European Technology Development Ltd

Linking Technology with Success

Risk Based Maintenance for Power Plant

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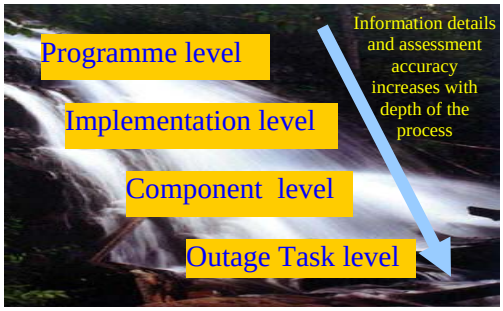
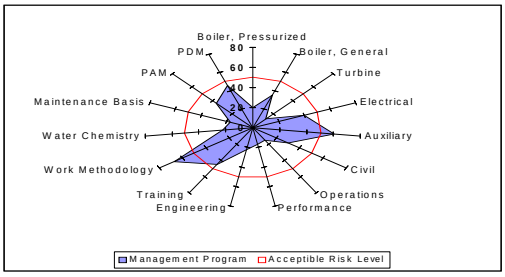
ETD Services

- Training
- Inspection Planning
- Life Extension
- Plant Cycling
- Defect Assessment
- Risk Based Maintenance
- Stress Analysis
- Repair Consultancy

Increasingly these days Maintenance Managers are finding that there is less time (and/or money) available to do the amount of maintenance that they would like to do. The key question that is often asked is "what outage tasks should I give priority to?" The answer is clearly to concentrate on the "value" Tasks, but how do you identify the critical tasks. There are a number of ways to assess the priority that should be given to maintenance or inspection tasks but increasingly a Risk Based approach is preferred. Although procedures are available for petrochemical and refining plant there was not one available for Power Plant. To address this need ETD developed Risk Based Maintenance Guidelines specifically aimed at generating equipment.

The main objective of Risk Based Maintenance is to allow a framework to identify and measure the risk areas and thereby allow optimised focusing of available resources.



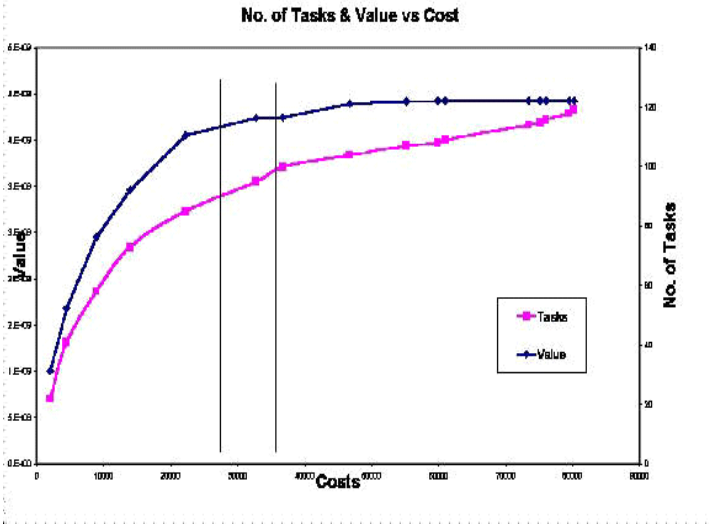


It is important to recognize that identification of risks does not necessarily require a substantial financial or resource commitment rather, as the ETD Guideline shows, a simplified system readily highlights and ranks risk areas for attention.

The ETD RBM process uses a "Risk Waterfall" Initially this involves examining how well the plant is managed in terms of technical and other programs and is carried out by comparison with good/best practice the attributes (or lack of attributes) of each program of each area. The output is a numerical indication of the level of risk in different plant areas. This is followed by a more detailed evaluation of the degree of risk by assessing how effectively the technical programmes are implemented and an estimate of the probable condition of specific components. Finally the maintenance activities to be performed on the component at the next shutdown are examined in terms of their (risk based) value and the cost of the activity to prioritize on a value cost basis. This allows elimination of the low value tasks and hence saving the costs associated with these tasks.

Risk Based Methods for Optimising the Content and Timing of Overhauls

In the current economic climate it is important to not only minimise risk levels but to do it at minimum cost. One of the main controllable costs is maintenance. The time it takes to carry out maintenance, the interval between outages, the quality and efficiency of the outage work and subsequent plant performance can all have a major impact on cost. ETD has a suite of risk based methods for optimising the maintenance and overhaul activities.



Key areas are:

- Optimising the outage content. Risk can be used to define the value of all of the maintenance and inspection activities. When this is combined with the cost of the activity a cost/risk optimised outage program can be defined. As shown opposite the majority of the plant risk can be captured with a relatively small percentage of the original planned outage activities.
- Optimising the interval between outages. By assessing the current condition of plant components and looking at how their risk levels increase with service it is possible to identify ways of moderating the risk thereby allowing longer run times between overhauls.
- Optimising Outage Productivity. By using advanced project management skills, improved planning support and project risk identification and mitigation processes a productivity improvement of 10-20% can be achieved.

ETD can offer these services together with conventional inspection planning and consultancy on component integrity management issues.