

REMOTE DIAGNOSIS BASED ON INTEGRATED SYSTEM OF CONDITION MONITORING FOR HYDROELECTRICITY EQUIPMENT

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Machine diagnosis technique has been developed in China for nearly 40 years, and great progress of research area has been achieved rapidly. With the introduction and application of new technologies, such as intelligent sensors, signal processing, computer application, network controlling, data transferring, system identification and intelligent expert system, fault diagnosis technique has been enriched and improved gradually, the scale of condition monitoring system are changed from single unit with monotonic function to multiple units with multiple function, even to the integrated condition monitoring system for a whole enterprise. In recent years, for the rapid development of network, by means of Internet and Intranet based technique, the remote on-line condition monitoring and fault diagnosis systems have been put into practice, which can complete remote fault diagnosis. And remote diagnosis has been an inevitable trend of condition monitoring and fault diagnosis for equipments in a hydraulic power plant (HPP), it is also the objective requirement of condition based maintenance. At present, in China, university of Huazhong science and technology^[1], Shanghai jiaotong university^[2], Xi'an jiaotong university, Tianjing university^[3] have done some research on such technical investigation and system development, all the applications have shown good effects. According to the "Guidance for condition based maintenance in HPP" (abbreviated as "guidance" in the following context) issued by the State Electric Corporation in China, great achievement has been got in the area of maintenance mode of condition monitoring and fault diagnosis for hydroelectricity equipments and high efficient management in HPP. In some HPPs, for example some pilot plants appointed by the State Electric Corporation, for main equipments in a plant, i.e., water turbine, generator, main transformer and Gis switch which requires long time maintenance, the integrated condition monitoring and fault diagnosis system has been developed, and remote diagnosis technique has been adopted. Based on the application of this kind of system, some knowledge and experience on such kind of system has been accumulated, but in the process of implementation, there are still some key technique should be further investigated and solved step by step.

This paper shows the application characteristics and requirements of condition monitoring and fault diagnosis system in large and middle scale HPPs in China. Considering the operation characteristics and management mode of HPPs and electric network, the mode of remote diagnosis, configuration characteristics and implementation of an integrated condition monitoring and fault diagnosis system for HPPs are detail introduced, especially the key technique on implementation of such a

system, which can be used for reference for HPPs to carry out condition based maintenance, to establish predictive maintenance system, to realize remote diagnosis and high efficient management mode.

Keywords: Hydroelectricity equipment; Integrated system; Remote diagnosis; Implementation technique

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