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Energy Analysis of the Productive Life Cycle of the MDP Wood-Based panel In Brazil

SILVA, D. A. L.^{a*}, VARANDA, L. D.^a, ROCCO LAHR, F. A.^a

a. Universidade de São Paulo, São Paulo

**Corresponding author, diogo.apls@hotmail.com*

Abstract

This paper presents a life cycle study of the MDP (medium density particleboard) produced in Brazil. This study considers an energy analysis of the cradle to gate life cycle of the product, divided into two subsystems: forest production and industrial production. For this, it was assumed the Life Cycle Assessment (LCA) technique, normalized by ISO 14040 and 14044 documents, and applying the Cumulative Energy Demand (CED) method, that computes the total primary energy used throughout the life cycle. According to results, it was checked that the industrial production subsystem was responsible for the major consumption and losses of energy, with 87.0% of the total life cycle energy consumption, and 96.4% of all energy losses. Furthermore, in terms of energy efficiency use, the industrial production subsystem showed inferior results, with 79.8%, while the forest production subsystem showed 95.0% of efficiency. In this sense, we proposed some improvement opportunities focused on the industrial production subsystem, considering some possibilities of optimization of energy use. We suggested the utilization of wooden residues generated during industrial manufacturing of MDP as an energy resource. This residue could be applied on cogeneration systems, to reduce electricity demand, and also reducing demand for fossil fuels used at energy matrix from industrial production subsystem.

Keywords: *forest biomass, MDP wood-based panel, life cycle assessment, energy balance.*
