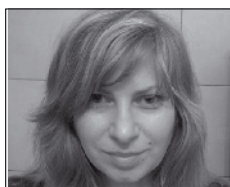


Modernization of post-industrial buildings on the example of a dairy factory at Hoża Street in Warsaw



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Renovation of post-industrial buildings often involves a radical change in their function. In most cases, this sort of facilities are adapted for various types of residential functions. The aim of the presented article is to show the possibilities offered by transforming this type of facility into short-term housing – on the example of a conceptual design of a hotel in a factory at Hoża Street in Warsaw.

Adapting 19th and 20th century industrial buildings in large cities is a complex challenge, but it can bring numerous benefits both for the cultural heritage and for the socio-economic development of a given community. Modernization of post-industrial buildings is a process that can bring many benefits, including improved functionality and revitalization of urban space [1]. In Poland, the principles of modernization of this type of facilities are regulated by most legal acts related to construction-related regulations, including Construction Law [2]. It is worth noting that this type of development is also subject to European directives adapted to EU law [3–4]. Post-industrial spaces and buildings in large agglomerations have specific features often related to the combination of

a prestigious location and the socio-economic situation of these places [5]. The shift of economic principles from the production sector to the service system resulted in the marginalization and often ruin of this type of facilities [6]. Some of these spaces are underfunded, neglected and often abandoned. Degraded post-industrial areas, often located close to city centers, have, on the one hand, become a serious problem for city authorities due to the formation of dead urban tissue, disturbing the continuity and cohesion of urban areas, and on the other hand, they are spaces with great architectural potential and attractive locations [7]. When factories were moved to other places when they were unprofitable, production halls remained in city centers, often occupying a significant area [8–9]. Often unused buildings constituted a barrier to the expansion of the city and in many cases were condemned to demolition. An alternative to this type of activities is the re-adaptation of spaces and buildings in order to modernize them and adapt them to the functional structure of the city, taking into account economic factors [10–11].

According to Stasiak, post-industrial spaces can be found in every city in the world. Their origins may vary depending on the type and role of a given structure in the city. These are among others:

- Deindustrialization – the number of post-industrial areas increases significantly due to the change in the importance of the manufacturing economy in favor of the development of the service sector.
- Accessibility – reconstruction of urban transport systems affects communication between different parts of the city.
- Neighborhood – space has a significant impact on the processes taking place in the areas adjacent to it, naturally forcing changes in the functioning of individual buildings.

– Financing – variability of financing depending on the current city development strategy [12]. The aim of the presented study is to present a project for the modernization of a post-industrial building with a change of function to a hotel.

History and description of the buildings at Hoża Street

The first auxiliary and utility buildings were erected on the plot at Hoża Street in Warsaw in 1893. According to Krasucki (pp 195–197) – at Hoża 41 Street (currently no. 51) was originally a vodka distillery, in its place a plant was built in 1900, partly belonging to the 6th Font Foundry Society of Samuel Orgelbrand and Sons, using the earlier development of the plot. Then the plant was expanded, the scale of which is indicated by the employment of approximately 700 workers in 1905. There was also a 100 HP steam locomotive on the premises at that time. The company operated until 1918. Later, the factory was taken over by the Association of Dairy and Egg Cooperatives. The building played a very important role during the Warsaw Uprising. "Jajczarnia" (Egg factory), as it was called then – due to its last pre-war owner – was captured by those defending the city on August 1, 1944 and remained in the hands of the insurgents until the end of the fighting. During the previous occupation, large supplies of food and chemicals were gathered here. In addition, there was an existing power generator, to which another one was delivered from the Warsaw University of Technology. This allowed the insurgent's only field power plant to be launched. The electricity generated by it powered several nearby field hospitals, as well as the "Btykawica" radio station. This made it possible to create an insurgent weapons factory on the premises of the building, where, among others, insurgent

