SMART REHABILITATION 3.0

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Historic working places turned into social dwellings.

Retrofitting of an ancient textile factory Can Fabra i Coats in Barcelona, Spain.

Type of intervention

[ ] *Restoration* [X] *Rehabilitation / Renovation*

Concerned elements on the intervention project

[ ] *1. Foundations and underground structures*
[X] *2. Vertical structures*
[X] *3. Horizontal structures and vertical connections*
[X] *4. Roof and terraces*
[X] *5. Façade and building envelope*
[X] *6. Finishes and completion elements*
[X] *7. Integrate services*
[X] *8. General strategies for building recovery*

Site	Can Fabra i Coats, carrer de Parellada 9, Barcelona, Catalunya, Spain
Objectives	Retrofitting of an ancient textile factory to transform it into 46 social dwelling and an equipment for the Jove Colla Castellera of Barcelona.
Property	Public
Designer	Chief architect: Roldán + Berengué (R+B) Structures: Bernuz-Fernández Arquitectes S.L. Facilities: Caba Sostenibilitat S.L.
Date	Project development: 2016 Works: 2019

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Background to the intervention

At the beginning of the 19th century, Fabra i Coats was created. It was one of the largest spinning companies in Europe, where more than 4.000 people worked. It was definitely closed in 2005.

The set of buildings that make up Pabra i Coats is a fundamental part of the Sant Andreu neighborhood, one of Barcelona's districts, and a key point to understand its history. Founded in 1837 by Ferran Puig i Gibert under the name of El Vapor de Fil, the establishment of the factory in Sant Andreu became a clear symbol of the passage of an agricultural society which took advantage of the Rec Comtal for its crops, to a new intended for industry.

Puig i Gilabert ran the company associated with his son-in-law, Camil Fabra, under the name of Camil Fabra I Cia and dedicated entirely to the manufacture of linen yarns and twists. For their part, in Scotland, a businessman named James Clark and the Coats family dominated 80% of the production of sewing thread in Britain.

In 1903, the successors of Fabra and Portabella, the directors of the Catalan factory at that time, signed a merger agreement with Clark that resulted in the "Compañía Anónima Hilaturas de Fabra y Coats", an important event that was the first investment foreign trade in the Catalan industrial economy.

From that moment, the history of the Fabra I Coats is a success story that we can see in the continuous expansion of the factory with the annex of new buildings.

Thanks to the association of Catalan industry with English company, the factory introduced a large number of labor advantages that were not yet established in Spain. In 1905, for example, they founded the "Mutual Relief for Employees of the Joint-Stock Company Hilaturas de Fabra y Coats", which was responsible for ensuring that workers received a paycheck in the event of sick leave or even a certain amount, once they retired.

Fig.1: Historical view of the factory complex. *https://ajuntament.barcelona.cat/recintefabraicoats/es/content/historia (10.21.2021).*

The crisis of the textile and the industrial reconversion of the sector at the end of the XXth century caused that from the 70's to the 2000, the Fabra I Coats underwent a process of fall that finalized with its closing in 2005. Then, the City Council was responsible for buying the buildings for conservation and reconversion into what we know now when we hear the name of Fabra I Coats: a multidisciplinary space that hosts all kinds of artistic creators, social service spaces, centers, library, etc., a hybridization center that encompasses contemporaneity without forgetting where we come from, preserving the historical memory of the factory…

(https://ajuntament.barcelona.cat/recintefabraicoats/es/content/historia (10.21.2021)

Fig.2: Ancient machines.
https://ajuntament.barcelona.cat/recintefabraicoats/es/content/historia (10.21.2021)

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Description of the building

The historic building has the usual historic factory typology: Façades made of brick, acting as loading walls; Steel beams; Sloped roof and High windows. All of them creating an open-plan and great volume space.

