

Honors thesis

POLITECNICO DI TORINO

COURSE OF MASTER'S DEGREE PROGRAM IN ARCHITECTURE FOR SUSTAINABLE PROJECT

Title

MULTI-STOREY WOODEN BUILDINGS AND THE ENVIRONMENTAL IMPACT.

LCA (Life Cycle Assessment) analysis of a multi-storey wooden building for social housing site in Castenaso (BO).

Abstract

In Italy and in the world, the development of multi-storey timber-bearing buildings grows exponentially, which is changing the concept of sustainability in the building sector. What is the construction world taking towards this direction? The environmental situation of our planet has become alarming, emissions into the atmosphere are now unsustainable and global warming has been relentless for over 100 years. For this reason, European and national environmental policies have drawn up valid programs from now to the near future, aimed at reducing CO₂ emissions into the atmosphere and the decay of resources deriving from non-renewable sources. Building plays a fundamental role in this area, which is why a change of mentality is necessary on the part of everyone, from architects to clients, so as not to cause any further problems for future generations.

So are wooden buildings able to meet future policy objectives and contribute to reducing carbon emissions in the atmosphere? To find a concrete answer, in this thesis a LCA (Life Cycle Assessment) analysis was carried out on a multi-storey wooden building, a case of social housing under construction in the province of Bologna, called the "Frullo" of Castenaso (1) designed by "SBAstudio by Gianluca Brini".

At the end of the analysis, the case study was compared with other LCA analyzes carried out in other parts of the world to verify the reliability of the results, and consequently the actual environmental sustainability of the project with the relative advantages compared to the buildings built with traditional technological solutions. The final objective of the thesis is to verify the impact that this mixed wood / concrete construction solution has on the environment in terms of the use of primary energy CED (Cumulative Energy Demand) and of global warming potential GWP (Global Warming Potential) . Impacts were calculated in the "from cradle to gate" phase and in the use phase using the SimaPro software.



(1)

Tutor

Guido Callegari

by Federico Pavia

Correlator

Corrado Carbonaro

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e-mail: <u>federico.pavia@hotmail.it</u> Cell: +39 3491653718

Testo abstract (4000 caratteri max) (Arial 12, interlinea 16 pt). Usare lo stile "Testo Abstract".

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