

LIFE CYCLE ASSESSMENT OF PRODUCTS BASED ON ENVIRONMENTAL PRODUCT DECLARATIONS DATA

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Abstract

Life cycle assessment is a standardised method for assessment of products and processes that consists of the following phases: goal and scope definition, inventory analysis, life cycle impact assessment and interpretation of results. Within the second and third life cycle assessment phases it is necessary to obtain complex data about the material and energy flows and the calculations of various environmental impacts. For this task, the use of life cycle inventory databases is recommended in order to tackle the background processes which are difficult to model manually and time consuming. On the other side, environmental product declarations are standardised type III environmental labels based on life cycle assessment that provide a detailed information on products impact on the environment through its life cycle stages. The information from environmental product declarations can be used as an alternative source of data to build the life cycle inventory and to obtain the corresponding impacts on the environment for several impact categories. In this research, the environmental product declaration data is used to perform the life cycle assessment of building constructions, namely three types of wall constructions. While three types of wall constructions were already analysed with common life cycle assessment approach in previous research [1], this research has alternative approach that uses the environmental product declaration data. The data for the life cycle assessment was built from various environmental product declaration owners in order to cover several construction materials such as: bricks, aerated concrete blocks, expanded polystyrene board, gyps boards, mineral wool, mortar, oriented strand board, wooden frame, polyvinyl chloride foil, and decorative finish render. The results show the differences, advantages and disadvantages between the common and alternative approaches in data gathering for life cycle assessment. Finally, it can be concluded that performing life cycle assessment based on environmental product declaration is a feasible approach that can be used in situations where the life cycle inventory databases are unavailable.

Key words: environmental product declarations, life cycle assessment, construction materials

References

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