

RINGKASAN

Nikita Ashardika Putri, Jurusan Teknik Industri, Fakultas Teknik, Universitas Brawijaya, Agustus 2015, *Perancangan Tata Letak Penempatan Pada Gudang Produk Jadi Melalui Penerapan Storage Policy*, Dosen Pembimbing: Ishardita Pambudi Tama, ST., MT., Ph.D. dan Debrina Puspita Andriani, ST., M.Eng.

Gudang merupakan salah satu aspek penting perusahaan dan berfungsi sebagai tempat menyimpan barang yang bersifat sementara. Penelitian ini dilaksanakan pada gudang A Pakisaji PT. Greenfields Indonesia yang merupakan tempat penyimpanan produk jadi jenis UHT. Salah satu aktivitas utama dalam gudang adalah *material handling*. Oleh karena itu usaha dalam meminimalisasi *material handling* dapat dilakukan melalui perbaikan tata letak penempatan produk. Penempatan produk jadi saat ini pada gudang A Pakisaji menggunakan sistem *racking* namun belum memperhatikan frekuensi perpindahan, sehingga produk bersifat *fast moving* harus menempuh perjalanan jauh dan menghasilkan waktu cukup panjang. Penelitian ini bertujuan untuk menentukan perancangan perbaikan alternatif tata letak penempatan produk jadi yang memperhatikan frekuensi perpindahan produk dengan meminimalisasi jarak *material handling* sehingga dapat memaksimalkan jumlah *output* produk.

Studi ini menghasilkan empat alternatif usulan tata letak penempatan produk pada gudang yang diperoleh dari konsep *storage policy* yaitu *class based storage* dan *dedicated storage* dengan menggunakan dua tipe *layout within aisle* dan *across aisle storage*. Pada alternatif tata letak usulan sistem *material handling* yang digunakan adalah *forklift* (tanpa ada perluasan area gudang namun merubah dan menambah beberapa bentuk *racking*). Dengan pengolahan data dalam analisis aliran produk dan aktivitas operasional, perhitungan utilitas gudang, frekuensi perpindahan, jumlah tempat penyimpanan, dan jarak perpindahan untuk mengetahui total jarak *material handling* dalam kondisi maksimal.

Hasil penelitian menunjukkan berdasarkan frekuensi perpindahan produk jadi menurut konsep *class based storage* dan *dedicated storage* terpilih alternatif *layout Class Based Storage - B* sebagai *layout* rekomendasi karena mampu menurunkan jarak perpindahan sebesar 59.32% dari 114469.86 meter menjadi 67914.82 meter.

Kata Kunci: Tata Letak Gudang, *Material Handling*, *Storage Policy*.

SUMMARY

Nikita Ashardika Putri, Department of Industrial Engineering, Faculty of Engineering, Brawijaya University, August 2015, *Warehouse Layout Designing To Minimize Material Handling Through The Application of Storage Policy and Simulation*, Academic Supervisor: Ishardita Pambudi Tama dan Debrina Puspita Andriani.

Warehouse is one of the important aspects of a company and function as a place to store goods temporarily. This research carried out at PT. Greenfields Indonesia's Pakisaji A warehouse which is storing UHT type finished product. One of the main activities in the warehouse is material handling, the current warehouse operational condition uses 25% of the workforce, 38% warehouse space utility, 25% of factory space and 77% of operational time. Therefore, efforts in minimizing material handling can be done by improving the layout of product placement. The current finished goods placement at Pakisaji A warehouse is devised with racking system but the products movements frequency are not yet considered, thus the fast moving products have to travel long distances and takes much time. This research aims to determine a better finished products placement layout alternative designs considering the product's movement frequency by minimizing the distance and time of material handling that can maximize the amount of product output.

This study resulted in four proposed layout of product placement alternatives in warehouse storage generated from the concept of storage policy that is class-based policy and dedicated storage by using two types of layouts, within aisle and across the aisle. In the proposed alternative layout the material handling system used is forklift (with no expansion of the warehouse area but some changes with the racking form). By processing data in the product flow analysis and operational activities, warehouse utility calculation, frequency of movement, the amount of storage space, and movement distance to determine the material handling total distance. Furthermore, using the Arena simulation software to determine the material handling time and the amount of output products as well to analyze other aspects such entities waiting time, processing time and the transporter utility as a considerations to choose the proposed layout.

The results showed that based on the finished product frequency and according to the concept of class-based storage and dedicated storage the alternate layout CBS-B selected as the layout recommendation because it decrease the displacement distance by 59.32% of 114469.86 meters per month to 67914.82 meters.

Kata Kunci: Warehouse Layout, Material Handling, Storage Policy, Arena Simulation.