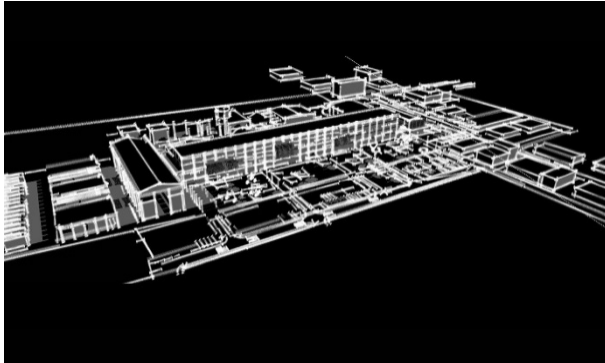




Ex-paper factory in Castiraga Vidardo: rehabilitation and reuse like a covered market

Ex-fábrica de papel en Castiraga Vidardo: rehabilitación y reutilización como mercado cubierto



1. Ex paper factory- 3D

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Abstract

Our cities and countrysides are characterized by lots of dismissed areas that could be important resources to reduce the use of land, peculiar character of our times. Those areas were always considered negative, but it is important to change this view, in relation with the sources they will be in the future and they were in the past.

The project consists of the revitalization of the paper factory that is an abandoned area in the village of Castiraga Vidardo, Italy, respecting its memory. The objective was not to destroy the existing buildings, but to reuse them like a covered market, making the area a new important centre for all the villages around the factory.

The idea is to create a continuous space; the visitors have to imagine a paper folder, moving in the oldest building. The result is the interaction and integration between the existing spaces and the new ones.

Keywords

Rehabilitation, reuse, factory, market

INTRODUCTION

"I was born in the little village of Castiraga Vidardo, where everybody thinks about the paper factory like a phantom place, to be afraid to go in, due to its degradation status. Nevertheless, my fellow citizens know also the importance of the factory, connected, above all, to the history of the village. I would like everyone to understand that regenerate this place is possible, changing their vision completely. So, I decided to propose the rehabilitation of the factory as my final project at the University; feeling a particular affiliation with it, hoping, one day, to see his realization or, at least, to inspire some ameliorative intervention on the factory." (Marta Medaglia, April 2015)

Resumen

Nuestras ciudades y sus periferias se caracterizan por disponer de áreas degradadas, que podrían ser un importante recurso para reducir el consumo de suelo, práctica habitual en nuestros días. Sería esencial cambiar la percepción negativa de dichas áreas, tanto por lo que fueron en el pasado como por lo que pueden llegar a ser en el futuro.

El proyecto pretende revitalizar una fábrica de papel abandonada en la población de Castiraga Vidardo, Italia, respetando su memoria. El objetivo era reutilizar las edificaciones existentes como mercado cubierto, convirtiendo el área en un importante foco para todas las ciudades próximas.

La idea es crear un espacio continuo, en el que los visitantes tengan que imaginar un pliego de papel continuo, moviéndose en la nave. El resultado es la interacción y la integración entre lo antiguo y lo nuevo.

Palabras clave

rehabilitación, reutilización, nave, mercado

The paper factory represents a central point for Castiraga Vid., because lot of people worked there and due to its location in the village. This one occupies a central position between the city of Milan, Pavia and Lodi, which is well connected with, such as with nearby villages, by main roads and bicycle ways. Moreover, the paper factory is perfectly visible and achievable from the village main street. From there it is possible to see the entire principal prospect.

It is one of the most characteristic elements of the village and it has a huge potential to make alive again something animated before, but which is completely empty now.

It was decided to reuse the paper factory as a covered market for various reasons. First, the village rules permit only the collocation of artisan and commercial functions in the area, according to the surroundings: the factory is located in the industrial part of the village, even if reachable from the residential zone in few minutes easily (fig. 2). Another motivation depends on the analysis of the present activities in Castiraga Vidardo and in the nearest cities: the nearest covered markets are in Milan and the majority is inserted in a rehabilitation plan. This type of market, replaced by big shopping centres in the last years, is revalued now, especially because of the match prize-quality and the sustainable quality (km 0, subsidy little users, etc.).

