

RE-USE OF INDUSTRIAL HERITAGE AS AN ELEMENT IN ACHIEVING URBAN RESILIENCE, ADAPTATION OF THE TEXTILE INDUSTRY INTO A SHOPPING CENTRE, LODZ, POLAND

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Abstract

Lodz is the fourth most populous city in the country, located in central Poland, a former center of the textile industry, which has a significant amount of valuable post-industrial heritage. This article presents an example of the adaptation of a complex of 19th-century industrial buildings (the former Izrael Kalmanowicz Poznański cotton mill) for commercial functions. The article presents the history of the place and how a new function was implemented on the territory of a former factory with an area of 270,000 m² and in former industrial buildings with an area of 9,000 m². The methods of adaptation to the new function at different hierarchical levels are described – from the level of the city’s master plan to individual industrial buildings and their details. The article presents archival cartographic materials in combination with the changes made and describes different approaches to preserving a historical building. The change is an example of a commercial investment that contributed to the popularization of post-industrial heritage and became an element of building a city brand, emphasizing its post-industrial identity. It is also an element of building a city’s resilience that can transform and adapt to changing external conditions.

Keywords: *Industrial heritage; Urban resilience; Adaptability; Revitalization; Adaptive re-use; Lodz; Manufaktura*

Introduction

In one century, Lodz transformed from a small settlement deep in the forest into a capital of the textile industry. The rapid city’s development, caused by the Kingdom of Poland’s government program implementation, provided for the creation and development of domestic industry [1], [2], [3]. The decision to locate an industrial settlement in Lodz was made in 1820 during a visit to the city by the head of the Masovian Voivodeship Commission, Raimund Rembelinski [1]-[4]. Lodz met all the conditions for locating a textile industry: it had access to small rivers with a relatively steep slope, clay reserves, and proximity to state forests [1]. The development of industry was rapid, and the number of inhabitants grew rapidly from 767 in 1820 to approximately 600,000 in 1918 [4], [5], [6].

The development of industry and the city’s expansion were associated with the influx of people from abroad: investors, specialists, and skilled and less skilled workers. At the beginning of the First World War, 50.9% of the city’s inhabitants were Poles, 32.5% Jews, 15.0% Germans, 1.6% Russians, and other nationalities [5]. Lodz became a multinational, densely populated city, with tenement houses, factory buildings, workers’ houses, and palaces of factory owners

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in the central part. The city was one of the world's most densely populated industrial cities, with a population density of 12,500 people per km². Growing factories needed workers; the number of employees in Lodz factories increased from 6,400 in 1866 to 103,257 in 1913 [5], [6]. Several factors contributed to such rapid development of the textile industry center: the state protectionist policy, the mechanization of textile production, the abolition of customs duties in trade with the Russian market, and the city's connection with the Warsaw-Vienna Railway.

The intensive development of industry in the 19th century coincides with the period of the creation of factories and industrial buildings in river valleys. The main advantage of Lodz was the favorable hydrological conditions necessary for the development of the textile industry [1], [7], [10], [11]. Water was used in the production of fabrics, and the driving force of water set machines and devices in motion. At that time, three large industrial complexes were built in Lodz: in the Łódka River valley - Izrael Poznański's Manufaktura, and in the Jasień River valley - Karl Wilhelm Scheibler's factory in Wodny Targ and Księży Młyny [1], [7], [8], [10], [11]. The Poznański and Scheibler factories and residential complexes were the largest industrial complexes in Lodz and became a model of urban planning and architecture for subsequent factories. They began to build blocks of industrial buildings made of unplastered red brick, resembling medieval castles in shape, which are still an element of the city landscape today [8]. A characteristic feature of Lodz was the placement of factory housing complexes intended for workers and the location of the palaces of factory owners near the industrial enterprise [7]-[11].

