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Energy Embodiment on Assembly Phase of Self-Propelled Sugarcane Harvesters

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Abstract

The energy subject is one the main challenges of 21st century. The geopolitical and environment aspects, they are concern sources to the current economic model. Energy analysis is necessary in order to monitor of scarce natural resources, to supply, a world population in constant growth. Studies of embodied energy in agricultural machinery are rare. The study aimed to determine the embodied energy on assembly phase in the self-propelled sugarcane harvesters. Two models were evaluated, so called: Machine 1 - equipped with wheels and tires; and Machine 2 - equipped with metallic tracks, manufactured by a company located at Piracicaba region, State of São Paulo, Brazil. The consumption of the input used in the assembly phase, was accounted, however, there is no difference in the consumption of those inputs for both machines, because its use from a same infrastructure and assembly time cycle. The consumption data of the inputs were processed, presenting the materials flows used, which they were multiplied by their energy index, resulting in the embodied energy required by the production system. The results show that electricity presented higher embodied energy (16,706.70 MJ). The embodied energy by demanded by labor, as well as, in the infrastructure, was low, could be disregarded.

Keywords: *Agricultural machinery, industry, mechanization, administration, life cycle analysis*