The new market wants to be a place in which there are degustation points, restaurants, cook labs, near fruit-vegetable sections, traditional butcher and fish shops, as the Covered Markets located in all the European Capitals, revitalizing in this way a dead part of the village.

THE PAPER FACTORY



2. Air photo of the area

The paper factory was located in a peripheral zone in Castiraga Vid., but now, because of the big village expanding in the last 15 years, it occupies a more central position, surrounded by other factories.

The complex is composed of six buildings; the ones to the east were built later (fig. 3, F fig. 6).



3. Existing buildings

So, it was decided to focus the project on the oldest part of the factory, according to historical and architectural aspects (fig. 4).



4. Interior spaces

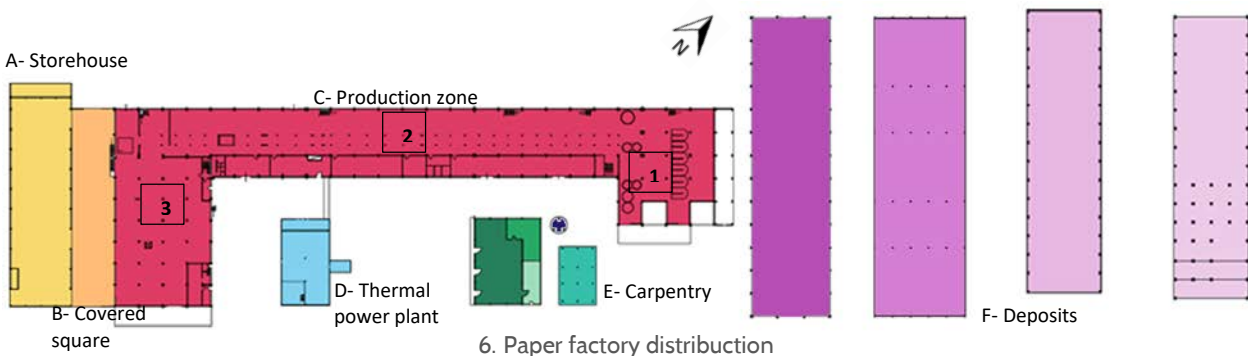
The oldest function of the buildings inspired the project, starting with the continuous machine study, used to produce the paper (fig. 5).



5. Continuous machine scheme

The main building (C, fig. 6) was the centre of all the paper production process. It develops for 206 m of length and 64 m of width and it is connected with the storehouse by a sort of covered square, whose roof was realized by steel trusses; now it is in a deteriorating status, like the rest of the area.

Construction year: 1968. Closing year: 1988



6. Paper factory distribution

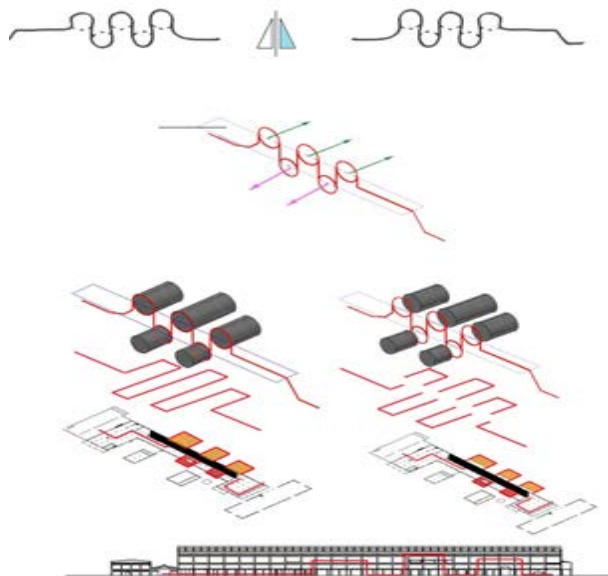
Following the production procedure, there is first of all a zone with cylindrical concrete elements (1, fig. 6), used for doughs. Then we find the double height continuous machine area (2, fig. 6), scanned by pillars and rounded by some different rooms. In the end there is the setting-up area, renovated recently (3, fig. 6). The first floor distribution is the same of the ground floor, even if the machine zone develops for 14 m of height. There is a second floor only in correspondence of the setting up and dough areas, reachable by two different stairs; the one to the south-west brings to inaccessible terraces. The whole building was realized by prefabricated concrete and the roof by fiber cement; now rebuild according to new current normative.