mortars, hand grenades, grenade launchers and Molotov cocktails were produced [13]. The current user of the facility is the Serwar Processed Cheese Factory, which produces processed cheese here. The warehouses also have space for rent. The services currently available at the factory include: art and exhibition studios, coworking spaces, small catering, climbing room, and conference rooms. Therefore, the users of the building (apart from the basic production function) are various social groups who find different forms of recreation, entertainment or education in the area. The complex consists of an administration building, an outbuilding, a workshop, a garage and the main production building. The administration building-concierge is made of brick, two-story with single-story extensions: on the right side with a shop, on the left – with a concierge. Elevation from the Hoża Street has a four-axis structural and compositional system, faced with brick, with a separate plinth. The window openings are closed with segmental arches, and the lintels are designed with an accentuated cornice. The crowning cornice is made of decoratively laid brick. Casement, wooden and multi-partition windows were used in the implementation. The facade facing the courtyard is similarly composed, with an additional floor on which two simple windows are located. Some elements of the old woodwork have been preserved to this day. The administration building/outbuilding is located along the eastern border of the plot. The building is two-story, made of ceramic brick, unplastered and faced with brick. The facade on the street side has two axes, and on the courtyard side it has eighteen axes, with a small entrance avant-corps in the middle. Both facades have a separate plinth, a window cornice on the first floor with a cordon cornice made of decorative bricks. The crowning cornice is simple. In the lower storey, the windows are closed with segmental arches, the window lintels are made of wedges, with a decorative cornice, in the upper storey – probably later – the windows are closed with straight arches, the lintels are designed without decorations. The two-story production building is made of brick, not plastered, and has an elongated rectangular plan. The ceilings are steel and ceramic, with brick filling, supported by pillars and cast iron columns on the ground floor and on the first floor. On the top floor, the hall was supported by wooden stools. The western and eastern facades are designed similarly, with a simple composition, with brick decorations on the window lintels, with a marked plinth and simple cordon and crowning cornices. The windows were closed with segmental arches. The building has a preserved iron staircase. The factory complex is still used for industrial purposes, which may guarantee the preservation of



Fig. 1. The front elevation of the building in its existing condition; source: author

a large part of the historic substance. Due to the good condition of preservation of the buildings (including some of the equipment in the production building), the complex was included in the Municipal Register of Monuments of the Capital City of Warsaw [14].

Results – modernization concept

Author's concept of modernization of facilities located at Hoża Street in Warsaw was developed in 2016 and included changing the functions of existing post-industrial buildings, reconstruction and revalorization of historical details, and dismantling objects of no high architectural value. The project was created solely for private purposes and was used for research and analysis. These objects would be replaced with a new function related to the topic of modernization, and their removal would allow for the introduction of additional biologically active surface to the plot. The main idea was to introduce a hotel function into the building of the former dairy factory, at the same time replacing its current purpose – incompatible minor service functions. The important elements that it was decided to preserve were the remains of the unique metal structure in the form of richly decorated stair steps and pillars with carved and cast capitals. The structural system was a fundamental barrier to adaptability and the design solutions used. It is believed that another problematic element was the lack of standard parking and the need to propose an underground parking lot. This one was designed directly under the main entrance square, and then connected as part of the concept with the brick basement part of the building. In addition, the challenge was to introduce comfortable pedestrian communication in the building and the adjacent area – due to the large differences in height, lack of access to elevators and the need to adapt the newly designed facility in compliance with the Construction Law and the needs of people with limited mobility,

including disabled people. At the same time, the open structure of the building based on a repeating module and small spans, as well as the repetitive rhythm of windows and high floors – favored the transformation of the facility's function into a hotel. The project was never implemented and remains a conceptual project (created for private purposes).

A hotel located deep within the plot should attract the attention of observers. This assumption forced attention to aesthetic solutions and modification of existing elements. As a result, it was proposed to change the front facade, which was to be reached by concrete stairs with a clear offset from the building, which were to become an extension of the plinth line. The full, glazed-free wall has been redesigned. The proposal concerned an open and transparent, multi-story representative entrance window, which would serve as an entrance and provide essential lighting to the front part of the building's interior. The display case is made of glass and aluminum, using curtain wall technology, and is topped with a brick lintel with an elliptical arch, with a decorative masonry thread divided into three parts.

Designing a hotel business in a former factory building required adapting it to accommodate a large number of people staying there. An important factor was to create accessible and comfortable communication for all users overcoming various altitude levels. Freedom of movement was to be possible for both hotel staff and guests, including disabled people. The entire creation was to be connected by a network of passages and elevators or lifts for disabled people. It was planned to organize a walkway with vegetation elements along the hotel building, and the driveway gate would function as an additional entrance to the building, as well as additional delivery access to the kitchen facilities. In place of the former technical yard and industrial ramp, an atrium part was separated, which was to be marked by the





Fig. 2. Design of the front elevation of the building; source: author



Fig. 3. Newly designed multifunctional atrium; source: author

development line of the existing building and the newly designed building, along with a covered passageway. The glazed atrium was to be a geometric grid structure converging into a funnel. The grid, supported in the central part by a pole, was to enable additional drainage of water mass into the sewage well. According to the design, the basic function of the roofed atrium was to provide communication services between the modernized hotel building and the newly designed buildings, as well as a recreational and integration function in the form of an exhibition, catering and event organization space.

