Abstract:

Construction industry has a low productivity rate concerning the raw material input and about 40% - 50% of global raw materials are used for the construction of our environment. Construction waste states the largest waste fraction even in highly industrialized countries and buildings are among the most expensive goods that we produce. Although we have achieved that complex high-tech products as cars and computers are produced with high efficiency, we have not brought the production of simple low-tech products as buildings to a comparable level. An alternative method to conventional construction is the large scale deployment of industrialization, enabled by applying automation and robotics based processes and technologies throughout all phases of the life cycle of built environments. The present chapter first analyzes best-practice industrialization/automation and building production projects, which have been tested or applied successfully in larger scales during the last decades. Furthermore, the chapter derives from that analysis, a framework for combined on/off-site building production as an approach for managing sustainable and resource efficient construction processes. Strategies from the presented framework are currently applied by the authors of this chapter to various projects around the world.