THE IDEA



7. Concept. The relation between the new and the old

The propose consists of the insertion of a paper folder, moving free, following the old production way. It starts like volume, to become vertical connection, horizontal connection and volume again. In this way it does not connect the start and the final point only, but also the different floors. The new volumes develop inside and outside the factory, revealing their presence and hiding the real development of the folder at the same time (figs. 7, 8). Only entering in the factory a visitor will understand what is going on and how the project works.



8. Concept. The development of the idea

It creates a functional and symbolical dialogue; the new structure interacts with the existing without

mimicry, resulting recognizable by materials and form. Lamellar wood is used, permitting the realization of curves, in opposition to the linearity and simplicity of the paper factory concrete. The new market will occupy all the spaces with different functions (fig. 8).

REFERENCE_ THE FOLDING ARCHITECTURE

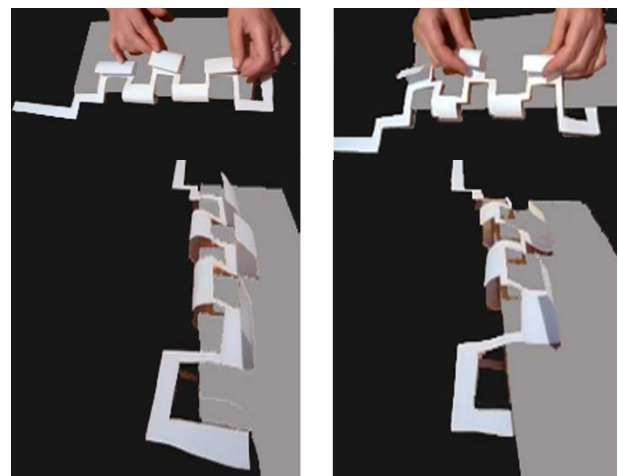
“Folding in architecture as strategy that manages complexity by integration of disparate elements into an heterogeneous yet continuous system” (Sophia Vyzoviti, June 2003)

To concretize the idea, the study of the folding architecture and, more specifically, of the paper fold, was essential. Its principles, in fact, reflect the ones of the propose.

The folding architecture, born at the end of XX sec., in fact, goes over the formal production process, useful to generate complex architecture, through the “fold” concept, introduced by Deleuze¹ (1993) and Cache² (1995), deduced by Leibniz’s³ considerations in the Baroque age. Moreover, Klee⁴, introduced the ‘curve’ idea, which permits the continuity between the floor, the wall and the roof, over taking the division between these elements. It is the introduction of this last concept that defines the Folding origin. It changes the traditional ideas, generating a new architectural language, avant-garde, not linear. Exactly, how the author, would like for her project.

PAPER FOLD

Was Sophia Vyzoviti (2003)⁵ that introduced the paper fold program, to study the main concepts, which the fold architecture is based on, analyzing various parts: matter and function; algorithms; spatial, structural and organize diagrams. The fold, in fact, is a continuous element that tends to the infinity, connects the *in* and the *out*, the *low* with the *high* (fig. 9).



9. Concept. The paper fold

THE PROJECT

OUTSIDE SPACES AND ACCESSES

Before starting the project, it was essential to analyze the market function to satisfy all the demands.

Different entrances and access ways for visitors and workers are thought, also for security reasons, such as for the products vehicles and workers; reversing to employers a parking in the south zone. Near this parking a new deposit building is realized (a, fig. 10). Always for security reasons the thermal power plant (D, fig. 6) is destroyed, permitting mayor movement facility to the vehicles and mayor security for the workers, moving in the area. The old carpentry is now dedicated for the offices (b, fig. 10). Carriageable accesses are reserved to the visitors in the north- west side of the area, where there are also parking, while pedestrian cycle accesses are located in the south- west part, where a new street is realized. This last one is reserved to the workers, but the visitors can ride it using the bicycle path. In this way, the village one is

