

Dzaky Permana. 2023. **Analisis Antropometri dan Biomekanik Mesin Pemisah Serat Daun Sisal (MPSDS) TEP-1901**. Di bawah bimbingan: Asep Yusuf dan S. Rosalinda.

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### ABSTRAK

Pada pemisahan serat daun sisal menggunakan mesin dekortikator ditemukan ketidakwajaran posisi kerja pada saat operator mengoperasikan mesin tersebut. Operator mesin pemisah serat daun sisal (MPSDS) TEP-1901 berpotensi mengalami gangguan kerangka, otot, dan saraf perifer yang disebut *Musculoskeletal Disorders* (MSDs). Penelitian ini dilakukan untuk mengevaluasi pengaruh perbaikan posisi kerja terhadap operator mesin pemisah serat daun sisal (MPSDS) TEP-1901 berdasarkan antropometri dan biomekanik. Analisis antropometri dilakukan dengan cara mengukur dimensi mesin dan dimensi tubuh operator menggunakan meteran, sedangkan analisis biomekanik dilakukan dengan cara mengambil gambar posisi kerja operator pada saat mengoperasikan mesin yang selanjutnya diolah menggunakan REBA (*Rapid Entire Body Assessment*). Beban kerja fisik diukur menggunakan alat *oxymeter* untuk mengetahui denyut nadi operator pada saat bekerja dan istirahat. Pengukuran tersebut dilakukan pada dua kondisi yaitu sebelum dan setelah perbaikan posisi kerja. Hasil penelitian menunjukkan bahwa konsumsi energi yang dihasilkan oleh operator sebelum perbaikan posisi kerja sebesar 16,89 kkal/menit, sedangkan setelah perbaikan posisi kerja konsumsi energi operator menurun menjadi 8,90 kkal/menit. Perbaikan posisi kerja operator mesin pemisah serat daun sisal (MPSDS) TEP-1901 juga menyebabkan peningkatan kapasitas produksi dari 1.285 batang/hari menjadi 1.404 batang/hari, sehingga menghasilkan selisih sebesar 119 batang/hari. Perbaikan posisi kerja operator mesin pemisah serat daun sisal (MPSDS) TEP-1901 berdasarkan antropometri dan biomekanik berdampak pada peningkatan daya tahan (*endurance*) operator dalam menyelesaikan pekerjaannya dan mengurangi kelelahan serta resiko keluhan otot atau *musculokeletal disorders* (MSDs).

**Kata kunci:** Antropometri, Biomekanik, Posisi kerja, Serat Daun Sisal.

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### **ABSTRACT**

*In separating sisal leaf fiber using a decorticator machine, it was found that the work position was abnormal when the operator operated the machine. Sisal leaf fiber separator machine (MPSDS) TEP-1901 operators have the potential to experience skeletal, muscle and peripheral nerve disorders called Musculoskeletal Disorders (MSDs). This study was conducted to evaluate the effect of improved working position on the operator of the TEP-1901 sisal fiber separator machine (MPSDS) based on anthropometry and biomechanics. Anthropometric analysis is carried out by measuring machine dimensions and operator body dimensions using a tape measure, while biomechanical analysis is carried out by taking pictures of the operator's working position when operating the machine which is then processed using REBA (Rapid Entire Body Assessment). Physical workload is measured using an oximeter to determine the operator's pulse at work and rest. These measurements were carried out in two conditions, namely before and after repairing the working position. The results showed that the energy consumption generated by the operator before repairing the working position was 16.89 kcal/minute, whereas after improving the working position the operator's energy consumption decreased to 8.90 kcal/minute. Improvements in the working position of TEP-1901 sisal leaf fiber separator machine operators (MPSDS) also led to an increase in production capacity from 1,285 stems/day to 1,404 stems/day, resulting in a difference of 119 stalks/day. Improvements in the working position of TEP-1901 sisal leaf fiber separator machine (MPSDS) operators based on anthropometry and biomechanics have an impact on increasing operator endurance in completing work and reducing fatigue and the risk of muscle complaints or musculoskeletal disorders (MSDs).*

**Keywords:** *Anthropometric, Biomechanical, Work Position, Sisal Leaf Fibers.*