

PRODUCTION CONTROL THROUGH MODULARISATION

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ABSTRACT

In Sweden, the industrial housing trade has developed for many years with the salient idea of improving production control through an increased level of prefabrication. However, production variability is a consistent issue as work is still sub-optimised, resulting in a fragmented production process. Consequently, problems arise when prefabricated parts and components are assembled. The building services are often a source of high variability (many different components and subcontractors), leading to reduced production control. The aim of this paper is to present how modularisations can provide prerequisites for production control in service system design.

So far, modularisation has only rendered little attention in Lean construction. In this paper, a modularisation development effort of five Swedish industrial housing companies is reported. To generate a relevant set of modules, several workshops were held together with company representatives and building service consultants. The Design Structure Matrix (DSM) was used to detect the lowest common geometrical denominator of the building service systems as well as crucial connection points and interfaces. Combining the DSM with qualitative module drivers generates a design for service system modules facilitating improved production control.

KEY WORDS

Production control, building services, modularisation, module drivers.

INTRODUCTION

An important theme within the Lean Construction community is production control. The general idea of production control is to protect against uncertainty in production (variation in production tasks, deliveries, etc.) (Ballard and Howell, 1998). Production control, in Lean Construction terms, is generally said to be gained by creating reliable work flows between production units and therefore production control should begin with defining the building at an overall level (customers, components, organisation, etc.). Henrich et al (2006) presented an overview of production control within the construction trade, concluding that the strategy depends on context and setting.

Consequently, the issue to gain production control has been addressed in a number of ways, e.g., in relation to Lean Construction, using tools such as Kanban, Critical Chain and of course the Last Planner system. These tools mainly concern the planning

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