

Rebirth in wood: From an old abandoned production site to a modern technology center

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1.1. Introduction

The "Officine Meccaniche Italiane S.A.", better known as "Officine Meccaniche Reggiane", or more simply "Reggiane", was an Italian company founded at the beginning of the 20th century to produce railways, artillery shells and combat aircrafts. In particular, in the shed number 18 were produced railway locomotives and, therefore, has a length of 174 m. The redevelopment project of this site, now abandoned for decades, concerns urban regeneration for the transformation of the historic Officine Meccaniche Reggiane into an innovation center, at the service of businesses and research.

1.2. Information about the project "Ex Officine Reggiane - Shed 18"

The project is spread over a total area of 18824 square meters and the timber structure occupies a surface of 7170 square meters. Below are listed some information regarding the project:

Developer: Società di Trasformazione Urbana Reggiane

General contractor: Impresa Allodi di Parma

Architectural designer: Arc. Andrea Oliva

Structural design: Eng. Pierluigi Cigarini

Design, production and installation of the timber structure: XLAM Dolomiti

Number of stories: 3

Cubic metres of CLT used: 850 m³

Cubic metres of Glulam used: 722 m³



Figure 1: situazione iniziale

1.3. Static, constructive and details design

The initial project based on the tender was designed with a precast timber frame structure. Following the assignment, in order to achieve a greater flexibility of the interior spaces (as well as for reasons of cost and timing) it was decided to change the project's structure with vertical CLT walls and floors with glulam joists.

Therefore, the project has been completely re-designed starting from the vertical loads, the seismic acceleration of the site and a R60 request of fire resistance. Particular attention was paid to the interaction with the installations which required a massive use of steel beams to reduce the thickness of the floor structural elements and have the space required.

