POLITECNICO DI TORINO

Master of Science in Architecture Construction City

Honors theses

The infographic evolution of the building process: from BIM-based integrated design to the bulding site management 4D and 5D.
Case study: The construction of 78 ATC residences on Spina 4, in Turin

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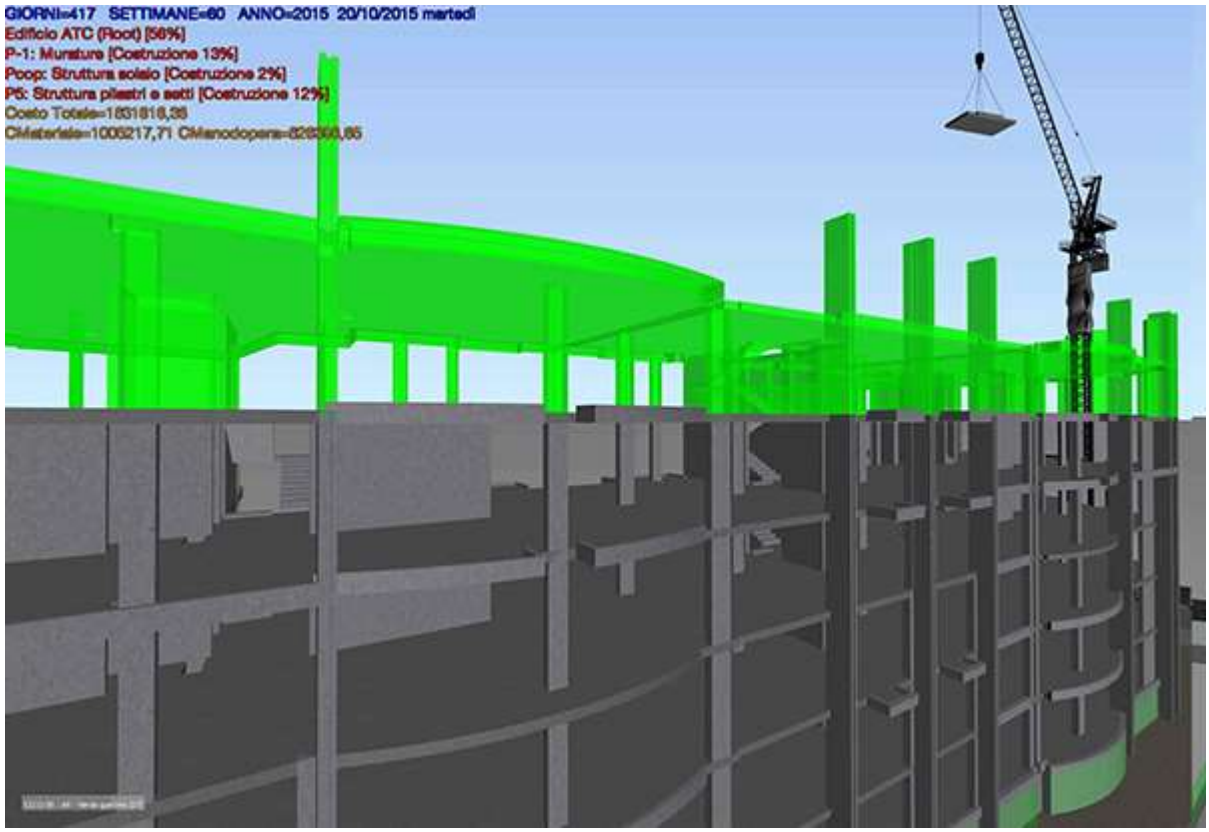
SINTESI TESI

In recent years the complexity of the construction field has produced a rapid spread of new applications though to accelerate some processes of construction and design: from 3D visualization of building components assembly up to the most engaging platforms that involve together the third, the fourth (time) and fifth (quantity take off) dimension.
The introduction of BIM technology allows to follow ambitious aims: a radical transformation of the design method used by professionals. However, the challenge is not just about the design method, but rather it means a drastic swing internal processes and the redefinition of the roles of the designers who work and coordinate with each other.
The architects assume new important roles because usually they represent the first players in the construction field: so they need to test constantly virtuous practices used as a support to the different areas of design to prepare the ground for the collaboration withal the actors involved in the building process.
Therefore the main goal consists in structuring methods and strategies able to improve the different project phases (preliminary final, executive design), and the subsequently construction phase: the virtual modeling linked to specific BIM database can be integrated and used to optimize the organization of the building site with new dynamic 4D representations (3D + time).



The BIM models allow, if properly used, to represent each object designed not only in its final version, but also in its temporal evolution from the early design up to the construction phase, using interdisciplinary processes deeply connected with the traditional Gantt charts that manage time and costs schedule (5D).
The case study used to develop the research refers to the construction of a residential building (78) apartments on Spina 4, close to via Fossata, in Turin. The building site is now in the initial stages. The intervention has been design by the “Agenzia Territoriale per la Casa della Provincia di Torino” (ATC), while ADICO Srl is the company designated for the building construction.

One of the main purposes of this study is the intent to compare the usual design approach with new approaches based on BIM methodologies, promoting it so that it becomes an integral part of all processes and design documentation at a later stage, becoming a valid and flexible support tool for the construction phase.

The testing part has carried out to re-interpret the architect role in the building process, critically analyzing the various peculiarities that involve him, directly and indirectly in the management of a project intervention.
In conclusion, despite the difficulties related to the learning of new software and the limited distribution (until now) on the national scene, BIM methodology has expressed their enormous capabilities that place it in a leading position in the digital design scenario. And it is just in times of crisis like this that new strategies acquire more strength, becoming the only alternative that allows, far from a tempting conformism, to remove the dark moments and pursue important process innovations.

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