ABSTRAK

Rizki Roito Ragil

Analisis Perawatan Berkala (Preventive Maintenance) terhadap Availability dan Reliability Mesin Diesel di Pembangkit Listrik Tenaga Diesel

Dibimbing oleh

Istianto Budhi Rahardja, S.T., M.T.

Penelitian ini bertujuan untuk mengevaluasi dampak penerapan *preventive maintenance* terhadap peningkatan keandalan operasional mesin diesel di PLTD. Metode yang digunakan adalah *kuantitatif deskriptif*, dengan pengumpulan data melalui *observasi* di lapangan, pencatatan durasi operasi mesin, waktu *downtime*, dan penggunaan bahan bakar selama masa pengamatan. Hasil penelitian menunjukkan bahwa total waktu kalender mencapai 720 jam, di mana mesin beroperasi selama 700 jam dan mengalami downtime sebesar 12 jam. Diperoleh nilai *Mean Time Between Failure (MTBF)* sebesar 233 jam, *Mean Time to Repair (MTTR)* sebesar 4 jam, serta *Availability* sebesar 98,31%, yang dikategorikan sebagai sangat baik. Selain itu, terjadi penurunan *Specific Fuel Consumption (SFC)* dan peningkatan efisiensi termal mesin sekitar 2–3% setelah penerapan preventive maintenance secara terjadwal.Hasil penelitian menunjukkan bahwa penerapan preventive maintenance memiliki hubungan positif terhadap peningkatan keandalan operasional, efisiensi kerja, serta pengurangan *downtime* mesin diesel di PLTD REMA.

Kata kunci: *Preventive Maintenance, MTBF, MTTR, Availability*, PLTD

ABSTRACT

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Analysis of Preventive Maintenance on the Availability and Reliability of Diesel Engines in Diesel Power Plants

Guided by :

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This study aims to evaluate the impact of preventive maintenance implementation on improving the operational reliability of diesel engines at a diesel-powered plant (PLTD). The method used was descriptive quantitative, with data collected through field observations, recording engine operating duration, downtime, and fuel consumption during the observation period. The results showed a total calendar time of 720 hours, of which 700 hours were operated and 12 hours were downtime. The Mean Time Between Failure (MTBF) was 233 hours, the Mean Time to Repair (MTTR) was 4 hours, and the Availability was 98.31%, categorized as very good. Furthermore, there was a decrease in Specific Fuel Consumption (SFC) and an increase in engine thermal efficiency of approximately 2–3% after the implementation of scheduled preventive maintenance. The results indicate that the implementation of preventive maintenance has a positive relationship with improved operational reliability, work efficiency, and reduced diesel engine downtime at the REMA PLTD.

Keywords: *Preventive Maintenance, MTBF, MTTR, Availability, Diesel Power Plant*