The beginning of World War I stopped industry development in Lodz. The city suffered great losses of population; industrial enterprises were looted. Due to the fall of tsarism, the collapse of the Russian Empire and the formation of the Soviet Union, Lodz lost its eastern market. In the interwar period, the city was first rebuilt, and the war-torn industry was restored. In this period, Lodz became the voivodeship's capital and remained the textile industry's center. The city's spatial and demographic development slowed down significantly, but in the interwar period the number of inhabitants doubled from 341.8 thousand people to 672.0 thousand [5], [6]. World War II was a tragic period in the history of the city. A ghetto was created in Lodz, where 250 thousand Jews were imprisoned, but only 830 people survived until liberation. Production in factories continued under the supervision of the German occupiers. During the war, Lodz suffered minor damage to its buildings, but the city irretrievably lost its multinational character. The entire Jewish community and 100,000 Poles were killed, and several tens of thousands of Germans fled before the very liberation [5].

The post-war change in the political and economic system led to changes in the factories in Lodz; industrial enterprises were nationalized and became part of the planned socialist economy. The textile industry continued to develop, mainly due to the reopening of the eastern market. Former factory complexes often operated on pre-war equipment for many years, but factories were expanded and new industrial zones were created, mainly in areas annexed to the city. Lodz grew; in 1989, the city reached its maximum number of inhabitants, over 850,000 [5].

Another political change in the early 1990s was the beginning of the collapse of huge state-owned industrial enterprises that could not compete in the free market. Łódź, a textile monoculture, was experiencing an economic and demographic crisis. Factories reduced production and employment and eventually declared bankruptcy. Post-industrial areas fell into disrepair, often partially bought out and divided up chaotically [4]. Factory complexes and post-industrial buildings, despite their often-interesting architectural form and rich brick details, were not perceived as valuable heritage.

This contributed to their destruction or ineffective adaptation in many places. Only at the turn of the 20th and 21st centuries was the value of post-industrial buildings widely recognized. The last three decades have become a period of vogue for branding the city by emphasizing its industrial roots.

The purpose of the study was as follows. The article presents the adaptation of one of the largest complexes of historical industrial buildings in Lodz – the reconstruction of the Izrael Kalmanowicz Poznański’s Cotton Industry Plants into the Manufaktura shopping mall, the Andels hotel and the MS2 Museum of Contemporary Art (Fig. 1). The investment covered 27 ha of post-industrial land and the change of function of 90,000 m² of former factory buildings. The reconstruction was carried out with the emphasis on the history of the place and shows how a compromise can be achieved between adaptation and creation to meet the expectations of the modern user. The former production area has become a public space where city and regional events take place. It is an example of building a city brand based on its history, reusing post-industrial areas, leveling wasteland in the city center, and the flexibility and adaptability of the 19th-century post-industrial development.



Fig. 1. Manufaktura shopping mall, former I.K. Poznański’s cotton industrial complex, view from the former printing house to the Market of Lodz Textile Workers, fire department building, power plant, locksmith shop and spinning mill, February 2025, author’s photo

Scientific sources were processed in the following areas:

- research of the industrial heritage of the city of Lodz [1]-[15],
- publications in scientometric sources devoted to the problems of revitalization of industrial enterprises [16]-[26],
- legal acts and archival maps [30]-[33],
- education of restorers and art historians [34]-[38].

Materials and Methods

To solve the research tasks, the method of historical analysis was used as a basis for studying the monuments of industrial architecture of Lodz in the context of the general urban development of the city in different historical periods. The method of comparative analysis allowed us to compare the stages of urban development with each other, as well as the stages of the existence of prominent industrial facilities of the city of Lodz, in particular, the state of buildings before, during, and after reconstruction with restoration. The method of systemic analysis allowed us to highlight the measures for the “Manufaktura” repurposing as a systemic

integrity, since the restoration industry is a kind of complex system with many components interconnected by connections. An important role was played by the iconographic method, the graph-analytical method, and the method of photo fixation, which later provided a visual evidence series for the argumentation of the conclusions obtained.

