

A Case Study Improvement of a Testing Process by Combining Lean Management, Industrial Engineering and Automation Methods

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Abstract

Increasingly competitive market environments have forced not only large manufacturing, but also small-and-medium size enterprises (SME) to look for means to improve their operations in order to increase competitive strength. This paper presents an adaptation and adoption by a UK SME engineering service organisation, of lean management, industrial engineering, and automation methods developed within larger organisations. This SME sought to improve the overall performance of one of its core testing processes. An exploratory analysis, based on the lean management concept of “value added” and work measurement technique “time study”, was developed and carried out in order to understand the current performance of a testing process for gas turbine fuel flow dividers. A design for the automation of some operations of the testing process was followed as an approach to reduce non-value added activities, and improve the overall efficiency of the testing process. The overall testing time was reduced from 12.41 to 7.93 hours (36.09 percent) while the man hours and non-value added time were also reduced from 23.91 to 12.94 hours (45.87 percent) and from 11.08 to 6.69 (39.67 percent) hours respectively. This resulted in an increase in process efficiency in terms of man hours from 51.91 to 61.28 percent. The contribution of this paper resides in presenting a case study that can be used as a guiding reference for managers and engineers to undertake improvement projects, in their organisations, similar to the one presented in this paper.

Keywords: lean management, industrial engineering, automation technology, value added, process efficiency

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