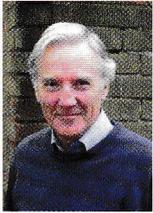


Early Asset Care



Traditionally, companies installing new plant and equipment do not consider how they should maintain it until after the supplier has left the site. However, the advantages of starting the asset care process before the plant is commissioned, as part of an early equipment management (EEM) approach, are significant writes **Michael Dixey** of GGR Associates. These benefits can include:

- ◆ building in ways in which the equipment can be condition monitored without the need for intrusive maintenance - before the equipment has been installed;
- ◆ ensuring that there is adequate and safe access for cleaning, lubrication, changeovers and maintenance tasks;
- ◆ the identification of 'snags' before commissioning takes place, leading to a reduction in commissioning time and costs;
- ◆ a better understanding by the company's staff of how the equipment operates and how it can fail - before the handover;
- ◆ the identification of specific training needs;
- ◆ a detailed and prioritised spares list agreed by those who will maintain the equipment - instead of those recommended by the vendor;
- ◆ the establishment of preventive maintenance routines (PM tasks) to reflect the specific duty and the operating context of the equipment - rather the standardised vendor recommendations.



The methodology

The recommended approach is to use fast-track RCM, a derivative of reliability-centred maintenance (RCM). RCM was developed in the airline industry for determining what preventive maintenance should be carried out. It also identifies where maintenance alone cannot deliver the required level of safety and reliability and where design changes are therefore necessary.

In industry, the first step in fast-track RCM is to identify all the ways in which the equipment can fail to

perform, together with the root causes of these failures. These include not just breakdowns - as in conventional failure mode and effects analysis (FMEA) - but minor stoppages, slow running, reduced throughput, quality and product integrity issues, potential access and changeover problems, and the failure of safety and protective systems.

The second step is to assess the consequences and criticality of all the failure modes and other issues that have been identified.

The final step in the process is to determine what preventive maintenance routines are required, where design modifications may be necessary, what spares should be carried, where procedures need to be documented, and what level of training is needed. These decisions are made with the help of the RCM logic chart. When selecting preventive maintenance tasks, the emphasis, wherever possible, is on selecting condition-based maintenance (CBM) in preference to time-based maintenance (TBM), and on avoiding intrusive maintenance - reflecting the experience of the airlines.

How it is done

For pre-commissioning projects, fast-track RCM is carried out by a small team of people working under the guidance of an experienced facilitator. The team typically numbers between four and six people and, for a particular area of plant, might include:

- ◆ a representative from the vendors (to provide the technical expertise);
- ◆ two experienced technicians from the company;
- ◆ one 'process expert' from the company, often the project manager;
- ◆ an experienced plant operator.

The meetings typically last five hours - leaving the balance of the day for the facilitator to edit the outputs and to enter them into Excel or a similar database.

What is needed

Other than the team, a spacious room and plenty of flip chart paper, the following are required:

- ◆ P&IDs of the new plant;
- ◆ operating manuals on all the equipment where these are available;
- ◆ plenty of coffee!

In conclusion

Plant commissioning can be a torrid time for all involved, but the approach outlined above can lead to:

- ◆ shorter commissioning times;
- ◆ a better understanding of the plant by all those involved in both its operation and its maintenance;
- ◆ the correct level of training, together with well documented supporting procedures, before commissioning commences;
- ◆ the right number and type of spares in place (usually significantly less than those recommended by the supplier!);
- ◆ the correct preventive maintenance routines entered onto the company's CMMS before the plant is handed over by the vendors; all of which can result in substantial savings in both time and costs. ✨