PREVENTIVE MAINTENANCE ON CENTRIFUGAL PUMP USING THE FAILURE MODE AND EFFECT ANALYSIS (FMEA) METHOD IN PERUMDA WATER DRINKING TIRTA TERUBUK BENGKALIS

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ABSTRACT

Centrifugal pumps play a vital role in the clean water distribution system at Perumda Air Minum Tirta Terubuk Bengkalis. This study was conducted to identify potential failures and determine preventive maintenance priorities using the Failure Mode and Effect Analysis (FMEA) method. The assessment was carried out by evaluating the severity, occurrence, and detection levels of each pump component. The analysis results showed that the impeller had the highest Risk Priority Number (RPN) of 684, caused by cavitation and the ingress of sludge or debris into the system. Bearings and mechanical seals ranked next with an RPN value of 288, while couplings, shafts, and casings had lower RPN values ranging from 84 to 94. Based on preventive maintenance interval calculations, distribution pumps ***IPAC*** *1 and IPAC 2 require servicing every 50–62 days, IPAC 3 every 70–83 days, and the IPAB pump, which operates for longer hours, requires maintenance every 20 days. For intake pumps, the preventive maintenance interval was calculated to be approximately every 21 days. The findings of this study emphasize the importance of implementing regular maintenance to prevent major damage, especially for components with high RPN values. Recommended actions include replacing damaged parts, performing routine inspections of pump conditions, and improving technicians' skills through training programs.*

Keywords*: Centrifugal pump, preventive maintenance, FMEA,*