

**ANALISIS KINERJA, EFISIENSI DAN BIAYA OPERASIONAL  
POMPA *MOBILE* PENANGGULANGAN BANJIR  
DEBIT 250 LITER PER DETIK**

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**ABSTRAK**

Banjir sering terjadi di kawasan perkotaan Indonesia akibat tingginya curah hujan dan keterbatasan kapasitas drainase. Salah satu upaya penanggulangan banjir adalah penggunaan pompa mobile yang dikelola oleh Kementerian Pekerjaan Umum dan Perumahan Rakyat (PUPR). Penelitian ini bertujuan untuk menganalisis kinerja pompa mobile sebagai solusi pengendalian banjir perkotaan.

Metode penelitian meliputi studi literatur, pengukuran lapangan, dan analisis perhitungan kinerja pompa, yang mencakup perhitungan kerugian head, kebutuhan daya, efisiensi, serta biaya operasional. Pompa yang digunakan memiliki kapasitas 250 liter per detik dengan head statis 10 m, digerakkan oleh mesin diesel berdaya 296,4 kW dan putaran 1000 rpm. Hasil pengukuran menunjukkan panjang saluran isap 6 m (diameter 6 inch) dan saluran tekan 15 m (diameter 4 inch). Hasil perhitungan menunjukkan kerugian head pada saluran isap sebesar 5,954 m dan pada saluran tekan sebesar 99,064 m, dengan kebutuhan daya 269,775 kW dan efisiensi operasi 91%.

Hasil analisis menunjukkan bahwa pompa mobile mampu beroperasi dengan baik dan efektif sebagai solusi penanggulangan banjir, dengan biaya operasional sebesar Rp 8.357.000 untuk setiap 10 jam pengoperasian.

Kata kunci : Pompa *Mobile*, Penanggulangan Banjir, *Head* Pompa, Debit Aliran, *Efisiensi Pompa*

**PERFORMANCE, EFFICIENCY AND OPERATIONAL COST ANALYSIS  
MOBILE FLOOD RESISTANCE PUMP  
250 LITERS PER SECOND DISCHARGE**

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**ABSTRACT**

*Flooding frequently occurs in urban areas of Indonesia due to high rainfall intensity and limited drainage capacity. One flood mitigation effort is the use of mobile pumps managed by the Kementerian Pekerjaan Umum dan Perumahan Rakyat (PUPR). This study aims to analyze the performance of mobile pumps as a solution for urban flood control. The research method includes field measurements, literature review, and pump performance analysis, covering head loss, power requirements, efficiency, and operational costs. The pump used has a capacity of 250 liters per second with a static head of 10 m, driven by a diesel engine with a power of 296.4 kW and a rotational speed of 1000 rpm. Field measurements show that the suction pipe length is 6 m (diameter 6 inches) and the discharge pipe length is 15 m (diameter 4 inches). The calculation results indicate head losses of 5.954 m in the suction line and 99.064 m in the discharge line, with a required power of 269.775 kW and an operating efficiency of 91 %. The analysis results show that the mobile pump is able to operate properly and effectively as a flood mitigation solution, with an operational cost of IDR 8,357,000 for every 10 hours of operation.*

**Keywords:** *Mobile Pump, Flood Mitigation, Pump Head, Flow Rate, Pump Efficiency*