The separation of hotel rooms in the space involved adapting to the existing structural system and using a repeatable module, taking into account the illumination of each room. In addition, it was necessary to equip the building with the necessary technical and recreational facilities, including: administrative, social, technical, utility, catering, dining, conference, sports and multimedia rooms. All of the above-mentioned program elements were included in precisely separated zones: day and night. These zones were to include: underground parking and commercial, sports, social and warehouse areas. Ground floor with the main hall, reception, restaurant, kitchen and sanitary facilities. The first and second floors contain hotel rooms. The added building was to contain conference rooms, multimedia rooms and a meeting club with a hotel bar.

Additionally, the modernization of the spatial and aesthetic structure of the existing buildings was crucial. According to the assumption, the facility was to become much more accessible in terms of communication and visually from the main street and the



Fig. 4. Functional scheme of the ground floor; source: author

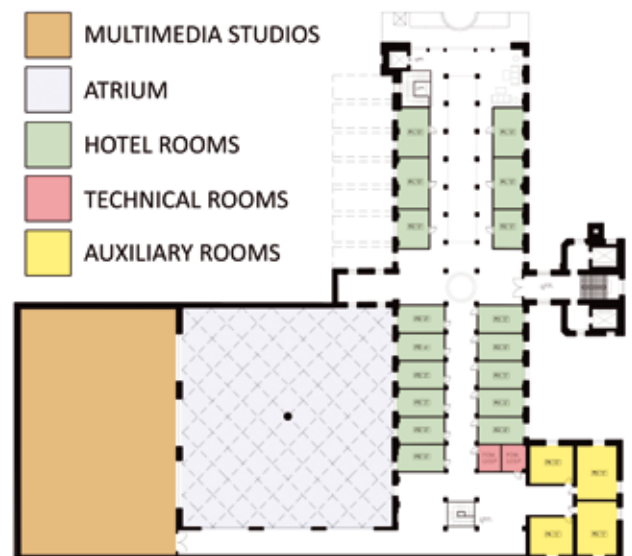


Fig. 5. Functional scheme of the second floor; source: author

entrance gate. Access means pedestrian and road services for the area, including access for passenger cars and delivery vans, taxis, fire trucks, and the separation of above-ground and underground parking spaces – connected to the hotel's basement. The modernization included a complete replacement of the damaged concrete surface, using radially laid paving stones and laying a mosaic in front of the main entrance to the hotel. The roof truss, ventilation and exhaust ducts were to be completely renovated. In addition, the renovation included: repairing defects and refreshing plastered plinths in all historical places, repairing defects in the brick structure and restoring the former aesthetic values to the ceramic material, cleaning brick joints, reconstruction and renovation of existing decorative brick elements such as cornices and lintels. It was planned to reconstruct the old rhythm and arrangement of window openings, which were built up or rebuilt. The concept also assumes the replacement of all windows in the hotel building with uniform ones that match the overall designed color theme of the new function of the facility. One of the other solutions to intensify the utility program and potential attractiveness for guests was to design in the buildings on the plot: a small restaurant, a cafe and commercial premises with office and coworking functions, with the possibility of renting or booking office rooms.

An important element of the entire concept was to ensure optimal sunlight exposure in all hotel rooms, which was difficult due to the specific location of the facility in relation to the existing buildings and the fact that on the western side the building is shaded by neighboring residential buildings. In order to increase the architectural values and optically enlarge the space of the narrow urban corridor, separated by the existing buildings, opposite the western façade of the hotel building, it was decided to design an experimental solution using a system of mirrors. It was decided to place the mirror panels on the blind and raw brick wall of the neighboring residential building. These elements would indirectly illuminate the corridor and create a more user-friendly space.

