**STUDI KASUS PENGARUH KOROSI TERHADAP KERUSAKAN *IMPELLER* PADA POMPA SENTRIFUGAL DAN DAMPAKNYA TERHADAP KINERJA OPERASIONAL DI PDAM TIRTA TERUBUK BENGKALIS**


Nama : Yono Suryadi

Nim : 2204211327

Dosen Pembimbing I : Erwen Martianis, S.T., M.T.

Dosen Pembimbing II : Irwan Kurniawan, S.T., M.T.


# ABSTRAK


Pompa sentrifugal merupakan komponen penting dalam sistem distribusi air bersih, terutama di instalasi pengolahan air seperti PDAM. Impeller sebagai bagian utama dari pompa sangat rentan terhadap kerusakan akibat korosi, yang dapat menurunkan efisiensi dan keandalan operasional. Penelitian ini bertujuan untuk menganalisis pengaruh korosi terhadap kerusakan impeller pada pompa sentrifugal serta dampaknya terhadap kinerja operasional di PDAM Tirta Terubuk Bengkalis. Metode yang digunakan adalah studi kasus dengan pendekatan lapangan, termasuk observasi langsung, pengukuran ketebalan impeller menggunakan *Ultrasonic Thickness Gauge*, serta analisis data pH air dan efisiensi pompa. Hasil penelitian menunjukkan bahwa nilai pH air baku yang rendah (4,66-5,04) berkontribusi terhadap laju korosi rata-rata sebesar 0,2406 mm/tahun. Penurunan ketebalan impeller secara signifikan menyebabkan penurunan efisiensi pompa dari kondisi ideal. Kesimpulannya, korosi berpengaruh langsung terhadap keausan impeller dan kinerja pompa, sehingga diperlukan strategi mitigasi seperti pemilihan material tahan korosi, pemantauan pH air secara rutin, dan perawatan preventif. Penelitian ini diharapkan dapat menjadi acuan dalam meningkatkan keandalan sistem perpompaan dan efisiensi distribusi air bersih di lingkungan industri pengolahan air.



**Kata kunci:** Korosi, Impeller, Pompa Sentrifugal, pH Air, Efisiensi.

***CASE STUDY OF THE EFFECT OF CORROSION ON IMPELLER DAMAGE IN CENTRIFUGAL PUMPS AND ITS IMPACT ON OPERATIONAL PERFORMANCE AT PDAM TIRTA TERUBUK BENGKALIS***


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| *Name* | : Yono Suryadi |
| *Register Number* | : 2204211327 |
| *Advisor I* | : Erwen Martianis, S.T., M.T. |
| *Advisor II* | : Irwan Kurniawan, S.T., M.T. |


# *ABSTRACT*


*Centrifugal pumps are crucial components in clean water distribution systems, especially in water treatment facilities such as PDAM. The impeller, as the main part of the pump, is highly susceptible to corrosion damage, which can reduce both efficiency and operational reliability. This study aims to analyze the effect of corrosion on impeller damage in centrifugal pumps and its impact on operational performance at PDAM Tirta Terubuk Bengkalis. The research method used is a case study with a field-based approach, including direct observation, impeller thickness measurements using an Ultrasonic Thickness Gauge, as well as analysis of water pH data and pump efficiency. The results show that the low pH of raw water (4.66–5.04) contributed to an average corrosion rate of 0.2406 mm/year. The reduction in impeller thickness significantly affected the pump's efficiency from its ideal condition. In conclusion, corrosion has a direct impact on impeller wear and pump performance, thus requiring mitigation strategies such as selecting corrosion-resistant materials, regular pH monitoring, and preventive maintenance. This study is expected to serve as a reference for improving the reliability of pumping systems and the efficiency of clean water distribution in the water treatment industry.*



***Keywords:*** *Corrosion, Impeller, Centrifugal Pump, Water pH, Efficiency.*