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from specialty «Mechanical Engineering»

Discipline RT 4319 «Repair technology»

Module AP 9 «Production automation»

LECTURE NOTES

Topic 3 Designing a preventive repairment program

Valid failure data provide the intelligence for an effective preventive repairment program. After all, the objective is to prevent those failures from recurring. A failure reporting system should identify the problem, cause, and corrective action for every call. An action group, prophetically called the Failure Review and Corrective Actions Task Force (FRACAS), can be very effective for involving responsible organizations in both detailed identification of problems and causes and assignment of both short- and long-term corrective action.

These parameters and their codes should be established to fit the needs of the specific organization. For example, an organization with many pneumatic and optical instruments would have sticky dials and dirty optics that would not concern an electronically oriented organization. Note also that the code letters are the same, whenever possible, as the commonly used words' first letters. Preventive repairment activities are recorded simply as PM. The cause codes, which may be more detailed, can use numbers and subsets of major groups, such as all power will be 20s, with external input power ¼ 21, main power supply ¼ 22, and so on.

It is possible, of course, to write out the complete words. However, analysis, whether done by computer or manually, requires standard terms. Short letter and number codes strike a balance that aids short reports and rapid data entry. Use of the equipment at every failure should also be recorded. A key to condition monitoring preventive repairment effectiveness is knowing how many hours, miles, gallons, activations, or other kinds of use have occurred before an item failed. This requires hour meters and similar instrumentation on major equipment. Use on related equipment may often be determined by its relationship to the parent. For example, it may be determined that if a specific production line is operating for 7 hours, then the input feeder operates 5 hours (5/7), the mixer 2 hours (2/7), and the packaging machine 4 hours (4/7).

It is also important to determine the valid relationship between the cause of the

problem and the recording measurement. For example, failures of an utomotive starter are directly related to the number of times the car engine is started and only indirectly to odometer miles. If startup or a particular activity stresses the equipment differently from normal use, those special activities should be recorded.

Total Plant Performance Management (TPPM) and similar quality programs promote a holistic approach that includes equipment performance as a major enhancement to productivity. To reinforce the ‘‘five-fingered approach to effective repairment’’ outlined in Chapter 1, the fundamental thumb is elimination of failures. Uptime of equipment is what counts.

Maintainability and repairment are most successful if we don’t have failures to fix. Successful repairment organizations spend more time on identification of trends and eliminating problems than they spend fixing repetitive breakdowns. Computerized repairment management systems provide a tool to gather data and provide analysis that can lead to improvement.