enlarged. Important space is dedicated to the park, above all in the n- w area, where there are paved zones to set counter sales, vegetable gardens, fountains, gazebos and tables to eat. The materials in the park are different from the concrete tiles of the areas circumscribing the buildings. As it was said before, the workers entrances are different from the visitors ones. Among the latter ones there is further hierarchization: a tube entrance (fig. 13), that is a part of the project, highlights the principal access, where people go through a bigger way. The exits in the south of the complex are reserved to the employers, because they lead to the service part. So, entering in the building and walking across the folder (fig. 10), we arrive in the intermediate space (d, fig. 10) between the preparation and deposit zone, which the recovery of steel trusses is foreseen for and to intended to a cover square, to create a sort of filter between the real market (c, fig. 10) and the ex-deposit (e, fig. 10). In this last one, a game area and a deposit of trucks are located (figs 10 to 14).



10. Ground floor and external spaces, with the new paper folder



11. S- E front



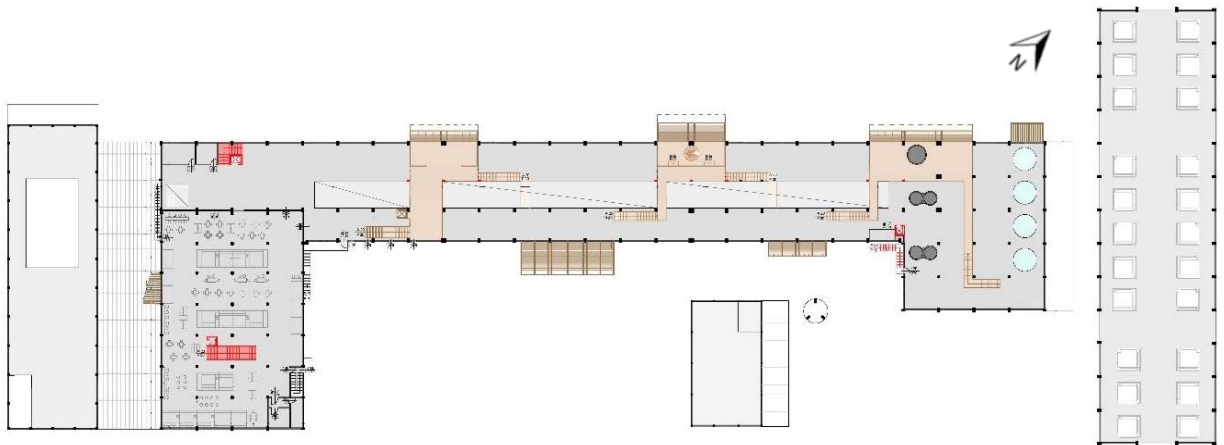
12. N- W front



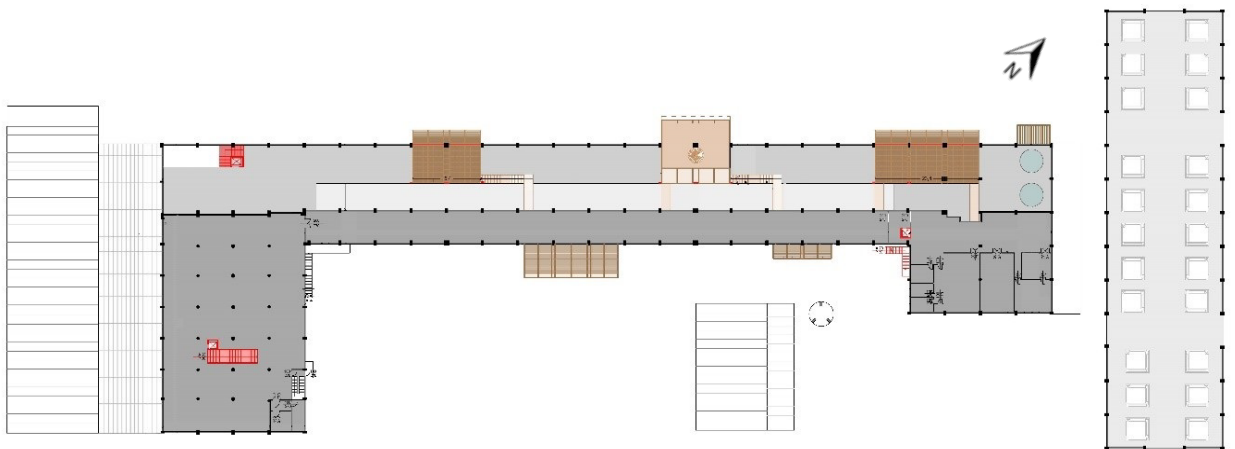
13. View. N- W front



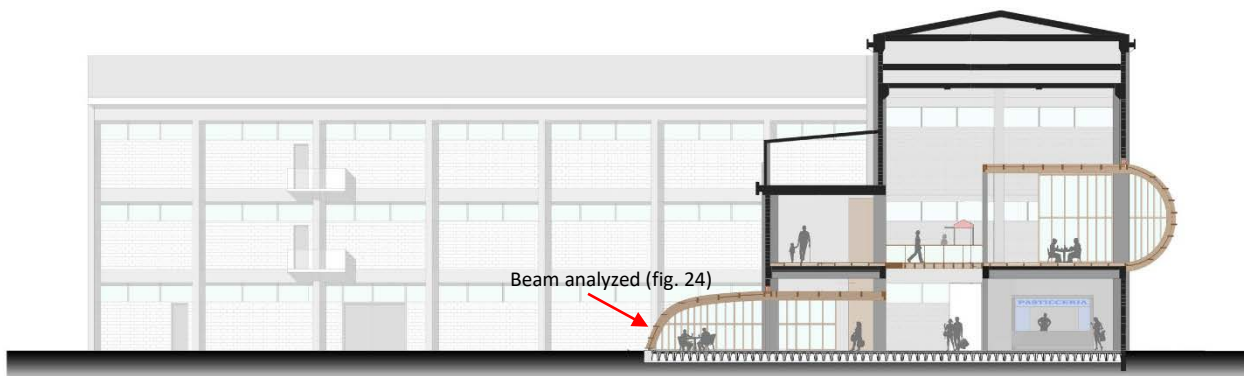
14. View. N- W front



15. First floor



16. Second floor



17. Transversal section

INTERIOR

Four types of market benches, settled at the ground floor, are projected; the ex-dough area (1, fig. 6) is now dedicated to winehouse, reusing the old pulpers like wineskins. The new volumes are destined to typical products degustation and beerhouse. The benches, like the San Miguel market in Madrid, characterize the first floor, where it is possible buy and consume at the same time. The added spaces are dedicated to bar, sushi point, reading and internet points; while the south- east zone is reserved to a tapas-point. Furthermore, at the same floor sell benches and areas for selling culinary books are located (fig. 15). The last floor, at the end, is reserved to a restaurant, labs and meeting rooms. These activities are connected by an accessible terrace (figs. 16 to 18).



