

## Abstrak

PT. Ika Bina Agro Wisesa (IBAS) merupakan perusahaan pengolahan kelapa sawit yang menghadapi permasalahan downtime tinggi pada mesin screw press, yaitu mencapai 132 jam per tahun, melebihi ambang batas wajar sebesar 12% dari total jam kerja tahunan. Kondisi ini berdampak negatif terhadap produktivitas dan efisiensi operasional perusahaan. Penelitian ini bertujuan untuk menganalisis kerusakan mesin screw press menggunakan metode *Failure Mode and Effect Analysis* (FMEA) untuk mengidentifikasi mode kegagalan potensial dan menghitung nilai *Risk Priority Number* (RPN), serta *Fault Tree Analysis* (FTA) untuk menelusuri akar penyebab kerusakan dari komponen dengan nilai RPN tertinggi. Hasil analisis menunjukkan empat komponen utama dengan risiko kritis, yaitu *Thrust Bearing* (RPN 252), *Screw Worm* (216), *Roller Bearing* (192), dan *Intermediate Gear* (144), dengan penyebab dominan berupa pelumasan yang tidak memadai, beban kerja berlebih, dan ketidakpatuhan terhadap SOP operasional. Sebagai tindak lanjut, penelitian ini merekomendasikan strategi perbaikan seperti peningkatan frekuensi inspeksi, pelatihan rutin bagi operator, serta penerapan kebijakan penggantian komponen yang mengalami kerusakan berulang. Implementasi strategi ini diharapkan mampu menurunkan tingkat downtime secara signifikan, memperpanjang umur pakai mesin, serta meningkatkan efektivitas sistem pemeliharaan. Penelitian ini memberikan kontribusi penting bagi pengembangan strategi maintenance prediktif dan preventif di industri pengolahan kelapa sawit, serta dapat dijadikan acuan dalam pengambilan keputusan teknis dan manajerial di lingkungan industri serupa

Kata Kunci : *Screw Press*, Downtime, FMEA, FTA, *Risk Priority Number* (RPN), Perawatan Mesin, Analisis Kegagalan, Industri Kelapa Sawit

## ***Abstract***

*PT. Ika Bina Agro Wisesa (IBAS) is a palm oil processing company that has been experiencing high downtime on its screw press machine, reaching 132 hours per year—exceeding the acceptable downtime threshold of 12% of total annual working hours. This issue has negatively impacted the company's productivity and operational efficiency. This study aims to analyze the screw press failures using the Failure Mode and Effect Analysis (FMEA) method to identify potential failure modes and calculate the Risk Priority Number (RPN), as well as the Fault Tree Analysis (FTA) method to trace the root causes of failure in components with the highest RPN values. The analysis identified four critical components with high risk: Thrust Bearing (RPN 252), Screw Worm (216), Roller Bearing (192), and Intermediate Gear (144), with dominant causes including inadequate lubrication, overload conditions, and non-compliance with operational standard procedures. In response to these findings, the study recommends several improvement strategies, such as increasing the frequency of inspections, providing regular operator training, and implementing policies for the replacement of components with recurring failures. The implementation of these strategies is expected to significantly reduce downtime, extend the service life of the machine, and enhance the overall effectiveness of the maintenance system. This research provides valuable insights into the development of predictive and preventive maintenance strategies in the palm oil industry and can serve as a reference for technical and managerial decision-making within similar industrial settings.*

*Keywords : Screw Press, Downtime, FMEA, FTA, Risk Priority Number (RPN), Machine Maintenance, Failure Analysis, Palm Oil Industry*