

ABSTRAK

Fery Koruna

Pengaruh Penerapan Preventive Maintenance terhadap Peningkatan Keandalan Operasional Mesin Diesel di PLTD Sungai Juaro Palembang

Dibimbing oleh

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Penelitian ini bertujuan untuk menganalisis pengaruh penerapan *preventive maintenance* terhadap peningkatan keandalan operasional mesin diesel di PLTD Sungai Juaro Palembang. Metode penelitian yang digunakan adalah deskriptif kuantitatif dengan pengumpulan data melalui observasi lapangan, pencatatan jam operasi mesin, *downtime*, serta konsumsi bahan bakar selama periode pengamatan.

Hasil penelitian menunjukkan bahwa total waktu kalender sebesar 720 jam dengan waktu operasi mesin 700 jam dan *downtime* gangguan sebesar 12 jam. Nilai *Mean Time Between Failure (MTBF)* diperoleh sebesar 233 jam, *Mean Time to Repair (MTTR)* sebesar 4 jam, serta nilai *Availability* sebesar 98,31% yang termasuk kategori 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 *preventive maintenance* memiliki hubungan positif terhadap peningkatan keandalan, efisiensi operasional, serta penurunan *downtime* mesin diesel PLTD Sungai Juaro Palembang.

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

ABSTRACT

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The Effect of Preventive Maintenance Implementation on Improving the Operational Reliability of Diesel Engines at the Sungai Juaro Diesel Power Plant, Palembang

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This study aims to analyze the effect of implementing preventive maintenance on improving the operational reliability of diesel engines at the Sungai Juaro Diesel Power Plant (PLTD), Palembang. The research method used was descriptive quantitative, with data collected through field observations, recording of engine operating hours, downtime data, and fuel consumption during the observation period.

The results show that the total calendar time was 720 hours, with 700 operating hours and 12 hours of failure-related downtime. The calculated Mean Time Between Failure (MTBF) was 233 hours, the Mean Time To Repair (MTTR) was 4 hours, and the Availability value reached 98.31%, which falls into the excellent reliability category. In addition, a reduction in Specific Fuel Consumption (SFC) and an increase in thermal efficiency of approximately 2–3% were observed after the scheduled implementation of preventive maintenance.

These findings indicate that preventive maintenance has a positive relationship with improved reliability, enhanced operational efficiency, and reduced downtime of diesel engines at the Sungai Juaro Diesel Power Plant.

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