Japan-DK Seminar 13/9 2019

Improvements by Construction Gemba Kaizen and i-Con-struction

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New Build-report: Japan-DK Seminar 13/9 2019 in Copenhagen

How can i-Construction and bottom-up leadership in construction (Construction Gemba Kaizen) make a difference in construction practice? The Japan-DK Seminar, held in Copenhagen last year, was an attempt at confronting both the challenges in construction in general and the challenges peculiar to the societies of Denmark and Japan.

At present, the results from Construction Gemba Kaizen and its effect on practice as a missing link in improvements. In order to make the principle an important factor of change and to realise its potential to transform practice, we must devote our attention to it and produce immediate, clear, and sustainable results in the future.

The inspiration for this Japan-DK Seminar was a closed seminar on February 26, 2019 arranged by the Consulate-General of Japan in New York. Here Professor Kazuyoshi Tateyama of Ritsumeikan University in Japan presented the Japanese national strategy for i-Construction. In a related meeting Tateyama, N. H. Bertelsen, AAU-Build, and S. H. Bertelsen, Decision Economics, Inc., New York discussed i-Construction, how to finance development and how to implement bottom-up leadership in construction.

When Tateyama together with Ph.D. Takaaki Yokoyama, Ritsumeikan University, and D.Eng. Hiroshi Furuya, Technical Research Institute, Obayashi Corporation visited Europe in September 2019, N. H. Bertelsen arranged the Japan-DK Seminar that took place on September 19, 2019 in Copenhagen. The seminar was divided into four themes and together they formed an inspiring discussion space to test three research questions about i-Construction, bottom-up pull from Construction Gemba Kaizen, and how to disseminate research results into education and construction practice. The seminar was held at BLOXHUB, The Danish Society of Engineers, and the construction site 'Postgrunden', all near the Copenhagen waterfront. In total, there were 50 participants in the seminar.

Themes

Theme 1 was an introduction, where Tateyama and Lene Espersen, Danish Association of Architectural Firms presented challenges and visions seen from the Japanese and Danish viewpoint. The construction sectors in both countries are fighting for better productivity, technology, workers, and technicians to fulfil the growing demands for additional, cheaper, better, and sustainable buildings and infrastructures. The two national presentations provided the participants with fine overviews over the national policies and activities on i-Constrution and Construction Gemba Kaizen. From a Danish point of view, it was interesting to see how structured the Japanese were in the development of i-Construction and in outlining a national policy for construction.

Theme 2 was on bottom-up improvements in construction processes related to Gemba Kaizen. The Japanese presentation was on the use of video data and drones in design and inspection of infrastructure projects and on how they work with a work-style reform in construction processes triggered by i-Construction. Two Danish presentations discussed Lean Construction, examples of Gemba Kaizen and practical innovation projects in small construction companies. The last Danish presentation described the study in architectural technology and construction management (ATCM) and how construction site management can support implementation of Construction Gemba Kaizen and balance the bottom-up and top-down approaches in innovation and Lean Construction.

Theme 3 was a visit to the construction site 'Postgrunden' in Copenhagen. Here employees from the main contractor Aarsleff described the construction project in general and the 3D model, VDC, and virtual reality (VR) applied in the project in particular.

Theme 4 was on i-Construction, including implementation of ICT and robotics in the construction sector. There were two Japanese presentations on utilisation of new technology by Japanese contractors. They presented examples of construction robots, contractors' approaches to i-Construction, 3D data models, and how 5G network is integrated in construction. The four Danish presentations were on dissemination of VDC, examples of using big data and artificial intelligence, low-weight moveable construction robots for craftspeople, and robots for construction of 3D-printed buildings.

Conclusion

It was beneficial to complete the seminar in the discussion space in between the four themes and to use the example of i-Construction and Construction Gemba Kaizen to demonstrate the lack of balance between top-down push and bottom-up pull in innovation. It is difficult for bottom-up approaches to compete with top-down approaches, which often have many visions and a simple form of promotion, but forget the shot-term perspective for results. Instead, they could be seen as a couple, who need each other to solve the challenges in construction. For example in Japan, specialists uses drones to measure tiled roofs in 3D as a basis for industrialisation and to reduce the work on site by skilled workers, and move the cutting of roof tiles to a factory with women workers. In Denmark skilled women workers are trained to use 3D and improvement techniques on site like Kaizen to reduce dangerous roof work and improve productivity. Could we find a better solution, if we combine these two approaches?

The seminar report can be downloaded from this link: https://sbi.dk/ and all the 16 presentation and the seminar program from this link: https://sbi.dk/japandk.

We at AAU-Build hope, that the Copenhagen seminar can inspire to a complete a second Japan-DK seminar in Japan in 2021, where we can continue the Japanese-Danish cooperation on development and knowledge exchange on i-Construction, Construction Gemba Kaizen, and other top-down and bottom-up improvements. AAU-Build also hope, we can launch a common Japanese-Danish development program call 'Bottom-up Leadership in Construction' to improve the construction sector through bottom-up leadership and cooperation to deliver improvements in the construction including green buildings. We are open for involving all leading construction individuals, companies, organisations and authorities in the two countries to form a mentor network and to execute many bottom-up leadership projects in balance with different top-down strategies.

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