The hotel interiors were designed in an industrial style. The existing structural, material and spatial structure was used and adapted or renovated to meet the requirements for the new functional function. The functional and aesthetic dominant feature of the hall design was a multi-story shop window, bringing daylight into the currently shaded industrial rooms. The second characteristic feature was the structural and axial solutions, which in a given interior were to consist of a row of cast-iron, slightly rusted pillars. These elements, in addition to carrying loads, constituted one of the

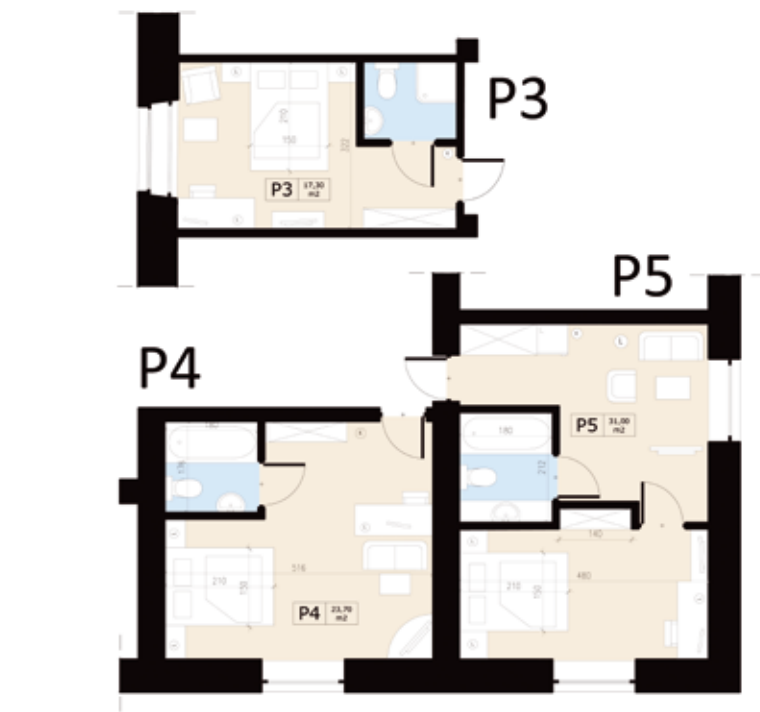


Fig. 6. Functional scheme of the exemplary hotel rooms; source: author



Fig. 7. Land development plan. Designed division of the external space, along with adjacent buildings. 1 – Entrance to the underground garage, 2 – additional function buildings, including a cafe, 3 – main entrance gate, 4 – office rooms for rent, 5 – main building with a hotel function, along with the adjacent atrium and newly designed buildings; source: author

main vertical decors of a given artistic proposal. The entrance axis was highlighted with a pedestrian route made of red carpet. The interior was to consist of locally sourced materials, colorfully warmed by ceramics, plants in massive stone pots, decorated with a stone floor, raw technological accessories, factory lamps, and lounge furniture with a massive and static shape.

The modernization of 19th and 20th century post-industrial buildings in large cities has become an important area of activity for the revitalization of urban areas and the

revival of industrial heritage [15]. Industrial buildings from the 19th and 20th centuries are often a symbol of the history and industrial heritage of a given region. Their modernization allows for preserving the cultural identity of the city and its history, while adapting these places to new functions [16–17]. One of the most common methods of revitalization is the transformation of old industrial buildings into residential purposes. Industrial (loft) apartments in converted factories or warehouses have become a popular trend, especially in large cities, where there



Fig. 8. A corridor modernization project in an urban interior. On the left, the existing state, on the right, the planned state; source: author



Fig. 9. Hotel interior with a view of the lobby and guest service area; source: author

is no space for new construction [18]. Some buildings are adapted into office spaces, working spaces, or ateliers for artists and creators. Their distinctive aesthetics and open space can foster creativity and innovation. Many former industrial buildings are used for commercial and entertainment purposes, such as shopping malls, cafes, restaurants and even concert halls [19–20]. Such initiatives attract both local residents and tourists, as shown by various types of projects in Poland and around the world [21–22]. Modernizing industrial areas can also be a way to promote sustainable development [23]. Transforming existing buildings instead of building from scratch allows you to reduce the consumption of resources and avoid the devastation of natural areas. The transformation and adaptation of industrial buildings can be difficult and expensive due to the need to carry out thorough renovation works and adapt to new safety and energy standards [24–25]. Therefore, it often requires the involvement of public funds, private investors or public-private partnerships [26]. Successful projects to revitalize and modernize industrial areas can bring social and

economic benefits, such as creating new jobs, increasing the attractiveness of the area for residents and tourists, and revitalizing the local community [27]. Effective revitalization and modernization of areas and buildings requires cooperation between various sectors, including local governments, development companies, cultural and social institutions, including the local community, in order to ensure sustainable and comprehensive development of a given area [28]. The modernization project presented in the article fits into these assumptions and its implementation could significantly influence the development and orderliness of this part of Warsaw.

