

***RISK ANALYSIS OF EXHAUST VALVE SEAT DAMAGE ON  
DOOSAN GV180 TI ENGINE USING FMEA METHOD AT  
PLTMG PT BIMA GOLDEN POWERINDO  
SITE MELIBUR***

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***ABSTRACT***

*The operational reliability of the Doosan GV180 TI gas engine unit at PLTMG PT Bima Golden Powerindo Site Melibur is fundamentally dependent on the structural integrity of its critical components, particularly the exhaust valve seat. This component is highly susceptible to premature degradation, such as recession and carbon deposit accumulation, due to continuous exposure to extreme thermal loads during the combustion process. These issues frequently manifest before the scheduled maintenance period, potentially leading to unplanned engine failures. This study aims to comprehensively identify failure modes, establish a risk priority hierarchy through Risk Priority Number (RPN) calculations, and formulate effective mitigation strategies to prevent fatal engine damage.*

*The research methodology employs the Failure Mode and Effect Analysis (FMEA) approach by utilizing secondary data from historical Preventive Maintenance (PM) reports at 500 Running Hours (RH) intervals throughout the 2025 operational year. Risk assessment is conducted by evaluating three primary dimensions: severity, occurrence, and detection. Furthermore, a Pareto Diagram is used to visualize and isolate the most significant failure modes that contribute to the highest risk levels. The results of this research are expected to serve as a strategic technical guideline for the company in minimizing unplanned downtime and significantly increasing operational maintenance cost efficiency.*

**Keywords:** Exhaust Valve Seat, Doosan GV180 TI, FMEA, RPN, Preventive Maintenance, Risk Analysis.