

Condition Based Maintenance System for Fossil Power Plants

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Abstract

Though the utility enterprises have successfully adopted and operated Enterprise Resource Planning (ERP) and Enterprise Asset Management (EAM), reliability and availability of power plant are usually increased only to a small degree. A maintenance strategy depending only on the manufacturer's recommendation intends to be too conservative. Therefore, it is important to set up preventive maintenance strategy that actively reflects the equipment condition to construct cost-effective and reliable equipment management. In order to establish an effective preventive maintenance strategy, Condition Based Maintenance (CBM), it is necessary to adopt an advanced maintenance technology such as Risk Based Maintenance (RBM), Reliability Centered Maintenance (RCM) and to make them suitable for equipment management system.

A failure occurring in power plant often causes the hazardous accident. It is important to identify the damage mechanism, the inspection method, the diagnosis result and the acceleration factor in design and operation for reducing the risk of failure. The function failure and failure mode are defined from the equipment function classification system. Reliability Centered Maintenance performs failure cause analysis and preventive maintenance task planning. Risk Based Maintenance controls the overhaul period through the risk and the cost assessment.

It is evident that the preventive maintenance strategy based on equipment characteristics and conditions improves the availability and the reliability of plant more than that based on a general guideline and subjective experience. RBM is the maintenance technology considering the degradation and the failure feature that can contribute to the establishment of a preventive maintenance strategy.

RBM has been focused on as useful methodology to optimize the reliability and the maintenance resource by means of providing effective maintenance plan. Considering current situation that the requirement of cost reduction and increased reliability get stronger, the application of CBM might be necessary to prevent serious failure and over-maintenance. Integrating the equipment management system with RBM and RCM includes the followings;

- Consistent identification of the equipment management system, RBM and RCM
- Classification of equipment by type, function and location
- Equipment centered failure and damage assessment process
- Preventive maintenance planning process based on RBM and RCM analysis

CBM system is expected to play a role in avoiding inefficient maintenance management and reflecting an actively advanced maintenance technology.

In this presentation, Korea Electric Power Corporation (KEPCO) will introduce the experience of system construction to optimize outage maintenance for the fossil power plant and provides information to redefine the maintenance business process.