



POLITECNICO
DI TORINO

Honors thesis

ARCHITECTURE FOR THE SUSTAINABILITY DESIGN

Abstract

**Seismic adjustment as an occasion for the valorization
of contemporary industrial heritage.
A structural and architectural reloading project of a
building of Lanificio Cariaggi in Cagli, Marche.**

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In a phase of Italian history in which much of the profound limits of construction techniques hitherto used are emerging with a disarming frequency and devastation; this thesis proposes to analyze the risks and the critical aspects of our industrial heritage, in terms of seismic vulnerability, architectural-functional and environmental quality. The aim is to explore a solution to the problem of the serious vulnerability of factories in Italy, the backbone of an economy for which guarantees of efficiency and continuity of work make the difference between prosperity and destruction of entire communities.

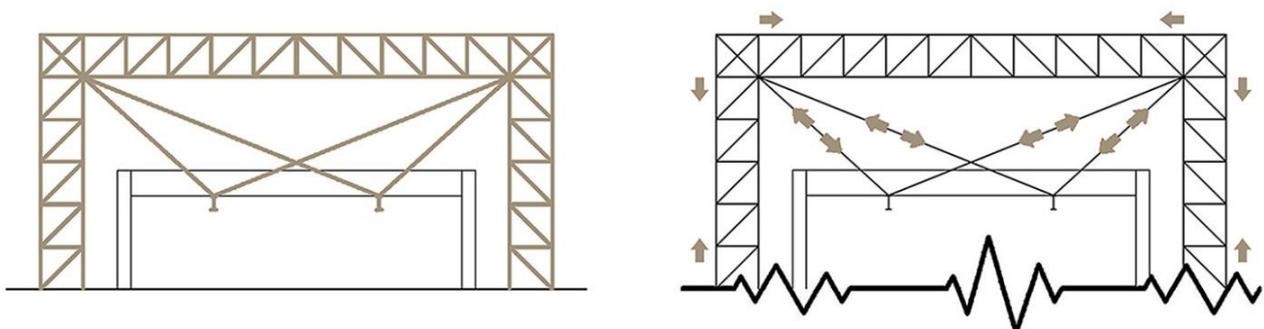
Although Italy is a predominantly seismic territory and the problem related to the adaptation of single floor sheds is widespread, our attention has focused on Marche as it is our land of origin, and we feel the problems related to this territory closely, rooted in a very high-quality craftsmanship, agro-industry and punctual industrial reality.

The conformation of the production systems of the Marche region is developed along the valleys of the main torrents, extending in a transversal way to the seismic hazard, from the less dangerous areas of the coast, to reach the seismically most active areas of the Apennines. Those pre-mountainous areas are very delicate, where the difficulty in agricultural production and a local tourism that is unable to compete with the coast make the few, but peculiar, industrial activities present, the only brake to a depopulation that in recent decades is already recording a strong increase.

This was the main reason that led us to choose Cagli (in the pre-mountain area of the province of Pesaro-Urbino) and the Cariaggi wool mill as the object of our research, a reality of great production, the flagship of the Italian textile industry that operates in a difficult territory and is characterized by a building system which is very vulnerable to seismic hazard.

