Analysis of Energy Efficiency Behavior with the Use of Train Dynamics Simulator and Statistical Tools: Case Study of Vitoria Minas Railway, Brazil

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Abstract : The large variation in the price of diesel in Brazil directly affects the variable cost of companies operating in the transportation sector. In rail transport, the great challenge is to overcome the annual budget, cargo and ore transported with cost reduction in relation to previous years, becoming more efficient every year. Some effective measures are necessary to achieve the reduction of the liter ratio consumed by KTKB (Gross Ton per Kilometer multiplied by thousand). This acronym represents the indicator of energy efficiency of some railroads in the world. This study is divided into two parts: the first, to identify using statistical tools, part of the controlled variables in the railways, which have a correlation with the energy efficiency indicator, seeking to aid decision-making. The second, with the use of the train dynamics simulator, within scenarios defined in the operational reality of a railroad, seeks to optimize the train formations and the train stop model for the change of train drivers. With the completion of the study, companies in the rail sector are expected to be able to reduce some of their transportation costs.

1

Keywords : railway transport, railway simulation, energy efficiency, fuel consumption

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