

ABSTRAK

Penelitian ini dilatarbelakangi oleh pentingnya kelayakan operasional mesin produksi dalam mendukung kelancaran proses produksi pada PT Melania Indonesia. Selama ini, data *log maintenance* telah digunakan sebagai catatan riwayat perawatan mesin, namun pemanfaatannya masih terbatas sebagai arsip dan belum diolah secara optimal untuk mendukung pengambilan keputusan terkait kelayakan mesin. Kondisi tersebut dapat menyebabkan proses penentuan status mesin masih bergantung pada penilaian manual, sehingga diperlukan sistem yang mampu mengolah data *maintenance* secara lebih terstruktur. Penelitian ini bertujuan untuk menerapkan metode *Support Vector Machine* (SVM) dalam mengklasifikasikan status kelayakan operasional mesin produksi berdasarkan data *log maintenance*. Parameter yang digunakan meliputi frekuensi kerusakan, durasi *downtime*, usia pakai mesin, jenis tindakan *maintenance*, dan ketersediaan suku cadang. Sistem dibangun berbasis web menggunakan framework Laravel dan database MySQL. Proses klasifikasi dilakukan dengan tahapan pengolahan data, normalisasi, penerapan *kernel Radial Basis Function* (RBF), serta penentuan hasil klasifikasi ke dalam kategori Layak dan Tidak Layak. Hasil penelitian ini berupa sistem yang dapat mengelola data mesin, mencatat *log maintenance*, melakukan proses klasifikasi SVM, menampilkan riwayat hasil klasifikasi, serta menyajikan laporan. Dengan adanya sistem ini, data *log maintenance* dapat dimanfaatkan sebagai dasar pendukung pengambilan keputusan *maintenance* secara lebih objektif dan terstruktur.

Kata Kunci: *Support Vector Machine*, *Log Maintenance*, Kelayakan Mesin, Klasifikasi

ABSTRACT

This research is motivated by the importance of production machine operational feasibility in supporting the smooth production process at PT Melania Indonesia. Maintenance log data has been used as a record of machine maintenance history; however, its utilization is still limited to administrative documentation and has not been optimally processed to support decision-making regarding machine feasibility. This condition may cause the determination of machine status to depend on manual assessment. Therefore, a system is needed to process maintenance data in a more structured manner. This research aims to apply the Support Vector Machine (SVM) method to classify the operational feasibility status of production machines based on maintenance log data. The parameters used include damage frequency, downtime duration, machine service life, type of maintenance action, and spare parts availability. The system was developed as a web-based application using the Laravel framework and MySQL database. The classification process includes data processing, normalization, the application of the Radial Basis Function (RBF) kernel, and the determination of classification results into Feasible and Not Feasible categories. The result of this research is a system that can manage machine data, record maintenance logs, perform SVM classification, display classification history, and present reports. With this system, maintenance log data can be utilized as a basis for supporting maintenance decision-making in a more objective and structured manner.

Keywords: Support Vector Machine, Maintenance Log, Machine Feasibility, Classification