

## ABSTRACT

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### **UTILIZATION OF CORRUGATED BOX WASTE BECOME ERGONOMIC FURNITURE WITH DESIGN FOR ENVIRONMENT GUIDELINE AT PERTAMINA OFFICE AREA**

Final report, Faculty of Sciences and Technology, 2018

(xiv + 106 pages, 20 tables, 37 figures, 11 attachments)

PERTAMINA has solid waste which is dominated by cardboard so that this research is aimed to utilize PERTAMINA's cardboard waste into furniture using Design for Environment guideline. The making of the furniture uses the design and development product theory of Ulrich and Eppinger, consisting of Phase 0 of Product Planning along with step 1 of the DFE Guidelines. Phase 1 Concept Development concurrent with stage 2 DFE Guidelines Identification of Potential Environmental Impacts and stage 3 Selection of DFE Guidelines. Phase 2 System Level Design in conjunction with the DFE 4th stage of the DFE Guide to Initial Design Guidelines. The selected design is modular with sectional-modular architecture type that can be arranged into 3 functions, table, shelf, and chair so that the product is named Mersi. Phase 3 Detail Design added ergonomic studies in product design. In this phase an alpha prototype is created which then impacts the environment measured by the DFE 5 phase guide and the result is the four factors that measured the value of the DFE fraction is close to 1, meaning the prototype is environmentally friendly. Phase 4 Testing and Evaluation Alpha Prototype with high performance rating results for 4 dimensions measured. Selling price of a set of modules Rp. 225.000, -. The final product of the DFE fraction value is close to 1, meaning that the product is environmentally friendly even if there is a component of the product that is not environmentally friendly.

Keywords : waste, cardboard, furniture, design for environment

References : 16 References (2008-2016)

## ABSTRAK

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### **PEMANFAATAN LIMBAH KARDUS MENJADI FURNITUR DENGAN PEDOMAN *DESIGN FOR ENVIRONMENT* PADA AREA PERKANTORAN PT PERTAMINA**

Laporan Tugas Akhir, Fakultas Sains dan Teknologi, 2018

(xiv + 106 hal, 20 tabel, 37 gambar, 11 lampiran)

PT PERTAMINA memiliki limbah padat yang didominasi oleh kardus sehingga penelitian ini bertujuan memanfaatkan limbah kardus PT PERTAMINA menjadi furnitur menggunakan pedoman *Design for Environment*. Pembuatan furnitur tersebut menggunakan teori perancangan dan pengembangan produk Ulrich dan Eppinger, yang terdiri dari Fase 0 Perencanaan Produk bersamaan dengan tahap 1 Pedoman DFE. Fase 1 Pengembangan Konsep bersamaan dengan Pedoman DFE tahap 2 Identifikasi Dampak Lingkungan Potensial dan tahap 3 Pemilihan Pedoman DFE. Fase 2 *System Level Design* bersamaan dengan Pedoman DFE tahap 4 Aplikasi Pedoman DFE ke Desain Awal. Desain yang terpilih berbentuk modular dengan tipe *sectional-modular architecture* yang dapat disusun menjadi 3 fungsi, yaitu meja, rak, dan kursi sehingga produk dinamakan Mersi. Fase 3 *Detail Design* ditambahkan studi ergonomi dalam perancangan produk. Pada fase ini dibuat prototipe *alpha* yang kemudian dampak lingkungannya diukur dengan Pedoman DFE tahap 5 dan hasilnya adalah keempat faktor yang diukur nilai fraksi DFE-nya mendekati 1, artinya prototipe bersifat ramah lingkungan. Fase 4 Pengujian dan Evaluasi Prototipe *Alpha* dengan hasil *performance rating* tinggi untuk 4 dimensi yang diukur. Harga jual satu set modul Rp. 225.000,-. Hasil ukur produk akhir nilai fraksi DFE mendekati 1, artinya produk bersifat ramah lingkungan meskipun ada komponen produk yang tidak ramah lingkungan.

Kata Kunci : limbah, kardus, furnitur, *design for environment*

Referensi : 16 References (2008-2016)