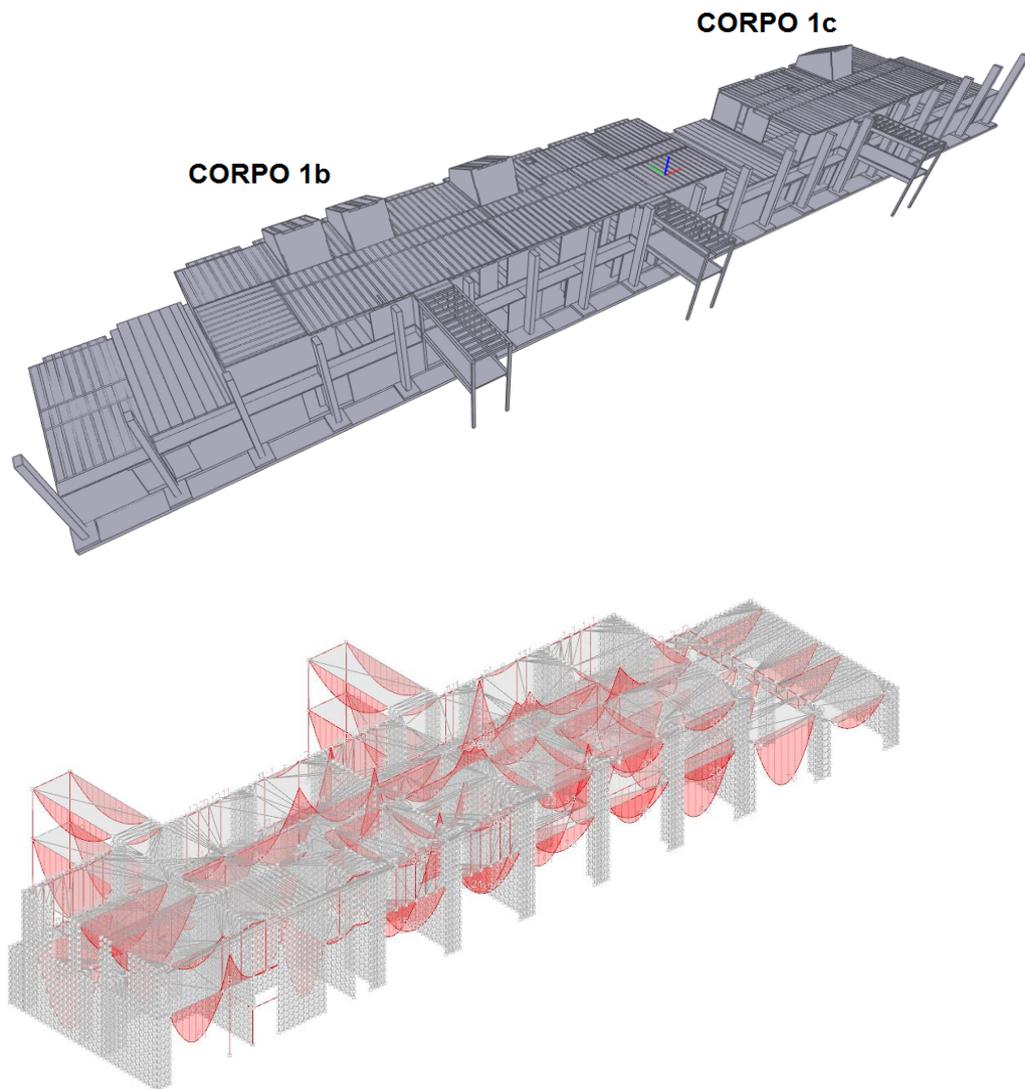


Figure 2: images of the FEM model of the building



Figure 3: Executive drawings for the installation of the wall panels of the second floor (1b building).

