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CONTRIBUTION OF RETURNED PRODUCTS HANDLING SCENARIOS TO LIFE CYCLE IMPACTS – RESEARCH CASE OF WASHING MACHINE

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Abstract

The paper is addressing the issue of returns in products life cycle, focusing on a washing machine as an example of a long-life product with a complex life cycle and numerous options concerning its handling as a return. The objective of the paper is to compare different return product handling scenarios in terms of their economic and environmental aspects. The used materials and methods are the survey results of Polish manufacturing companies, an environmental life cycle assessment and simple costs and revenues estimation. The results obtained through the life cycle impact assessment and the costs / revenues analysis are compared and analyzed together in order to get an overview of the return handling options. The analysis shows that the possible environmental improvements of the washing machine impacts are highly dependent on the returned product status and are certainly significant. However, the decision making is based not only on the environmental issues but it depends rather on the costs related to the returns handling processes. That makes the repair scenarios the most attractive options from the economic and environmental point of view. Remanufacturing is quite close to reach the acceptance border of business decision makers and holds the advantage of being more flexible while return status is concerned. Recycling option is also flexible but is associated with significantly more impacts and costs. Therefore, since it is often the only possible scenario to be introduced, it needs some purposeful actions to be taken in order to improve its economic and environmental performance.

Key words: costs and revenues estimation, life cycle assessment, returned product handling scenarios, washing machine life cycle

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