IMPLEMENTATION OF LEAN IN CONTINUOUS PROCESS-BASED INDUSTRIES

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ABSTRACT

Lean engineering is a proven method for reducing waste in a production process and increasing its efficiency. It has been successfully employed across a range of industries and services but is most associated with the production of discrete products. Lean represents a major advance over traditional mass production methods. This paper describes work undertaken to implement lean practices in the continuous process sector as represented by cement production. One of the major barriers to lean implementation is providing evidence of its potential benefit to end-users. This work aims to overcome this obstacle by producing a tool which can be used to easily visualise the benefits of adopting lean practices without requiring disruption to the production environment.

This paper describes a methodology for data collection, knowledge extraction, model creation and experimentation that combines the use of process mapping, computational simulation and the Taguchi method for Design of Experiments. A detailed description of each step of the process is given and is illustrated by results from a case study undertaken during the research. Experiments performed to evaluate lean improvements against current production methods for cement production are given and clearly demonstrate the utility of the approach and have helped to convey the lean message to industry end-users.

KEYWORDS: Lean Manufacturing, Cement Production, Simulation, Process Improvement