance list (SAL). Parts may no longer be needed because of changes to the equipment, stocking levels may need to be adjusted because of usage, additional parts may need to be added to the SAL. History can help identify parts that should be vendor stocked, vendors who are not responsive either in timeliness or quality of parts, and parts that have a high failure rate and should be substituted. Incidences of not having the proper tools, drawing or manuals will also be identified by history review. Correction of these problems will reduce the delay before the repair can start, which means less lost production and more sales dollars.

New Equipment Selection

The best plants will monitor the life cycle costs of their equipment. As your equipment ages, there may come a time when it is more effective to replace it with new than it is to continue to repair it. A recent study by Eastman Chemical Company showed that maintenance costs can be as high as 50% to 75% of total life cycle costs. A good machinery history will give you the information needed to make an overhaul/buy decision.

Summary

You put a lot of hard work into maintaining your equipment and repairing it. Why not put some effort into making that job easier and cheaper to do. By using your history, you can find opportunities to improve equipment reliability, reduce maintenance costs and improve job satisfaction.