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ASSESSING ENVIRONMENTAL IMPACT OF PACKAGING PAPER PRODUCTION BASED ON RECYCLED FIBRE RAW MATERIAL

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Abstract

This paper is part of LCA studies performed in the frame of FP7 project “Recovered Paper Sorting by Innovative Technologies - SORT IT”. It analysis the results obtained by Life Cycle Impact Assessment (LCIA) of the reference case for recycled packaging paper manufacturing (current sorting technology), which will constitute a comparison base for new sorting technology developed in SORT IT project. The main stages considered in the life cycle were: recovered paper (RP) transport from collection center to paper mill, RP processing and recycling in paper production, wastewater and solid waste treatment. Special attention has been paid to detailed definition of the parameters that have a relevant impact on the whole assessment such as system boundaries, functional unit, quality standards for input data in term of time, geographic area, etc. Subsequently a life cycle inventory analysis was made. In the impact assessment stage, CML 2001 Dec.07 baseline impact assessment factors developed by the Centre for Environmental Science were used and the adjusted data were entered into the GaBi 4.4 LCA software and modeled into environmental inputs and outputs. The classification and characterization of essential elements in LCIA were applied to the inventory data in order to assess their potential impact on the environment. The contribution to various impacts categories was analyzed and, the characterized results were normalized. The results revealed that in recycled packaging paper manufacturing cycle the most important unitary processes that affect the environmental impact are the consumption of energy (electricity mainly) resources, natural gas used in steam generation, RP transport stage and packaging paper manufacturing unitary process (represented by recovered paper processing, paper machine, boiler and rejects/sludge treatment). All unitary processes were found to be significant sources of air and water emissions that affect the environmental impact.

Key words: environmental impact, Life Cycle Assessment, packaging paper, recovered paper

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