

Power Plant Asset Management through Real Time Remote Condition Monitoring and Diagnostics and Development of Knowledge Base

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India has nearly 100,000 MW installed power plant equipment in electric utilities, most of this is in public sector. Very little power is produced in private sector. Despite several advances in the world and within India, we still have very low power factor compared to advanced countries. To make the plant equipment availability to be high, we need good health monitoring systems and corrective action programs in time. Besides health improvement of these machinery, considerable power shortages can be eliminated by improving the machine availability to the grid.

India has taken the lead in developing advanced tools for real time monitoring of machines after having witnessed severe malfunctions and failures in machines such as Narora. Advanced real time monitoring and diagnostics tools have been developed through Board of Research for Nuclear Sciences, Department of Atomic Energy for Kakrapar nuclear plant and Department of Science and Technology for Ropar Thermal plant.

DAE and DST projects have demonstrated our capabilities in designing and implementing on line condition monitoring and diagnostics of power plants. These projects have now paved way for modernizing the asset management in power sector. Though economical, the present arrangement is localized to a given utility and requires well trained man power to operate the system and diagnose impending problems through rotor dynamic experts. Recent developments in internet based technologies allow a remote condition monitoring a reality. A remote condition monitoring and diagnostics through the availability of experts has significant advantages over on line condition monitoring and diagnostics at the site. They are:

1. Several machines can be monitored together which cuts down costs considerably.
2. Specialists can be made responsible to track several machines, which keeps them active with the subject and maintain a high vigilance.

3. The country can collect a huge data base on the health monitoring and diagnostics of important machinery, which in turn allows improved health monitoring programs.
4. The down time of the plants can be predicted and redistribution of power as and when needed, can be made in a planned way to ensure no power outages in deficit areas.
5. Considerable power can be made available through better management of existing installed capacity.

The presentation will trace the previous developments in Condition Monitoring and Diagnostics and the On-line systems designed for Kakrapar and Ropar and show the current state of art on Remote Condition Monitoring and Diagnostics.