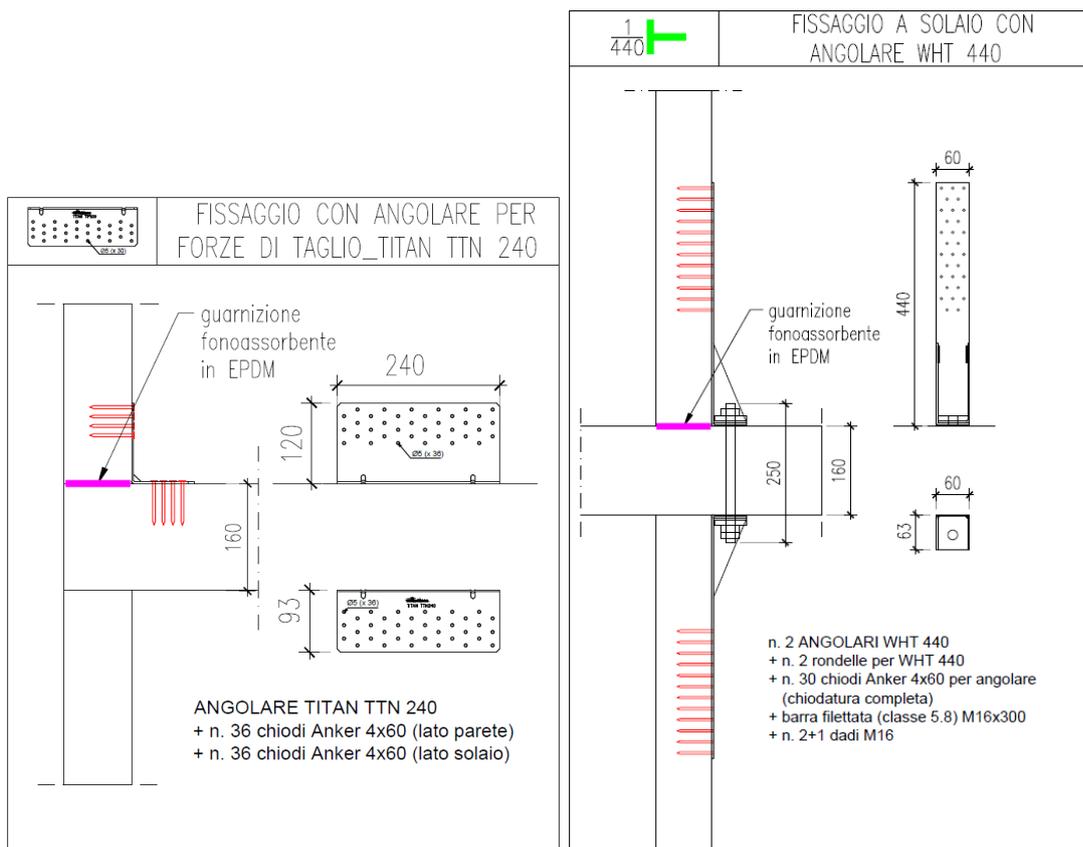


Figure 4: connections details

1.4. Production and installation of the timber structure

The installation of the timber structures started on 10/11/2017 and ended on 30/03/2018. As you can tell from the images, the management of the logistics on site was the most complicated factor of the entire construction. In fact, we found ourselves working inside an historic building with a pre-existing structure. Moreover, many works were carried out at the same time and had to be carefully planned.



Figure 5: On site installation of the wall panels of the ground floor



Figure 6: some pictures of the building on site during the installation of the timber structures

1.5. External cladding

The external cladding was made using the ISOTEC system which is a high performance polyurethane thermal insulation, designed to build high energy efficiency buildings, guaranteeing excellent insulation and ventilation of the entire casing. As outer finish, it was used a WPC slatted cover or a polycarbonate coating.



Figure 7: phases of installation of the facade build up



Figure 8: installation on site of the facade

1.6. Internal finishing

On the inside, the timber was always covered with a layer of plasterboard, without leaving it visible. The interior spaces were divided using glass windows, which also characterizes the facades towards the outside.



Figure 9: internal view of the spaces with plasterboard walls and the counter ceiling ready to be put in place

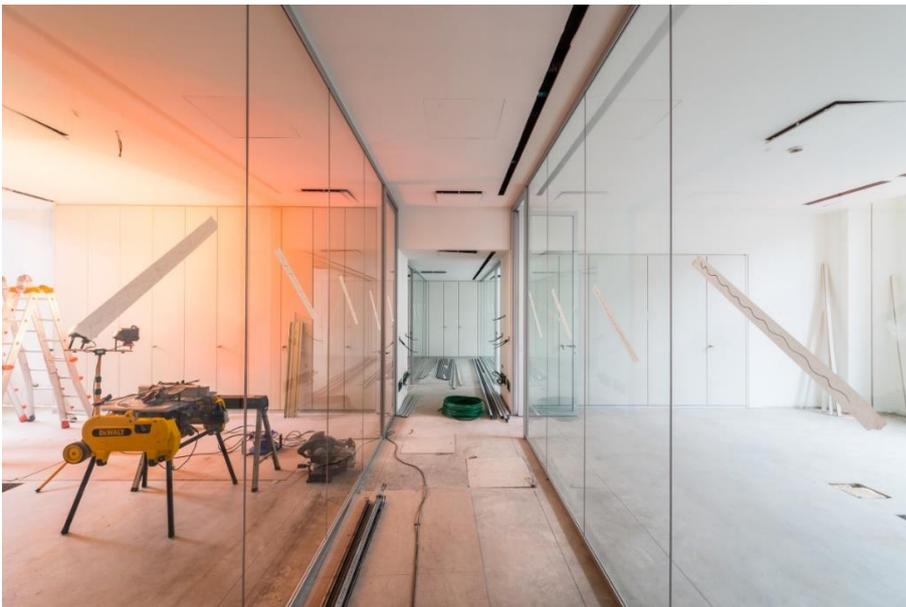


Figure 10: view of the internal finish

1.7. Finished building

The building was completed at the end of 2018 and inaugurated in the spring of 2019. To date, almost all the spaces have been sold / rented to companies and innovative start-ups in the city of Reggio Emilia. The Shed 18 of the Ex Officine Reggiane is reborn to its new life.



