

Advancement of Life Cycle Assessment Towards Eco-design In Ceramic Floor Tile Industry In Sri Lanka

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Abstract

Tiles industry is the prime ceramic product which widely uses in Sri Lanka. Wall tiles, Floor tiles, and Roof tiles are the major products of tile industry outlet. In Sri Lankan building construction applications, ceramic floor tiles show a significant contribution when compared with other floor development materials. Today's world is more concerned about environmental awareness with continuous growth unsustainable manufacturing practices. Therefore, many manufacturers are trying to create more and more eco-friendly processes and products by minimizing the effects of their activities on the environment. Although, as a developing country, the environmental performance of the tiles manufacturing sector and improvement of the product quality and performance are key factors to improve the sustainability. In order to go for a green future, it is needed to identify the environmental hotspots generated by the manufacturing sector. The product life cycle assessment (LCA) is an effective tool in the identification of environmental hotspots. In addition to that, it is required to model different life cycle scenarios for the improvement of Life Cycle Management (LCM). Therefore, this research focuses on conducting LCA towards eco-design on floor tile industry by using sensitivity analysis as well as scenario analysis. Through this study, local floor tile industry can be driven to improve its overall sustainability of the floor tile manufacturing sector.

Keywords

Life cycle assessment, Life cycle management

Biography

A. K. Kulatunga is a senior lecturer in the Department of Manufacturing & Industrial Engineering at the Faculty of Engineering, University of Peradeniya, Sri Lanka. He earned Bachelors in Production Engineering from University of Peradeniya, Sri Lanka and PhD in Mechanical/ Industrial Engineering from University of Technology, Sydney, Australia and gLink Erasmus Mundus Research Fellowship at University of Bremen Germany. He has published several books/book chapters, and more than seventy journal and conference papers. Dr. Kulatunga has served in many local and international forums which include the ministry of Environment Sri Lanka, UNEP LCA initiative, UNIDO-NCPC projects. His research interests include lean and sustainable manufacturing, Industrial Engineering. He is the country representative for IEOM in Sri Lanka. He also holds memberships at IIE, IEEE, ERSCP, and IESL.

Kamalakkannan.S is currently a fulltime Research Assistant at Faculty of Engineering University of Peradeniya. Mr. Kamalakkannan holds a Bachelor of Science degree in Manufacturing and Industrial Engineering from the University of Peradeniya. He has carried out a project regarding design and fabrication of impact resistance testing instrument for ceramic floor tiles. Furthermore, he worked with BOEHM + LECKNER MULTI MOULDS (PVT) LTD and SINGER(SRILANKA) PLC where he supported the engineering departments.