Such a comprehensive approach to the analysis of the repurposing of an industrial facility aimed to highlight the consistency and effectiveness of such measures and to prove the need for comprehensive, rather than partial, restoration, which simultaneously involves changing the function, preserving some of the structures, and supplementing them with modern structures that do not spoil the authentic appearance of historical objects. At the same time, the original authentic appearance of the industrial building, which is being transformed into a tourist attraction, is preserved.

Results and discussion

History of the Izrael Kalmanowicz Poznański's cotton industry empire

In the Łódka River valley, west of Nowe Miasto, around 1862, land at Ogrodowa Street, towards the municipal cemetery, was purchased by Kalman Poznański, where he built the Cotton Products Manufactory. Rapid development of the enterprise took place a decade later, under the management of his son. In the 1870s, Izrael Poznański bought neighboring plots, where he built a weaving mill (1872), the first in the city with a shed construction, designed to work 200 mechanical looms. Thanks to the new technology, Poznański moved away from manufacturing production and introduced mechanized production, which resulted in very rapid development of the company. In the following years, the following were built: a five-story spinning mill, a currency exchange office, a bleaching plant, a gasworks, a power plant, a printing house, a foundry, a locksmith's shop, warehouses, and workshops. The factory had its own fire brigade building, a broad-gauge railway siding and an internal narrow-gauge railway, and a locomotive shed. After twelve years, the factory already had over 1,500 looms and, in 1900, 6,000 workers. The Poznański family empire occupied an area of 27 ha [7]-[11].

The industrial development complex was complemented by residential and service buildings. On the other side of Ogrodowa Street, houses for workers, a canteen, and a theater were built, and the oldest church in Lodz, St. Joseph's, was moved (Figs. 2, 3). The workers' estate was to eventually have 1,086 apartments in three large and 18 smaller buildings. The impressive eclectic palace of the factory owner stood out in the entire complex. In the interwar period, the factory became the property of the Italian Banca Commerciale Italiana, and the Poznański family lost control of the company [9], [10].

After World War II, the Poznański's factory was nationalized and changed its name – first to Państwowe Zakłady Przemysłu Bawełnianego im. J. Marchlewskiego (The Julian Marchlewski Cotton Works) and in 1963 to Poltex. The fall of socialism in 1989, the return to the principles of the market economy, the closure of the Eastern market, and the influx of cheap Asian products resulted in a lack of buyers for the manufactured fabrics and initiated a crisis in the centrally managed state-owned plants. The Poltex plants gradually reduced production and the number of employees, and in May 1991, they declared bankruptcy. The textile industry plant, once bustling with life, like many others in the city, slowly became a post-industrial wasteland. The area was partly occupied by privatized smaller companies, which from 1996 were gradually bought by a French company.



Fig. 2. Vignette of the Izrael Poznański's Cotton Industry Plants, source: <https://atlas.ltn.lodz.pl>



Fig. 3. I.K. Poznański's cotton industry factories on the map of Jasiński from 1917; blue indicates the bed of the Łódź River and the location of the ponds for fabric production, orange indicates the factory complex, dark orange indicates the workers' houses on the other side of Ogrodowa Street, red indicates the church and the factory theater, and the black dotted line indicates the direction of the railway tracks. author's own work based on www.mapa.lodz.pl

The area of the former cotton industry plants was adapted by the Apsys company into a service area; in 2006, the Manufaktura Shopping Mall was opened here. Two years later, the Museum of Contemporary Art – MS2 was opened in the building of the high weaving mill. In 2009, the Andels hotel was opened in the building of the spinning mill on Ogrodowa Street. Currently, multi-family houses for workers are being rebuilt for residential purposes, and the factory office building is for offices and services. Design work is also underway to adapt former cotton warehouses for service functions.

