

Analisis dan Perancangan Jig terhadap Nilai Kompleksitas Manual Assembly sebagai Basis Evaluasi pada Pengembangan Produk Delivery Bed = Analysis and Design of Jigs for Manual Assembly Complexity Value as a Basis for Evaluation in Delivery Bed Product Development

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Abstrak

Penelitian ini bertujuan untuk mengembangkan desain jig untuk proses perakitan produk delivery bed guna mengurangi kompleksitas manual assembly. Berdasarkan metode pemodelan kompleksitas dari Samy dan ElMaraghy, dilakukan perhitungan nilai kompleksitas manual assembly untuk produk delivery bed sebelum dan sesudah optimasi desain jig. Hasil penelitian menunjukkan bahwa desain jig baru yang dioptimasi dengan penambahan support part locator, bar reinforcement, dan penggabungan pillar berhasil menurunkan nilai indeks kompleksitas part (CIpart) dan total kompleksitas assembly. Nilai CIpart terbesar ada pada part undercarriage linkage dengan nilai awal 0,73 yang menurun menjadi 0,69 setelah optimasi desain jig. Total nilai kompleksitas manual assembly delivery bed juga turun dari 19,9 menjadi 19,83 setelah perancangan jig baru. Penelitian ini menyarankan dilakukannya validasi hasil desain melalui implementasi langsung di lapangan dan pembuatan desain jig dalam bentuk 2D dan 3D untuk mempermudah penelitian berikutnya.This research aims to develop jig designs for the assembly process of delivery bed products to reduce the complexity of manual assembly. Based on the complexity modeling method by Samy and ElMaraghy, complexity values for manual assembly of the "delivery bed" product were calculated before and after jig design optimization. The research findings indicate that the new optimized jig design, with additional support part locators and bar reinforcement, successfully reduced the part complexity index (CIpart) and total assembly complexity. The highest CIpart value was initially found in the undercarriage linkage part with a value of 0.73, which decreased to 0.69 after jig design optimization. The total complexity value of the manual assembly delivery bed also decreased from 19,9 to 19,83 after the new jig design. This study recommends validating the design results through direct implementation in the field and creating jig designs in 2D and 3D forms to facilitate future research.