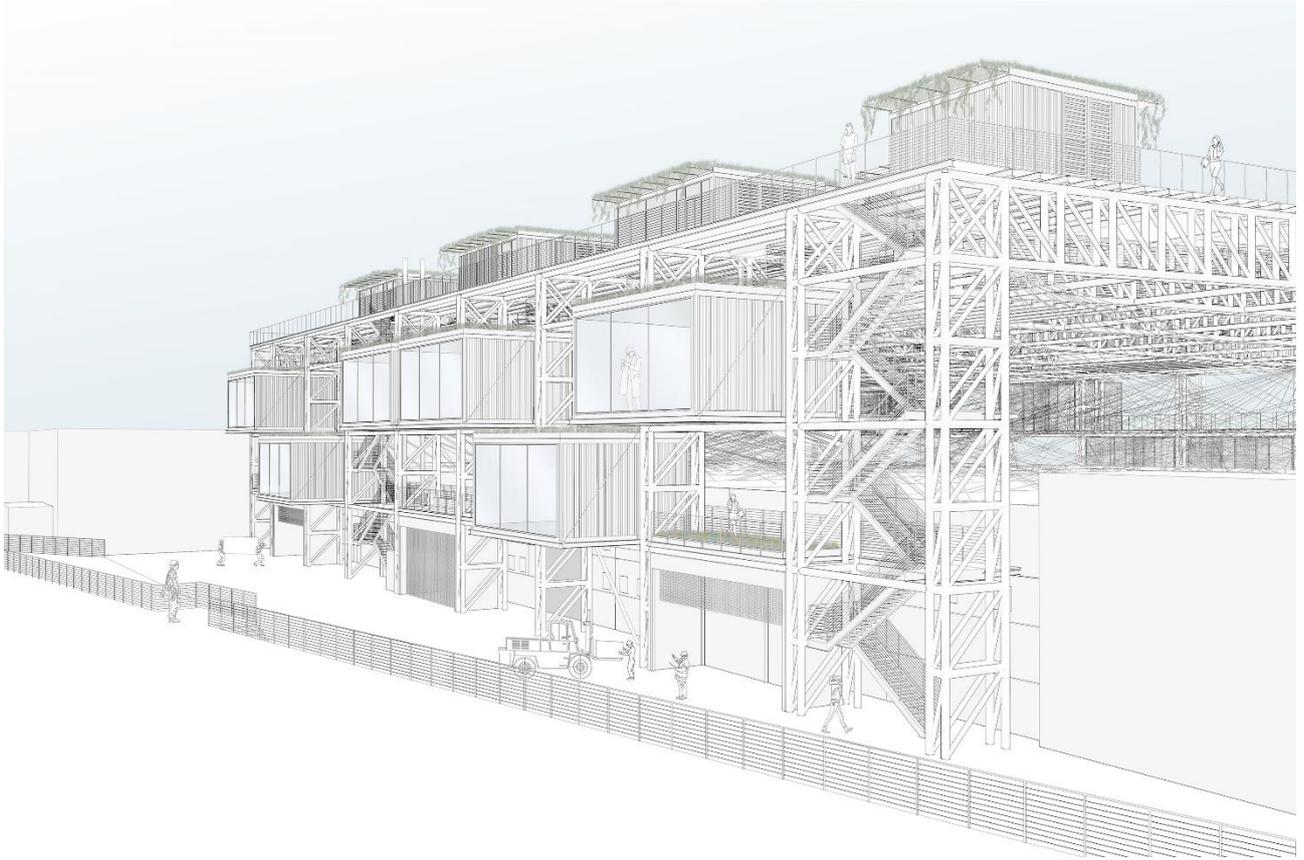
The work starts from a construction technology analyzed in a research of the Department of Structural, Geotechnical and Building Engineering of the Polytechnic University of Turin by Professor Giuseppe Andrea Ferro, with the name "Seismic safety belts", so far developed only in ideal cases, with the intention to test its feasibility and benefits.

Starting from the consideration that the techniques of adaptation of prefabricated sheds (cited in NTC 2008) provide a massive structural reconsolidation intervention with long periods of construction and stop production, "seismic safety belts" provides a series of linked portals, placed at horse of the single floor shed, to which the covering is connected through an order of steel cables that come into traction when the beam of the shed loses its support on the pillar, thus acting almost totally from the outside.



This work aims to exploit the theme of seismic adaptation as an opportunity to give new light to a heritage that shatters in many ways, from technical to architectural-functional, energy-environmental and landscape, without interrupting production and providing quality without additional land appropriation. The design of such structure can not only be an adjustment for its own sake, but concomitantly must explore all possibilities generated in terms of new spaces and functions available to companies, the possibility of engaging technologies and systems that can favor total performance and, ultimately, return an architectural quality, often a marginal characteristic in nearby projects. The final intent is to trigger virtuous processes with a recovery-oriented reuse rather than a novel object, to the redevelopment rather than the simple adjustment, avoiding waiting for the disaster to appear before dealing with it.





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