

ANALISIS PENYEBAB KERUSAKAN *EXHAUST VALVE GUIDE* MESIN DOOSAN GV 180 TI PT. BIMA GOLDEN POWERINDO

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ABSTRAK

Kerusakan *exhaust valve guide* pada mesin gas Doosan GV180 TI dapat menurunkan performa dan keandalan mesin sehingga berpotensi mengganggu kontinuitas pembangkitan listrik di PT Bima Golden Powerindo Site Melibur. Penelitian ini bertujuan untuk mengidentifikasi bentuk kerusakan, menganalisis faktor penyebab, serta menentukan prioritas penanganan menggunakan metode *Failure Mode and Effect Analysis* (FMEA) dan Diagram Pareto. Metode penelitian yang digunakan adalah studi kasus dengan pengumpulan data melalui observasi, inspeksi visual, pengukuran dimensi *valve guide*, serta data *preventive maintenance* 750 *running hours*. Hasil penelitian menunjukkan bahwa kerusakan yang dominan meliputi *excessive wear*, *ovality*, *valve sticking*, *overheating*, dan *lubrication failure*. Analisis FMEA menunjukkan bahwa *excessive wear* memiliki tingkat risiko tertinggi sehingga menjadi prioritas utama dalam tindakan perbaikan. Faktor utama penyebab kerusakan adalah temperatur operasi yang tinggi, pelumasan yang kurang optimal, serta tingginya jam operasi mesin. Penerapan inspeksi berkala, pengendalian sistem pelumasan, dan penggantian *valve guide* sesuai spesifikasi pabrikan direkomendasikan untuk meningkatkan keandalan dan umur pakai mesin.

Kata kunci: *Exhaust valve guide*, Doosan GV180 TI, FMEA, Diagram Pareto, keausan.

***ANALISIS OF THE CAUSES OF EXHAUST VALVE GUIDE FAILURE IN
THE DOOSAN GV 180 TI AT PT.BIMA GOLDEN POWERINDO***

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ABSTRACT

Damage to the exhaust valve guide in the Doosan GV180 TI gas engine can reduce engine performance and reliability, potentially disrupting the continuity of power generation at PT Bima Golden Powerindo, Melibur Site. This study aims to identify the types of exhaust valve guide failures, analyze their contributing factors, and determine corrective action priorities using the Failure Mode and Effects Analysis (FMEA) method and Pareto Diagram. The research employed a case study approach, with data collected through field observations, visual inspections, dimensional measurements of the valve guide, and preventive maintenance records at 750 running hours. The results indicate that the dominant failure modes include excessive wear, ovality, valve sticking, overheating, and lubrication failure. FMEA analysis revealed that excessive wear has the highest risk level, making it the primary priority for corrective action. The main factors contributing to the failures are high operating temperatures, inadequate lubrication, and prolonged engine operating hours. Therefore, periodic inspections, proper lubrication system control, and replacement of the valve guide according to the manufacturer's specifications are recommended to improve engine reliability and extend its service life.

Keywords: Exhaust valve guide, Doosan GV180 TI, Failure Mode and Effects Analysis (FMEA), Pareto Diagram, wear.