

## **Research study at Berkeley University, San Francisco, USA**

Productivity optimisation of renovation projects by use of lean tools

Hasse Højgaard Neve, PhD student is researching how the productivity of renovation projects can be optimized by use of lean tools. The research project covers a four-year period from February 2017 to February 2021. Hasse's research is part of [www.Revalue.dk](http://www.Revalue.dk) a partnership who wants to create a decision tool so that future renovation projects can get most value for money.

This research uses the most basic lean principle "Go Gemba" meaning "go out in the production, observe and understand, solve the problem and optimize". In this case, the production is several renovation projects in Denmark. Now, the project group is doing an analysis of the approx. 50,000 registered data points collected during hundreds of hours observation.

The reason why this research is highly relevant is that the productivity for renovation projects has been decreasing for more than 2 decades. The consequences of the low productivity are many and the two most important consequences are:

1. Higher construction costs for residential housing organizations (and in the end higher rent for tenants) which today renovates thousands of apartments all over Denmark.
2. An unnecessary use of energy (CO<sub>2</sub>) for operation of the construction site and thus contribution to global warming.

The analysis of the results has already dissolved many important productivity potentials of more than 20%. This is an important result and a lot of effort is put into identifying the underlying reasons so that recommendations can be given to the industry.

The perspectives of this research are huge because an increased productivity will have a positive effect on so many areas; the competitiveness of the Danish construction industry, reduction of energy usage and the CO<sub>2</sub> emission from renovation projects and it will meet the increasing demand for qualified craftsmen.