### **Accepted Manuscript**

Incorporating lean thinking and life cycle assessment to reduce environmental impacts of plastic injection moulded products

Wai M. Cheung, Jun T. Leong, Parag Vichare

PII: S0959-6526(17)31949-2

DOI: 10.1016/j.jclepro.2017.08.208

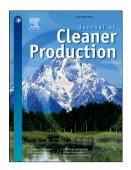
Reference: JCLP 10467

To appear in: Journal of Cleaner Production

Received Date: 7 March 2017
Revised Date: 25 August 2017
Accepted Date: 28 August 2017

Please cite this article as: Cheung WM, Leong JT, Vichare P, Incorporating lean thinking and life cycle assessment to reduce environmental impacts of plastic injection moulded products, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.08.208.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



#### ACCEPTED MANUSCRIPT

# Incorporating lean thinking and life cycle assessment to reduce environmental impacts of plastic injection moulded products

Wai M Cheung \*a, Jun T Leong b, Parag Vichare c

a, b Faculty of Engineering and Environment,

Department of Mechanical and Construction Engineering,

University of Northumbria,

Newcastle Upon Tyne, NE1 8ST, UK.

<sup>c</sup> School of Engineering and Computing,
University of the West of Scotland,
Paisley PA1 2BE, UK

#### **Abstract**

In the last decades, environmental footprint of the product manufacture has emerged as an important public concern, causing manufacturers to re-assess their product's environmental impacts. Responding to global outcry on global warming, world leaders have agreed to limit global temperature rise to less than 2°C above the temperature in pre-industrial times. As a result, governments and industrial leaders around the world have proposed a roadmap for 80% emissions reduction by 2050. The aim of this work develops a novel approach of linking Life Cycle Assessment (LCA) and Lean manufacturing to reduce the negative environmental impacts of a plastic injection moulded product. Products that use plastic as their primary source of raw materials are mainly produced by plastic injection processes. Although plastic injection moulding has many benefits such as 'high production rates', there is a lack of through investigation on the effects of this process has on the environment such as climate change, ozone depletion etc. This paper proposes a novel cross-functional mapping approach of linking lean-thinking and LCA. The implementation case study has been presented with the view to re-assess carbon footprint of an existing plastic

<sup>\*</sup> Corresponding author wai.m.cheung@northumbria.ac.uk

#### Download English Version:

## https://daneshyari.com/en/article/5479490

Download Persian Version:

https://daneshyari.com/article/5479490

<u>Daneshyari.com</u>