

Thermal Performance Test through On-line Turbine Cycle Performance Monitoring in Nuclear Power Plants

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Abstract

Now under worldwide deregulation environment, the performance features of nuclear power plants (NPPs) become more important. A turbine cycle thermal performance test in an NPP is regarded as an important tool to improve plant economical efficiency. In this study, the feasibility and the technical issues for the turbine cycle thermal performance test through on-line monitoring are described. The performance test based on on-line monitoring is superior to the performance test by ASME Performance Test Code(PTC)s in the dynamic reflection of operating performance indexes. This advantage improves plant availability and saves resource needed in a performance test. However the critical technical issues such as 1) the security of an on-line data acquisition, 2) signal processing, and 3) plant simulation model development to implement useful on-line performance test concept because of the inherent characteristics of NPPs remain. Additionally the development strategy of a prototype on-line performance test system is proposed.

Emergency Diesel Dynamic Diagnosis System of Nuclear Power Plant

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Abstract

An emergency diesel generator of nuclear power plant should supply the rated power to safety class load within a limited time, if a station black out occurs. The emergency diesel generator must have higher reliability than any other industrial diesel generator due to nuclear safety. Most of the problems of the emergency diesel generator were trade off between stability and performance in control system. From the viewpoint of nuclear safety, the performance such as start time and load sequence time was more focused than stability. From the viewpoint of overall reliability, however, performance and stability of control system were equally important. The emergency diesel dynamic diagnosis system was developed in order to tune a dynamic control parameter optimally, verify a static engine parameter, and assist a human decision making. The emergency diesel dynamic diagnosis system really improved the reliability of the emergency diesel generator of the nuclear power plant.