

STANDARDIZATION OF FOSSIL-FUEL POWER PLANT PROJECTS ACCORDING TO LEAN CONSTRUCTION PRINCIPLES

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ABSTRACT

The peculiarities of construction industry cause many non-added value activities that reduce the efficiency of construction projects. These activities are real threats to corporate success and sustained growth. Therefore becoming lean and improving overall performance is indispensable in today's competitive market. Construction of fossil-fuel power plants is a complicated task susceptible to including many non-added value activities. So survival and growth in such industries is hardly achievable without having a new paradigm to execution of these projects.

This paper discusses application of lean construction principles (LCP) into fossil-fuel power-plant projects in engineering, procurement and construction (EPC) phases. Partial implementation of LCP in engineering phase is achieved through standardization of design process. Consequently manufacturing power-plant main equipments that were considered a make-to-order (MOD) task has been changed to a make-to-stock (MOS) activity which greatly improves quality and reduces cost and lead time in manufacturing. Further work is being pursued to utilize LCP in preparing for construction and building power plants islands. The paper discusses a case study in MAPNA Group which involves quantification of LCP utilization in various power-plant activities and the way it has improved overall corporate performance in these projects. Finally it is shown how gained benefits are transferred as value to customers.

KEYWORDS

Lean construction, standardization, fossil-fuel power plant projects.

INTRODUCTION

According to new production philosophy, there are two kinds of phenomena in all production systems: conversions and flows. Both aspects have to be considered in design, control and improvement of production systems, (Koskela, 1992). Lean production focus on two types of conversions: design as the main process of information conversion and production that is the main process of material conversion (Crowley, 1998).

In production processes there are two types of activities: value-adding activities and some others that do not add any value for the end user. The competitiveness in new production philosophy is improved by identifying and eliminating non value-adding activities that is called MUDA or waste. Experience shows that non value-adding activities dominate most processes; usually only 3 to 20 % of steps add value

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