

“Value added maintenance” a mixture of Predictive Preventive and Reactive Maintenance

Drives, electric motors, control logic's, process automations are the life line and productivity engines for almost all manufacturing industries, while maintenance professionals understand the untapped hidden value in such plant assets but they often lack a strategy to maximize their performance

- Er Pradip Kumar Banerjee



Maintenance however remains one of the few vital areas to decide product cost. Where ever a modest improvement can provide significant boost to the top and bottom lines, as well as the product quality.

The role of maintenance in maximizing uptime, reducing life cycle cost and increasing profits is well established globally. By implementing strategic maintenance approach throughout the life cycle, one can impact key performance indicators such as Return on the net assets (RONA) and overall equipment Effectiveness (OEE). This is the beginning of a new era where top line start rethinking for considering strategic maintenance as profit improvement plan. Turning maintenance into profit begins by evaluating one's current practices and defining goals.

Predictive maintenance approach –

Predictive maintenance involves monitoring the condition and operation of the equipment to assess whether the equipment will fail during some definite future period and then taking action to avoid the consequence of that failure. It is often practiced on critical process equipment and measured in terms of cost of avoidance.

An effective predictive programme allows industry to make necessary changes well before catastrophic equipment failure occurs. It often provides enough advanced warning of a problem that changes a corrective action can be done when they will be least disruptive to production. This helps in minimizing overtime cost and optimizes inventory lay allowing spares to be ordered and arranged well ahead of time to support maintenance needs. Over and above it prevents maintenance personals from the psychological pressure, trauma and agony they undergo due to failure of critical equipment. But this methodology works very well if maintenance team is properly trained and has adequate time to perform necessary groundwork to address the potential problem. The success rate also depends on having an integrated information enabled control architecture with intelligent devices capable of collecting and sharing the required data.

Predictive methodology is more expensive to implement up front. However if applied strategically on life line equipments where the failure can cause a halt to continuous process or impact adversely on final product quality – the actual cost is always substantially lower than lost production in terms of quality and quantity resulting from failure.

Preventive maintenance Approach –

Preventive maintenance is another approach, which is very commonly practiced in the industries. It is a time – based strategy where actions are performed on a predetermined, periodic basis to detect, prevent or mitigate degradation of a component or system.

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In a plant preventive maintenance activities are performed on a monthly, quarterly, half yearly or annual basis depending on the type of equipment, performance against specification, and operating conditions. While this approach can help reduction equipment failure and extend working life, increase mean time between failures (MTBF). But it is labour intensive since maintenance is done based on a preset schedule regardless of the condition of the equipment at that time.

This technique works well for capital-intensive equipment and production process. It works with the people who have the knowledge, skills and time to perform the required tasks.

Reactive maintenance approach

The reactive maintenance approach is one in which industry runs the equipment until it breaks. These are no routine maintenance tasks to perform and equipment is repaired or replaced only when obvious problems occur. Since industries do not incur any maintenance expenses until some thing breaks or fails to perform may look cheapest approach. The reality is that industries relying solely on reactive approach ultimately spend more time and money on maintenance due to lack of basic preventive measures. People actually shorten M.T.B.F (mean time between failures). The result is more frequent placement and higher capitals costs more over repair cost are always higher because down time events are often unplanned, more frequent and of long duration. In other words reactive maintenance approach works excellent if the equipment is not critical and breakdowns do not affect product quality or revenue generation.

In general maintenance strategy must be a mix of predictive preventing and reactive methods depending on the desired goals and part of the process being maintained. The right mix is developed with predetermined expectations of performance and up time requirements as the end goals, keeping in mind direct and indirect life cycle cost of the equipments. Utilizing this approach will always produce an optimal production environment that maximizes machine uptime reduces costs and increase profit-compelling industries to rethink on maintaining strategies to consider maintenance as separate profit center.

Reference Book:

Electrical India
September 2006
Vol 46 No. 09