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“TEN YEARS WORKING TOGETHER FOR A SUSTAINABLE FUTURE”

Eco-Efficiency Analysis of Hand Drying Systems

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Abstract

In order to meet current legal requirements that demand control and reduction of solid waste generation, as well as society's interest in more sustainable options in the execution of their daily activities, the paper addresses an Eco-efficiency Analysis comparing alternatives for hand drying in environments with different rates of movement of people: Shopping Center (high) and University Center (low). The Eco-efficiency Analysis, which analyzed the combined environmental and economic performances, was carried out based on internationally recognized methodologies, tools and databases, which follow ISO 14040 series standards. The technologies studied refer to those available in the market with the function of hand drying, from which the electric dryer by hot air jet was selected; alternatives of 5 and 15 seconds of constant use. The alternative in comparison consists on two or three towels of Paper offered in plastic dispenser. By means of a survey that counted with 1350 responses, it was possible to observe that about 75% of the target public has a preference for using paper towels, and this choice is mainly motivated by the requirements of practicality and hygiene. Despite this preference, 42% of the participants believe in the efficiency of electric dryers. It was also realized that the society is concerned about environmental and social issues arising from the production, use and final destination of both alternatives. In addition, approximately 69% of the respondents considered the option of electric dryers as the best alternative to reduce the impacts on the environment. After the analysis, the use of electric dryers by hot-air jet was pointed out as the most eco-efficient option. The drying time using the electric dryer is not significant in terms of environmental and economic impacts in either of the alternatives. However, the amount of paper towels used is determinant, and the alternative of three paper towels was presented as the less eco-efficient. It was also observed that in high circulation places, the use of electric dryer stands out as the most economical alternative. Thus, its use, in addition to bringing lower environmental and economic impacts throughout the life cycle, supplies the current governmental demands and the expectation of consumption of a significant portion of the target public of the research.

Keywords: *Urban Solid Waste, Hand Drying, Eco-efficiency Analysis, Life Cycle Assessment.*