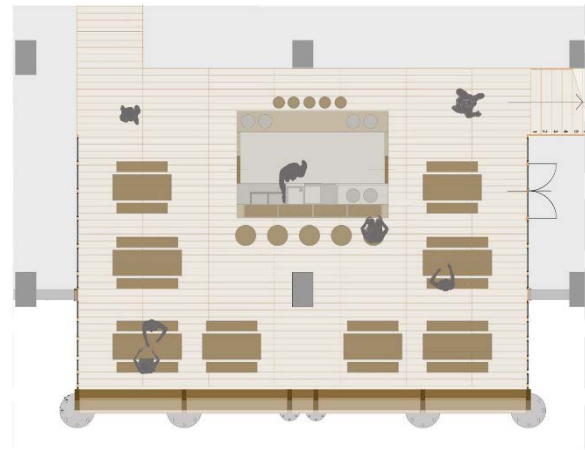
19. Ground floor view



20. First floor view



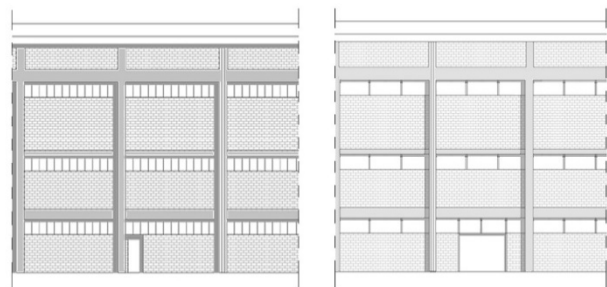
21. First floor view



18. Beer bar zone- ground floor

As it was said before the principal project material is the wood, in particular the lamellar one for the structure. Thanks to it, the curving profile of the new volumes acquires more linearity going into the building, creating a better connection with the entry and the exit, characterized by a wood tube (fig. 14). Using the wood, completely in opposition to the concrete, a way to move inside the market is created; nonetheless the visitors are not bound to follow the new one. In fact, different exits are expected in the exposition areas and the new volumes have at least a front open. The way will be recognizable by the use of different materials from the existing ones (figs. 19 to 21).

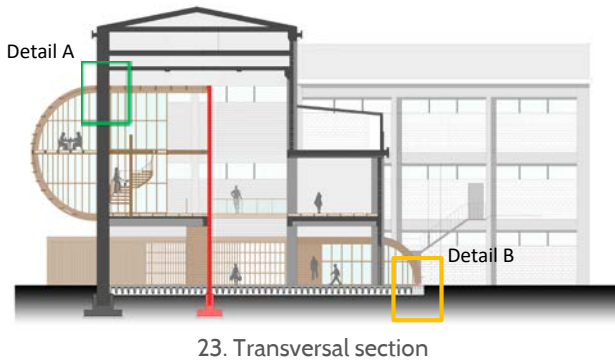
On the structural side, the existing was analyzed to understand how to work on it, to make it suitable for the new project. The intention was to maintain the built characteristics, operating if structural consolidation or aesthetic renovations were necessary. Therefore, for example, larger isolating glasses substitute the old windows and all the walls are renovated (fig. 22).



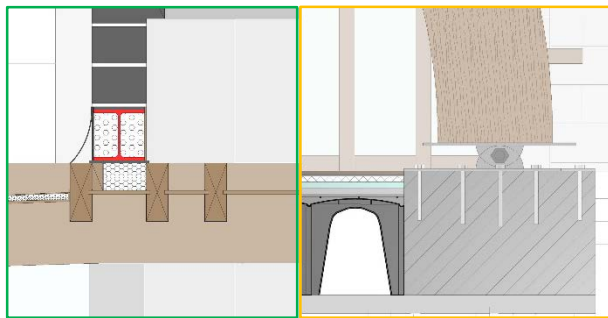
22. Facades: before and after

Relative to the structure, a crawl garret is realized to improve the building features, and all the others are reinforced and completed by shine concrete tiles or by wood system, if part of the folder way, to highlight the difference between various zones (figs. 19, 20, 21, 23, 24 detail B). Concrete pillars are added (indicated

by red color- fig. 23) to sustain the new volumes at the first floor, while the other ones are anchored to the ground by steel plates (fig. 24, detail B). Moreover, to permit to the new paper folder, to go over the walls of the factory, not prejudicing its stability, steel beams are collocated between the wood volumes and the concrete vertical walls (fig. 24, detail A).



