

ABSTRAK

Manajemen inventory yang efektif berperan penting dalam menjaga kelancaran produksi panel kelistrikan kereta api dengan mengendalikan tingkat stok bahan baku agar sesuai kebutuhan tanpa menimbulkan pemborosan biaya penyimpanan. Penelitian ini menganalisis kondisi kelebihan stok pada 24 komponen utama di gudang bahan baku PT Rekindo Global Jasa yang menyebabkan penumpukan material, risiko kerusakan komponen listrik, inefisiensi ruang, serta tingginya Total Inventory Cost (TIC). Tujuan penelitian adalah merancang penerapan metode Just In Time untuk meningkatkan efisiensi penyimpanan dan mengurangi biaya persediaan melalui perhitungan kuantitas pesanan optimal, frekuensi pengiriman, safety stock, reorder point, serta usulan implementasi Material Requirements Planning (MRP). Hasil perhitungan menunjukkan penerapan Just In Time mampu menurunkan TIC dari Rp1.682.431,54 menjadi Rp12.210.004,45 sehingga menghasilkan penghematan Rp10.527.572,91, dengan lot size yang lebih kecil dan frekuensi pemesanan yang lebih terkontrol. Safety stock dihitung pada service level 90% dan ROP ditetapkan untuk mencegah stockout tanpa menambah overstock, sementara tabel MRP untuk setiap komponen mendukung perencanaan kebutuhan material yang sinkron dengan produksi 21 Train Set per tahun. Penerapan metode Just In Time ini mendukung Sustainable Development Goals (SDGs) khususnya tujuan 12 tentang konsumsi dan produksi yang bertanggung jawab melalui pengurangan pemborosan persediaan dan optimalisasi sumber daya. Secara keseluruhan, usulan Just In Time terbukti mampu menekan kelebihan stok, meningkatkan efisiensi pengelolaan gudang, serta memperbaiki aliran material menuju lini produksi.

Kata Kunci: Just In Time, Manajemen Persediaan, Total Inventory Cost, Safety Stock, MRP, Efisiensi Gudang Bahan Baku.

ABSTRACT

Effective inventory management plays a vital role in ensuring the smooth production of railway electrical panels by controlling raw material stock levels to match actual requirements without generating unnecessary storage cost waste. This study analyzes the overstock condition of 24 main components in the raw material warehouse of PT Rekindo Global Jasa, which causes material accumulation, risk of damage to electrical components, space inefficiency, and high Total Inventory Cost (TIC). The research aims to design the application of the Just In Time method to improve storage efficiency and reduce inventory costs through calculations of optimal order quantity, delivery frequency, safety stock, reorder point, as well as a proposed Material Requirements Planning (MRP) implementation. Calculation results show that the application of Just In Time is able to reduce TIC from Rp12.210.004,45 to Rp1.682.431,54, resulting in a cost saving of Rp10.527.572,91, with smaller lot sizes and more controlled ordering frequencies. Safety stock is calculated at a 90% service level and ROP is determined to prevent stockouts without increasing overstock, while MRP tables for each component support material requirement planning that is synchronized with the production of 21 Train Sets per year. The application of the Just In Time method supports the Sustainable Development Goals (SDGs), particularly Goal 12 on responsible consumption and production, through the reduction of inventory waste and optimization of resources. Overall, the Just In Time proposal is proven capable of suppressing excess stock, improving warehouse management efficiency, and enhancing material flow toward the production line.

Keywords: Just In Time, Inventory Management, Total Inventory Cost, Safety Stock, MRP, Raw Material Warehouse Efficiency.