

ABSTRAK

Penelitian ini bertujuan untuk menganalisis dan merancang ulang tata letak fasilitas produksi pada *workshop* PT RRA Teknojaya Perkasa menggunakan pendekatan *Systematic Layout Planning* (SLP) untuk meminimalkan jarak perpindahan material dan meningkatkan efisiensi aliran proses produksi. Permasalahan utama pada tata letak eksisting adalah penempatan mesin dan area kerja yang belum mempertimbangkan tingkat keterkaitan aktivitas secara maksimal sehingga menyebabkan jarak perpindahan material relatif panjang, aliran proses tidak terstruktur, serta potensi tumpang tindih antar area kerja.

Metode penelitian yang digunakan adalah metode deskriptif kuantitatif dengan pendekatan *Systematic Layout Planning* (SLP) yang meliputi analisis hubungan aktivitas yakni *Activity Relationship Chart*, *Activity Relationship Diagram*, perhitungan kebutuhan luas area, serta evaluasi alternatif tata letak berdasarkan perhitungan jarak perpindahan material menggunakan metode jarak Euclidean. Data koordinat titik tengah masing-masing fasilitas digunakan untuk menghitung jarak sebelum yakni eksisting dan sesudah berupa alternatif perancangan ulang tata letak.

Hasil penelitian menunjukkan bahwa tata letak alternatif mampu menurunkan jarak perpindahan material secara signifikan pada beberapa pasangan fasilitas dengan tingkat keterkaitan tinggi, seperti antara mesin poles dengan mesin bubut, mesin honing, serta mesin line boring. Pengurangan jarak ini berkaitan dengan efisiensi waktu perpindahan material, peningkatan keteraturan aliran produksi, serta mendukung aspek keselamatan dan kemudahan pengawasan operasional. Dengan demikian, tata letak alternatif yang diusulkan dinilai lebih efektif dibandingkan tata letak eksisting.

Kata kunci: Tata letak fasilitas, *systematic layout planning* (SLP), *activity relationship chart* (ARC), *activity relationship diagram* (ARD), jarak Euclidean

ABSTRACT

This study aims to analyze and redesign the production facility layout of the workshop at PT RRA Teknojaya Perkasa using the Systematic Layout Planning (SLP) approach in order to minimize material handling distances and improve the efficiency of production process flow. The main problem identified in the existing layout is the placement of machines and work areas that has not optimally considered the level of activity interrelationships, resulting in relatively long material handling distances, unstructured process flow, and potential overlap between work areas.

The research method employed is a descriptive quantitative method using the Systematic Layout Planning (SLP) approach, which includes activity relationship analysis through the Activity Relationship Chart (ARC) and Activity Relationship Diagram (ARD), calculation of space requirements, and evaluation of alternative layouts based on material handling distance calculations using the Euclidean distance method. The midpoint coordinates of each facility were utilized to calculate distances before (existing layout) and after (proposed alternative layout) the redesign.

The results indicate that the proposed alternative layout is capable of significantly reducing material handling distances among several facility pairs with high levels of interrelationship, such as between polishing machines and lathes, honing machines, and line boring machines. This reduction in distance is associated with improved material transfer time efficiency, enhanced production flow organization, and better support for safety and operational supervision. Therefore, the proposed alternative layout is considered more effective than the existing layout.

Keywords: Facility layout, Systematic Layout Planning (SLP), Activity Relationship Chart (ARC), Activity Relationship Diagram (ARD), Euclidean distance