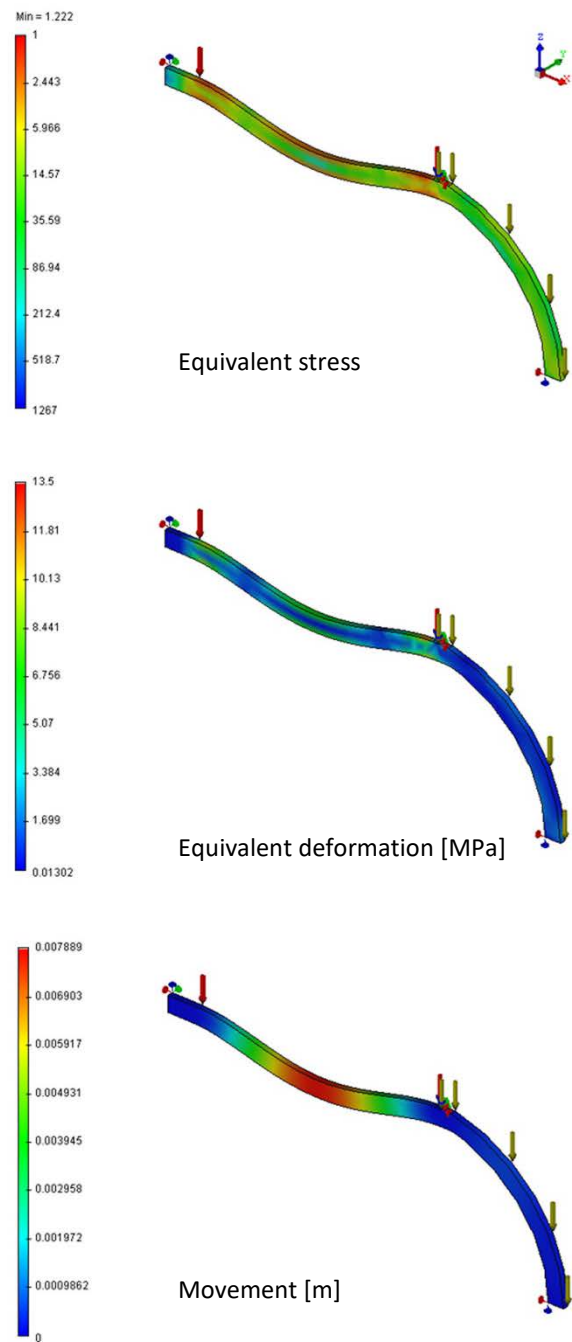
23. Transversal section



24. Details A and B

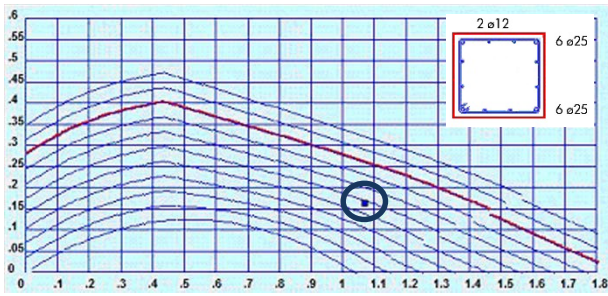
Not only the oldest building was studied, but also the new volumes. Different programs were used, like autoFEM, Cype, SecHOR and, at the end, the project satisfies all the requisites.

Specifically, to verify this, first, the loads, burdened on the beams, were analyzed, choosing, so, the appropriate profile, respecting the normative. The profiles were, then, studied by AutoFEM, a software about finite elements, related with AutoCAD. This one is used as kernel of solids modeling, checked then by the program. It permits to evaluate movements, reactions, deformations. To analyze all this elements, is important to give to the program the information about the structures: materials, Poisson's coefficient, density, traction and compression resistance and all the loads. Only in this way the program can study the structure, reporting, at the end, the movement, the equivalent deformation and stress. AutoFEM uses a colors range, to indicate the different values in the various parts of the element analyzed. The figure 25 shows it; referring to the beam of the figure 17.



25. Study of beam deformation by AutoFEM

The pillars were studied using SecHOR. As with the beams, the loads related to them were examined, to comprove if the chosen profile was adapted to the function. Inserted all the necessary informations, the program elaborates a diagram compression- bending moment (fig. 25); if the point indicated is under the red line, the chose profile satisfies all the requisites. The pillar analyzed in the figure 26 corresponds to the red one indicated in the figure 23.



16. Diagram compression- bending moment

¹ Gille Deleuze (1925- 1995) was a French philosopher, who influenced various discipline by his works.

² Bernard Cache, an architect born in the 1958 in France, researches the use of computational techniques, creating a non-standard architecture.

³ Leibniz (1646- 1716) was a German philosopher and polymath. He elaborated the theory of monads that possess no material or spatial character, differently from the atoms.

⁴ Klee (1879- 1940) was a Swiss-German artist. He contributed to create a new painting, based on abstract features.

⁵ Sophia Vyzoviti, born in Salonico in the 1971, focuses her research on design tool development, exploring how form generation processes mediate between social groups and artefacts to transform conditions of spatial interaction.

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