

ABSTRAK

PT PLN (Persero) Pusharlis UP2W V Semarang berencana membangun *workshop* baru untuk memproduksi *roller conveyor* guna mengurangi ketergantungan terhadap pemasok eksternal. Sebagai fasilitas *greenfield* tanpa tata letak yang tersedia, pengaturan area kerja dan aliran material perlu dilakukan secara sistematis sejak tahap perencanaan. Penelitian ini bertujuan merancang tata letak *workshop roller conveyor* menggunakan metode *Systematic Layout Planning* (SLP) dan *Computerized Relationship Layout Planning* (CORELAP). Produk yang diproduksi meliputi *Troughing Idler* dan *Flat Return Idler*, dengan *Troughing Idler* dipilih sebagai produk representatif karena memiliki aliran produksi yang sama dan volume permintaan lebih tinggi. SLP menerapkan *Modifying Consideration* dan *Practical Limitation* untuk menyesuaikan rancangan dengan kondisi aktual Workshop dan menghasilkan dua alternatif tata letak. Sementara itu, CORELAP menghasilkan alternatif ketiga berdasarkan nilai *Total Closeness Rating* (TCR). Ketiga alternatif dievaluasi berdasarkan total jarak perpindahan material secara rectilinear. Alternatif 2 (SLP) menghasilkan jarak terpendek sebesar 344,355 meter, sedangkan Alternatif 1 (SLP) dan Alternatif 3 (CORELAP) masing-masing sebesar 384,468 meter dan 387,034 meter. Hasil penelitian menunjukkan bahwa fleksibilitas SLP dalam mengakomodasi keterbatasan praktis menghasilkan tata letak dengan jarak perpindahan material lebih rendah. Alternatif 2 kemudian ditinjau dan dikonfirmasi oleh *Production Planning Team Leader* sebagai rancangan yang diusulkan untuk pembangunan *workshop*.

Kata kunci: Perencanaan Tata Letak Fasilitas; *Systematic Layout Planning* (SLP); *Computerized Relationship Layout Planning* (CORELAP); Jarak Perpindahan Material; *Roller Conveyor*

ABSTRACT

PT PLN (Persero) Pusharlis UP2W V Semarang plans to establish a new workshop for roller conveyor production to reduce its dependence on external suppliers. As a greenfield facility without an existing layout, work areas and material flow need to be systematically arranged from the planning stage. This study aims to design the roller conveyor workshop layout using the *Systematic Layout Planning* (SLP) and *Computerized Relationship Layout Planning* (CORELAP) methods. The products manufactured include *Troughing Idler* and *Flat Return Idler*, with *Troughing Idler* selected as the representative product because it has the same production flow and higher demand volume. SLP incorporates *Modifying Consideration* and *Practical Limitation* to adapt the layout design to the actual conditions of Workshop G6, resulting in two layout alternatives. Meanwhile, CORELAP generates a third alternative based on *Total Closeness Rating* (TCR) values. The three alternatives are evaluated based on the total rectilinear material handling distance. Alternative 2 (SLP) achieves the shortest distance of 344.355 meters, while Alternative 1 (SLP) and Alternative 3 (CORELAP) result in 384.468 meters and 387.034 meters, respectively. The results indicate that SLP's flexibility in accommodating practical limitations produces a layout with a shorter material handling distance. Alternative 2 was subsequently reviewed and confirmed by the *Production Planning Team Leader* as the proposed layout for workshop construction.

Keywords: Facility Layout Planning; *Systematic Layout Planning* (SLP); *Computerized Relationship Layout Planning* (CORELAP); Material Handling Distance; *Roller Conveyor*