

ABSTRAK

CV Puja Box adalah perusahaan industri manufaktur yang bergerak pada bidang pembuatan karton *box*. CV Puja Box memiliki lima stasiun kerja yaitu SK pemotongan, SK *slotter*, SK sablon, SK *staples*, dan SK pengeleman. Hasil pengamatan awal menunjukkan adanya ketidakseimbangan beban kerja antar operator. Pembebanan kerja operator oleh pemilik perusahaan dilakukan secara subjektif tanpa mempertimbangkan beban kerja maksimal yang dapat diterima oleh operator. Hal ini menyebabkan beban kerja antar operator tidak merata dan efisiensi lintasan rendah.

Penelitian ini bertujuan untuk menyeimbangkan lintasan produksi karton *box* SPIIK dengan meratakan beban tenaga kerja. Melalui pemerataan tenaga kerja diharapkan dapat meningkatkan efisiensi CV Puja Box. Penyeimbangan lintasan produksi dengan pemerataan beban kerja dilakukan dengan metode *Ranked Positional Weight* (RPW) dan simulasi dengan *software* ProModel.

Hasil rancangan metode RPW dengan 9 tenaga kerja meningkatkan efisiensi dari kondisi awal, menghasilkan L, SI 25.78 detik, BD 29.72%, *idle time* 67.26 detik, biaya gaji Rp599.949/hari, produktivitas 1,1117 unit/Rp/hari, dan produktivitas TK 74,11 unit/orang. Skenario 1 dengan 6 tenaga kerja memberikan performa lintasan terbaik dengan LE mencapai 92%, SI 18,35 detik, BD 8%, dan *idle time* 34,74 detik, serta menghasilkan produktivitas tertinggi sebesar 1,2501 unit/Rp/hari dengan biaya gaji Rp399.966/hari (produktivitas TK 83,33 unit/orang). Sementara itu, Skenario 2 dengan 5 tenaga kerja dan 4 jam lembur menghasilkan LE 63%, SI 38 detik, BD 36.78%, *idle time* 73.91 detik, biaya gaji Rp391.313/hari, produktivitas 1,2036 unit/Rp/hari, serta produktivitas TK tertinggi mencapai 94.2 unit/orang.

Kata kunci: *Line balancing*, *Ranked Weight Positional*, Simulasi, Beban kerja.

ABSTRACT

CV Puja Box is a manufacturing company engaged in the production of carton boxes. The company operates five work stations, which consist of cutting, slotting, screen-printing, stapling, and gluing stations. Initial observations indicate a workload imbalance among operators. The workload assignment by the company owner was conducted subjectively without considering the maximum workload that an operator could handle. This practice led to an uneven distribution of workload and low line efficiency.

This study aims to balance the SPIIK carton box production line by distributing the workforce workload evenly. Through this workforce balancing, it is expected to increase the efficiency of CV Puja Box. The line balancing process combined with workload evening was performed using the Ranked Positional Weight (RPW) method and validated through simulation utilizing ProModel software.

The results of the RPW method design using 9 workers showed an increase in efficiency from the initial condition, yielding a Line Efficiency (LE) of 70%, Smoothness Index (SI) of 25.78 seconds, Balance Delay (BD) of 29.72%, idle time of 67.26 seconds, labor cost of IDR 599,949/day, productivity of 1.1117 units/IDR/day, and labor productivity of 74.11 units/person. Scenario 1, utilizing 6 workers, provided the best line performance with LE reaching 92%, SI of 18.35 seconds, BD of 8%, idle time of 34.74 seconds, and generated the highest productivity of 1.2501 units/IDR/day with a labor cost of IDR 399,966/day (labor productivity of 83.33 units/person). Meanwhile, Scenario 2, with 5 workers and 4 hours of overtime, resulted in an LE of 63%, SI of 38 seconds, BD of 36.78%, idle time of 73.91 seconds, labor cost of IDR 391,313/day, productivity of 1.2036 units/IDR/day, and achieved the highest labor productivity at 94.2 units/person.

Keywords: *Line balancing, Ranked Position Weight, Simulation, Workload.*