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Table 1. Building characteristics and parameters

Designed function	Hotel with additional functions	
Project	Case study for private purposes	
Localisation	Warsaw, Poland, Hoża 51 Street	
Author	Own concept, MD	
Status/Year	Unrealized	2016
Elements	Conceptual / graphical design	
Historical condition	No conservation requirements	
Solutions standard	High / hotel – 5 stars	
Total area of the existing building	+/- 5370,00 m ² *	
	*– without including the roof and inaccessible elements / Main building	
Number of floors in the existing building	3 above ground floors	1 underground
Total area of the designed buildings	+/- 10827,00 m ² *	
	*– without including the roof and inaccessible elements / Main building + newly designed building with a connector + underground garage	
Number of floors in the designed buildings	3 above ground floors	1 underground – buildings 2 underground – garage
Number of designed hotel rooms	42 / 50 *	
	*– by variant. The number of hotel rooms depends on the structural layout of the building and the rhythm of the windows.	
Area of the designed hotel rooms	17,30 m ² – minimal	31,00 m ² – maximal
Project characteristics	Genius Loci of the place / contrast between the preserved historical state and contemporary architectural solutions / industrial aesthetics	
Limitations in the implementation of pro-environmental solutions	Low formal and legal requirements; the need to preserve the historical value of the place and buildings; existing interdependencies of the surrounding buildings making the implementation of solutions difficult; the need to arrange pedestrian and driving paths and a large number of parking spaces located in the underground garage; downtown character of the development; the need to use the existing building structure and structural system - making it difficult to use less environmentally invasive solutions.	

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ABSTRACT:

In most cases, this sort of facilities are adapted for various types of residential functions. A similar example of the transformation of a post-industrial building is the modernization project a Hoża Street in Warsaw. The aim of the presented article is to show the possibilities offered by transforming this type of facility into short-term housing. The methodology is based on the concept of modernization and change of development. The results present the design of the adapted building. The conclusions focus on maintaining the cultural identity of the city, along with its historical fabric, and adapting it to contemporary architectural and construction standards and practices.

KEYWORDS:

modernization, post-industrial buildings, conceptual designs, hotel function

STRESZCZENIE:

MODERNIZACJA BUDYNKÓW POPRZEMYSŁOWYCH NA PRZYKŁADZIE REALIZACJI FABRYKI WYROBÓW MLECZNYCH PRZY UL. HOŻEJ W WARSZAWIE. Renowacja budynków przemysłowych wiąże się często z radykalną zmianą ich funkcji. Niejednokrotnie tego typu obiekty są adaptowane na różnego rodzaju funkcje użyteczności, w tym mieszkalne. Podobnym przykładem przekształcenia budynku pofabrycznego jest projekt modernizacji przy ul. Hożej w Warszawie. Celem przedstawionego artykułu jest pokazanie możliwości, jakie stwarza przekształcenie tego typu obiektów na cele mieszkalnictwa krótkoterminowego. Metodyka jest oparta na koncepcji modernizacji oraz zmiany zagospodarowania. Wyniki przedstawiają projekt zaadaptowanego budynku. Wnioski koncentrują się wokół podtrzymania kulturowej tożsamości miasta, wraz z jego tkanką historyczną oraz adaptacji do współczesnych standardów i praktyki architektoniczno-budowlanych.

SŁOWA KLUCZOWE:

modernizacja, budynki przemysłowe, projekty koncepcyjne, funkcja hotelarska

DOI: 10.5604/01.3001.0054.6957

PRAWIDŁOWY SPOSÓB CYTOWANIA
 Rybak-Niedziółka Kinga, Donderewicz Mikołaj, 2024, Modernization of post-industrial buildings on the example of a dairy factory at Hoża Street in Warsaw, „Builder” 09 (326).
 DOI: 10.5604/01.3001.0054.6957