Fig.3: Site and location.
(https://www.espaisrecobrats.cat/fabra-i-coats-fabrica-de-creacio-fabra-i-coats/ 10.21.2021)

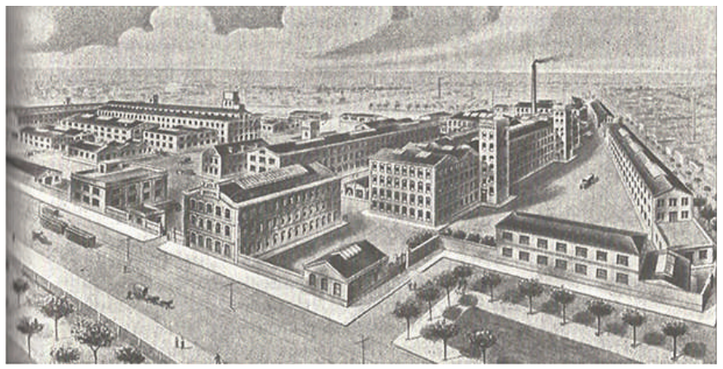

Fig.4: Historical engraving
(web page R+B architects http://www.roldanberengue.com/?p=project&id=120 10.21.2021)

The diagnosis of the building (values and state)

The building had food conditions in 2005, except for the roofs, but several floors had to be developed. The proposal was based on providing structural safety and habitability conditions to the building, following the current requirements and regulations and, in addition, on restoring the historical and artistic elements.

Restoration and rehabilitation works

The ancient palace has become a multi-family building with 46 endowment dwellings. Keeping brick loading walls and adding new hybrid horizontal structure (steel-wood) to create a box-in-box system in order to divide each original floor into 2 floors. The façades were preserved with firm and full respect. The sloped roof was replaced by a new one with steel trusses and laminated wood beams, adding insulation and waterproofing. The great challenge was to develop 46 dwellings inside, without altering the façades. Dwellings open to both main façades and have an average surface of 64m^2.

The main innovative contributions are the hybrid horizontal structure: steel beams and laminated wood beams, tongue-and-groove, to make a wood slab. This system is so light that avoids foundations reinforcement. Low environmental impact.

Energy Efficiency strategies: aerothermal systems, sun protection and cross ventilation.

Energy Certificate: A

Assessment of the results

This is an exemplary rehabilitation case which has won many awards:

- Mention, Best Collective Housing, Hispalyt Award of Brick Arquitecture 2017-2019, 2020.
- AEDAS Homes Award to Offsite and Modular Construction, REBUILD. Advanced Architecture Awards 2020.
- First Prize MAPEI Award to Sustainable Architecture 2020.
- Mention, ASPRIMA-SIMA 2020 Awards in the category of Best Real Estate intervention in housing.
- Panorama de obras Award, XV Bienal Española de Arquitectura y Urbanismo 2021.
- Finalist, Catalunya Construcció Awards in Technological Innovation Section 2021.
- First Prize, FAD Awards 2021.
- First Prize, AIT Award for Best Interior and Architecture in the category of Multi-family Housing, 2021.

It is highly important to remark the role of the IMHAB, that develops programs of social housing for sale or rent, of diverse typologies, but always carrying out social and constructive strategies, with special emphasis in the environmental subjects: rating A in the indicator of consumption of no renewable primary energy, rating B for the indicators of demand for heating and cooling and maximum renewable photovoltaic production.

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http://roldanberengue.com/

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https://ajuntament.barcelona.cat/premsa/2019/12/09/lajuntament-lliura-les-claus-dels-habitatges-per-a-joves-de-can-fabra-al-barri-de-sant-andreu/

Every picture that follows is from photographer Jordi Surroca, in R+B web page:
http://www.roldanberengue.com/?p=project&id=120

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Photos and drawings of the completed intervention.

Every picture that follows is from photographer Jordi Surroca, in R+B web page http://www.roldanberengue.com/?p=project&id=120

Fig.5: Main façade.

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Fig.6: Interior views, before and after the intervention.

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Fig.7-8: Main Stairs and Main hall.

Fig.9: “Frame structure” in wood is like a translation of ancient steel structures used as shelves.

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Fig.10-11: Interior view of a dwelling unit, and view of the corridor.

