Availability analysis of the integrated maintenance technique based on reliability, risk, and condition in power plants

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Abstrak

The availability of power plants is of utmost importance in a power system. The availlability of a power plant is determined by its reliability and maintainability, which results from the plant’s maintenance program. Commonly used maintenance techniques for power plants include reliability-centered maintenance (RCM), risk-based maintenance (RBM), and condition-based maintenance (CBM) as well as their combination. This study aims to analyze the respective system availability that results from each of the three maintenance techniques and examines the system availability of the integrated maintenance technique, which is based on reliability, risk, and condition. The availability analysis is performed by developing a mathematical model based on the maintenance programs produced by each maintenance technique. The availabilities of the RCM, RBM, CBM, and integrated maintenance techniques are 81.56%, 81.02%, 84.92%, and 90.07%, respectively.