Forms of conservation protection

The post-industrial development from the 19th century was not perceived as valuable cultural heritage for a long time. The beginning of the 1970s was a time of discussion on the protection of post-factory areas, but in the following decades the protection of post-industrial heritage was not understood by residents and local authorities. The I.K. Poznański's factory complex was placed under area protection by entering it into the register of monuments in 1971. The entire complex was entered under the number A/16 – the surroundings of the Izrael Kalmanowicz Poznański's factory complex [31]. Object protection was also established on the premises of the former plants – 15 buildings are entered in the register: a palace, a currency exchange office with a porter's lodge, an entrance gate with a fence, a high spinning mill with a water tower, a ground-floor weaving mill, an electrical workshop, a fire brigade building, an office building, an old bleachery, a power plant, a printing house, a foundry, a locomotive shed, a high weaving mill with a water supply tower, a high warehouse, and a primary school. Poznański Palace with its garden and the spinning mill at Ogrodowa Street were recognized as a historical monument by the regulation of the President of the Republic of Poland of 16 February 2015 on the recognition of "Łódź – the multicultural landscape of an industrial city" as a historical monument [30].

The principles of protection of the entire complex are also determined by the provisions of the local spatial development plan, among others, by introducing a protection zone for the exposure of the spatial layout, ordering the implementation of new development in a way that emphasizes the industrial character and historical value of monuments, ordering the development of the space as a compositional whole using coherent material solutions, prohibiting the locating of construction objects in the exposure zone of historic buildings, protecting indicated viewpoints, and prohibiting the expansion of expanding buildings under conservation protection (Fig. 4) [32].

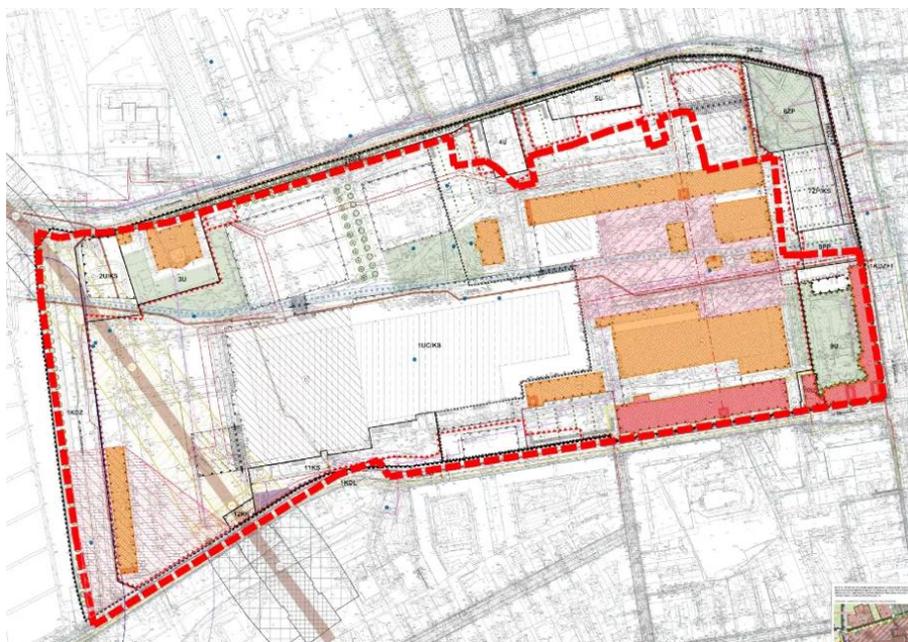


Fig. 4. Drawing of the local spatial development plan; orange colour marks the buildings entered into the register of monuments, red colour marks the buildings entered into the register of monuments and recognised as historical monuments, pink colour marks the zones: in the centre of the layout, the spatial development zone as a compositional whole, and in the western part of the area, the zone of exposure of the former cotton warehouses, prepared based on the local spatial development plan, www.mpu.lodz.pl

Adaptation of former factory areas into a service centre

The investment idea was to use the potential of the 19th-century post-industrial buildings for a new commercial function. The advantage was the location of the area, right next to the city center, a large plot of land to be used for new development, and the investment barrier was the huge scale of the post-industrial complex.