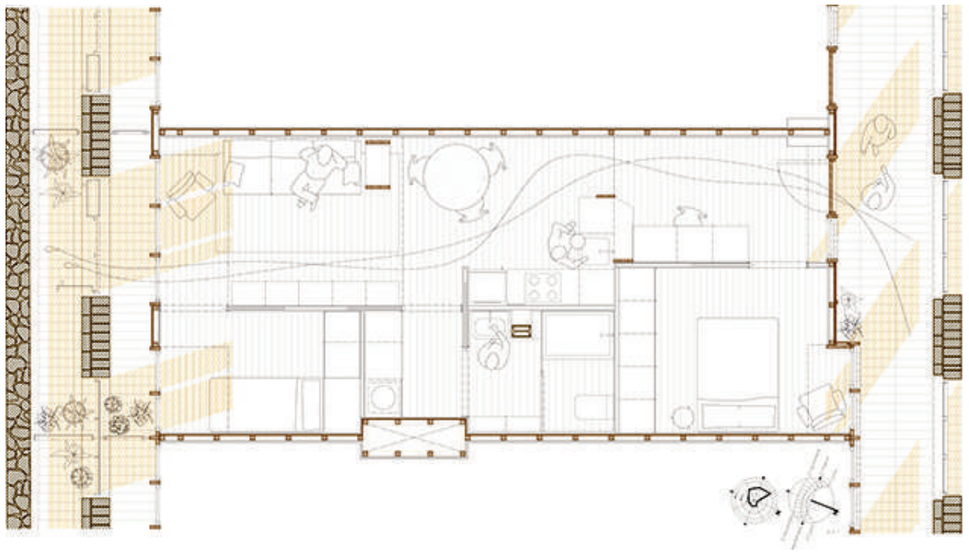

Fig.12: Dwelling with doble façade floor plan.

Fig.13: View of the Main hall.

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Fig.14: Corridors viewed from the exterior.

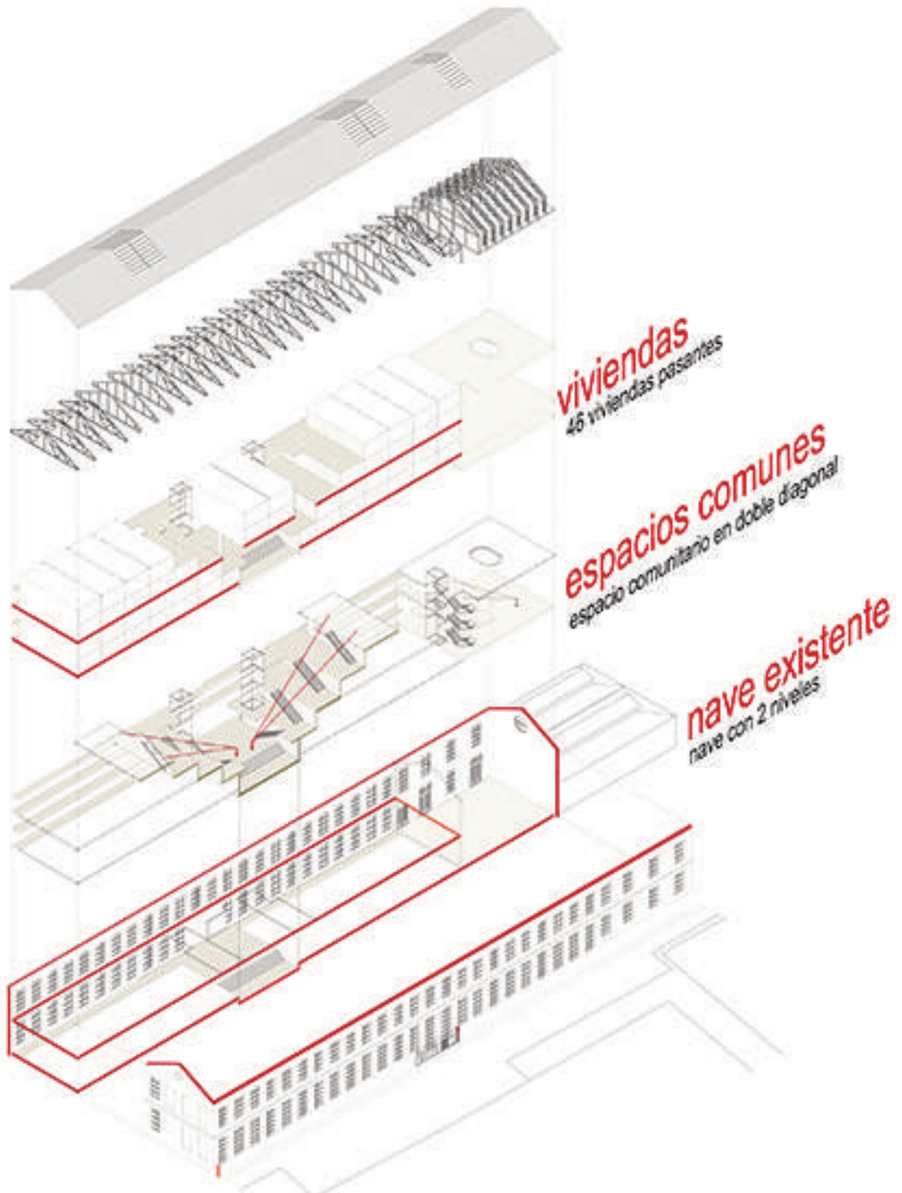

Fig.15: Original building envelope, common spaces, and dwellings.