Figure 11: internal view of the offices already completed

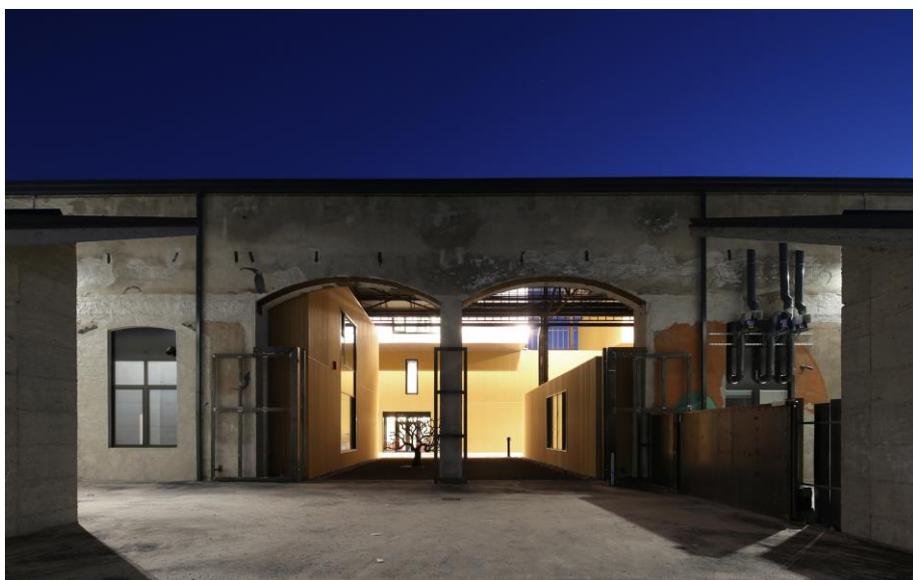


Figure 11: night view of the outside of the building (Image taken from "redazionale rivista il Modulo n. 420")

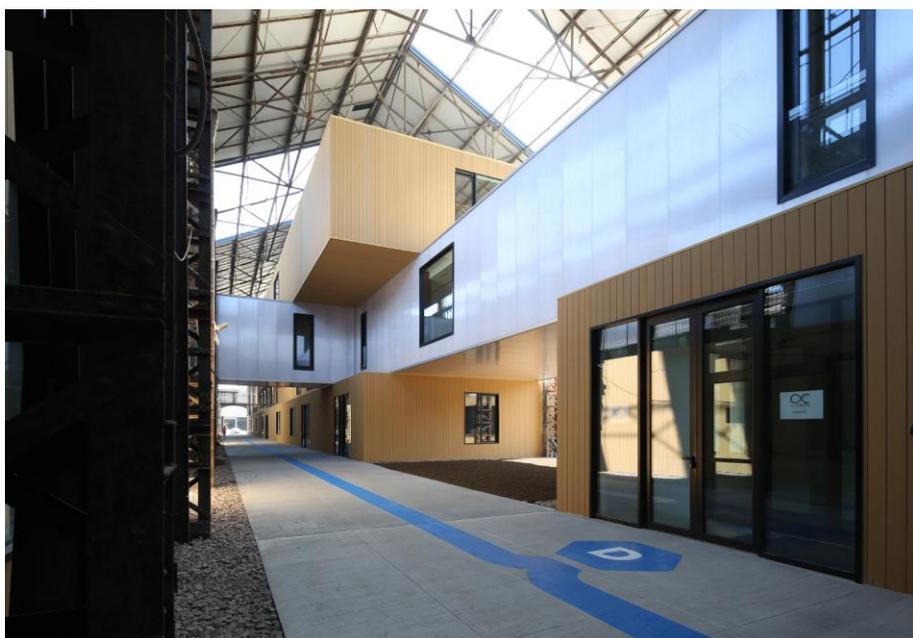


Figure 12: general view of the finished building (Image taken from "redazionale rivista il Modulo n. 420")