The area of the “Poltex” Cotton Industry Plant was densely built up. The layout of the buildings was related to the production technology: brick buildings from the 19th century, built by Izrael Poznański, intertwined with later production buildings built after the war. In the area’s eastern part there were densely arranged buildings related to fabric production – spinning mills, weaving mills, finishing plants, repair workshops, and offices. The eastern part is the area where cotton warehouses used to be, and on which the trace of the old narrow-gauge railway running inside the I.K. Poznański factory was still visible. In the southeastern corner of the area there was an impressive eclectic palace of the Poznański family, which since 1975 has served as the Museum of the City of Lodz, and its northern part was designated as the seat of offices (Fig. 5) [8]-[11].

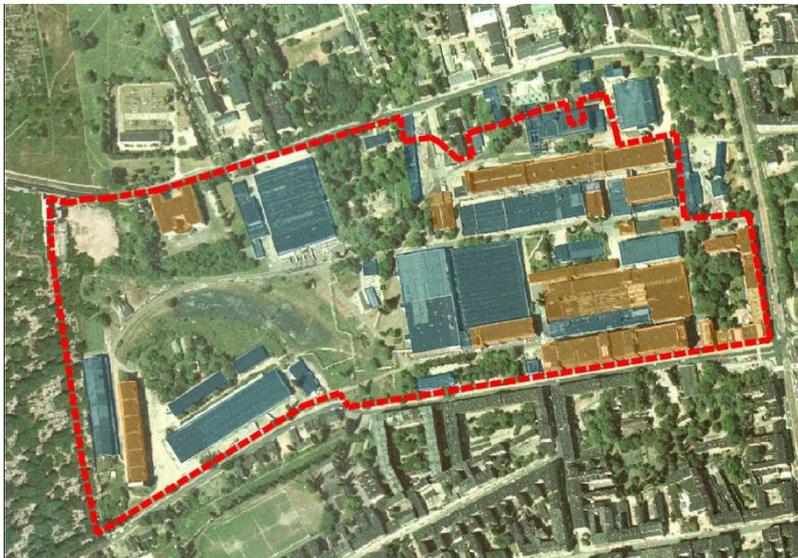


Fig. 5. The area of the former Poltex Cotton Industry Plant, preserved buildings marked in orange, demolished buildings marked in grey, prepared based on the 1994 orthophotomap, source: <https://mapa.lodz.pl/ortofotomapy/>

The design work lasted 5 years, construction began in May 2003, and the Manufaktura shopping mall was opened on May 17, 2006. The investment covered an area of 270,000 m². The reconstruction for service purposes included 13 former factory buildings, with a usable area of 90,000 m². 45,000 m² of 19th-century brick facades were renovated, and from the side of Ogrodowa Street, the brick fence and the impressive entrance gate, with richly decorated forged grates, were renovated. 12,500 m² of metal windows were renovated. As part of the entire complex construction, 95,000 m² of new service area was built, mostly intended for a shopping mall and cinemas. As part of the shopping mall construction, the following were demolished: single-story production halls with sawtooth roofs, both weaving mills (except for the high weaving mill) and the dyeworks, as well as buildings constructed after the war.

The post-industrial area has received a new urban layout; the center of the area is the market square, located in the middle of the eastern part of the area. It is a 3000 m² square, called the Market

of Lodz Textile Workers, which forms the main public space in the Manufaktura shopping mall. The frontages of the square from the north and south are formed by complexes of preserved post-factory buildings from the 19th century (Fig. 6). The history of the place is emphasized by restored brick walls, richly decorated with detail, with characteristic divisions of factory windows. In the market square, the linear layout of fountains in the floor emphasizes the former course of the Łódka River. The historic post-factory buildings have been adapted for service functions: the former locksmith and repair workshop building houses shops and catering services, the former printing house and finishing plant building houses restaurants, the Factory Museum, the Experimentarium—an interactive museum of science and technology—and a climbing wall, the former high-rise weaving mill building houses the MS2 Museum of Contemporary Art, and the spinning mill on Ogrodowa Street houses the Andels Hotel.