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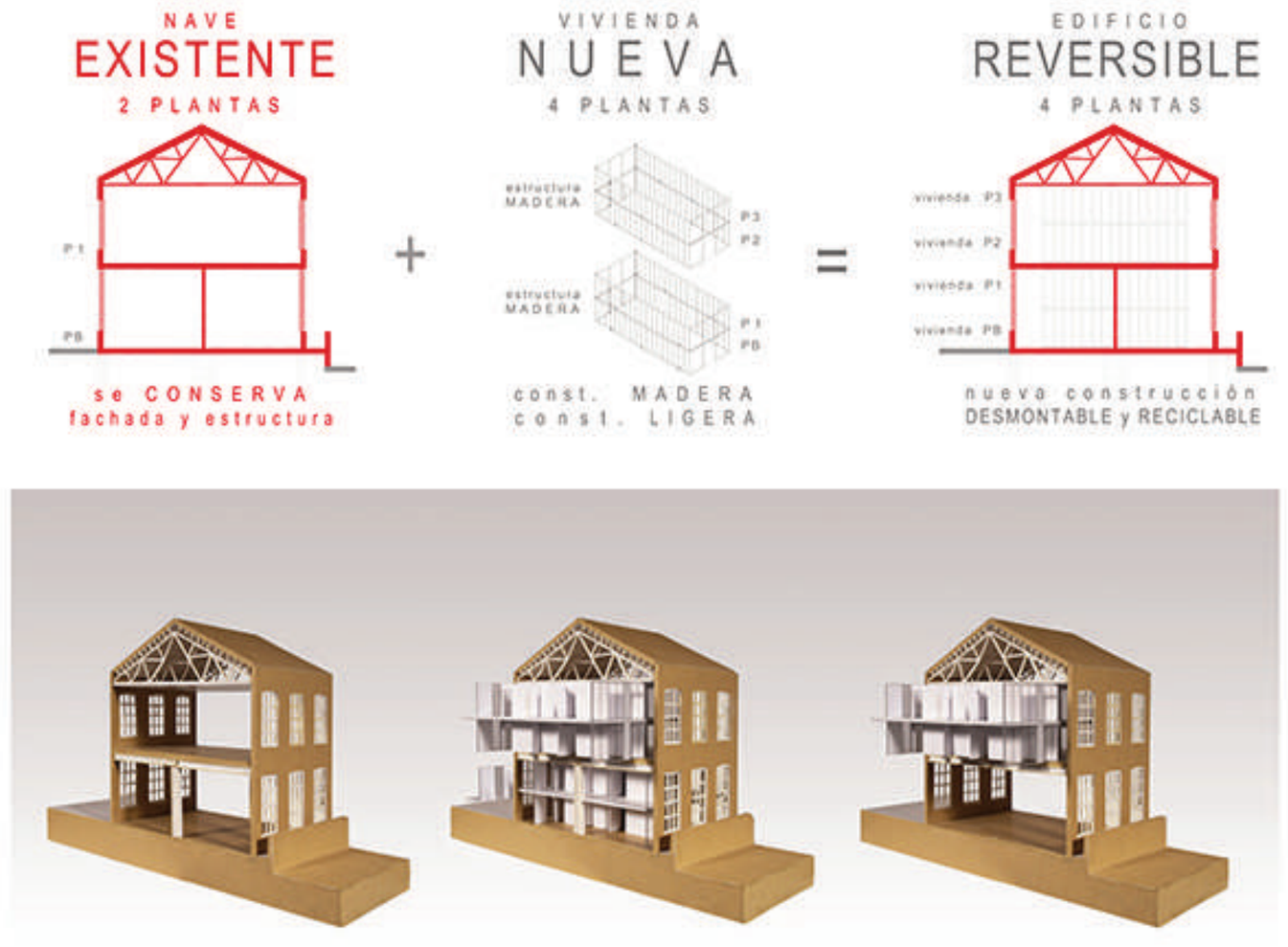

Fig.16: Strategies: assembly, lightness, and reversibility.