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Abstract:

This paper describes the application of reliability-centered maintenance methodology to the development of maintenance plan for a steam-process plant. The main objective of reliability-centered maintenance is the cost-effective maintenance of the plant components inherent reliability value. The process-steam plant consists of fire-tube boiler, steam distribution, dryer, feed-water pump and process heater. Within this context, a maintenance program for the plant is carried out based on this reliability-centered maintenance concept. Applying of the reliability-centered maintenance methodology showed that the main time between failures for the plant equipments and the probability of sudden equipment failures are decreased. The proposed labor program is carried out. The results show that the labor cost decreases from 290200 \$/year to 220800 \$/year (about 20.8% of the total labor cost) for the proposed preventive maintenance planning. Moreover, the downtime cost of the plant components is investigated. The proposed PM planning results indicate a saving of about 80% of the total downtime cost as compared with that of current maintenance. In addition, the proposed spare parts programs for the plant components are generated. The results show that about 22.17% of the annual spare parts cost are saved when proposed preventive maintenance planning other current maintenance once. Based on these results, the application of the predictive maintenance should be applied.