

## **ABSTRAK**

Digester merupakan salah satu peralatan utama dalam proses pengolahan kelapa sawit yang berperan penting dalam menentukan kelancaran produksi di pabrik kelapa sawit. Tingginya intensitas operasi menyebabkan digester rentan mengalami kerusakan apabila tidak didukung oleh sistem maintenance yang efektif. Penelitian ini bertujuan untuk mengevaluasi sistem maintenance pada digester di PT. Perkebunan Nusantara IV Regional II Unit Kebun dan PKS Adolina menggunakan metode Root Cause Analysis (RCA) dan Failure Mode and Effect Analysis (FMEA). Metode RCA digunakan untuk mengidentifikasi akar penyebab terjadinya kerusakan digester, sedangkan metode FMEA digunakan untuk menilai tingkat risiko kegagalan melalui perhitungan Risk Priority Number (RPN). Data penelitian diperoleh melalui observasi lapangan, wawancara dengan teknisi maintenance, serta data historis kerusakan dan downtime mesin. Hasil penelitian menunjukkan bahwa kerusakan digester dipengaruhi oleh faktor mesin, manusia, metode, material, dan lingkungan. Analisis FMEA menunjukkan adanya beberapa mode kegagalan dengan nilai RPN tertinggi yang menjadi prioritas perbaikan. Berdasarkan hasil analisis tersebut, disusun rekomendasi perbaikan sistem maintenance yang diharapkan dapat mengurangi downtime dan meningkatkan keandalan digester di PT. Perkebunan Nusantara IV Regional II Unit Kebun dan PKS Adolina.

**Kata Kunci:** Digester, Sistem Maintenance, *Root Cause Analysis (RCA)*, *Failure Mode and Effect Analysis (FMEA)*

***ABSTRACT***

*The digester is one of the main pieces of equipment in the palm oil processing process, playing a crucial role in ensuring smooth production at the palm oil mill. The high operating intensity makes the digester susceptible to damage if not supported by an effective maintenance system. This study aims to evaluate the digester maintenance system at PT. Perkebunan Nusantara IV Regional II Plantation Unit and Adolina Palm Oil Mill using the Root Cause Analysis (RCA) and Failure Mode and Effect Analysis (FMEA) methods. The RCA method is used to identify the root causes of digester damage, while the FMEA method is used to assess the level of failure risk through the calculation of the Risk Priority Number (RPN). Research data was obtained through field observations, interviews with maintenance technicians, and historical data on machine damage and downtime. The results indicate that digester damage is influenced by machine, human, method, material, and environmental factors. The FMEA analysis identified several failure modes with the highest RPN values, which are prioritized for repair. Based on the analysis, recommendations for improving the maintenance system are developed to reduce downtime and increase digester reliability at PT. Perkebunan Nusantara IV Regional II Plantation Unit and Adolina Palm Oil Mill.*

*Keywords: Digester, System Maintenance, Root Cause Analysis (RCA), Failure Mode and Effect Analysis (FMEA)*