

Manufacturing Line Uptime Improvement: A Lean Approach

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Abstract: *The purpose of this manuscript is to propose a framework for implementing 5S+S in engineering-to-order (ETO) projects with a focus on knowledge work. The application of this framework helps to improve overall performance in companies providing knowledge work. The methodology allows transparency and control over projects in day-to-day management, through the implementation of digital tools such as visual management, 5S+S online audits, key performance indicators (KPI), dashboards, etc. This paper presents the implementation of lean management concepts in customer-specific tailor-made engineering projects, which has not been sufficiently addressed in the existing literature. The methodology used in this paper is based on the application by researchers of lean concepts in a combination of three different disciplines, namely, lean project planning and control (LPPC), lean quality management system (LQMS), and Lean Design. First, attempts at knowledge work improvement through lean are presented, based on the existing literature. Second, all three approaches: LPPC, LQMS, and Lean Design are explained. Third, the possibility of combining all three concepts into one framework is discussed. The use of 5S+S in knowledge work is demonstrated, and a framework is developed, based on a DMAIC (Define, Measure, Analyze, Improve, and Control) approach. The used framework is presented using an illustrative case in a small and medium-sized enterprise (SME) providing engineering services. The suggested methodology is applicable for engineering services-providing companies seeking overall project performance improvement. The findings are useful for project managers and engineering discipline leaders who aim to implement lean thinking in engineering projects*

Keywords: Machine Line Uptime, MTTR, MTBF, 5S+, SUR (Set up Reduction), I4.0 (Industry 4.0)

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