In the western part of the area, partly on the site of the former weaving mill and on the site of the former narrow-gauge railway line, a new volume was created – a shopping mall housing shops and restaurants on the eastern side and a DIY store in the western part. The center of the new layout is the pedestrian zone; the external areas are intended for access roads and parking lots (Fig. 6) [12].

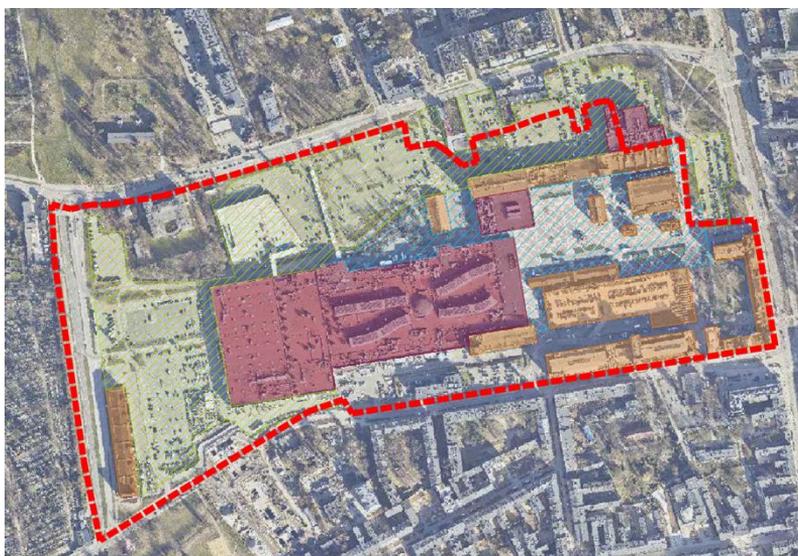


Fig. 6. Orthoplan of the Manufaktura Shopping Mall; orange indicates the preserved historical buildings, burgundy indicates new buildings, the green line indicates the parking area, and the blue line indicates the pedestrian zone. own work based on the orthophoto map of 2024, source: <https://mapa.lodz.pl/ortofotomapy/>

Currently, in the western part, from the side of Ogrodowa Street, an underground railway stop, Łódź Polesie, is being built. Preparations are underway for further adaptations of the buildings, which used to be part of I.K. Poznański's empire. The former workers' estate on Ogrodowa Street is being rebuilt and is to continue to serve as a residential building. The building of the former cotton warehouses, located on Karskiego Street, in the western part of the area, is planned for redevelopment into services and offices.

Adaptation of former factory buildings to the Manufaktura shopping mall

The adaptation of the area after the Poltex Cotton Industry Plant was preceded by a detailed inventory, a construction opinion, and conceptual work under the supervision of a conservator. Changing the function of the industrial complex to a shopping mall required intervention on several levels; first of all, there was the need to ensure the safety of future users by meeting fire protection

requirements and improving the statics of the buildings. The second task was to meet the requirements resulting from the specificity of the new functions. All changes should take into account the preservation and emphasis of the post-industrial character of the area.

In many places, structural elements required reinforcement or replacement. Post-industrial buildings in the former Izrael Poznański's factory were built of red brick. The structural walls were of different thicknesses, but all were made of full ceramic bricks, measuring 27×13×7 cm, on lime mortar. The roads and windows were flat or arched, built of bricks. The bricks were fired from local clay with high contamination, so they were not a good quality material. Renovation of brick elevations in many places required replacing the face layers and reconstructing the details (Figs. 7, 8).



Fig. 7. Manufaktura Shopping Mall during construction, view from the Lodz Textile Workers' Market in the direction of Ogrodowa Street, May 2005, photo by author



Fig. 8. The former ironworks building during reconstruction, visible brick damage in the facade and brick losses in the cornices, May 2005, photos by author

Problematic was also the destruction of the structure of unused or unprotected buildings due to moisture and variable temperatures. Lack of proper supervision and ongoing maintenance caused excessive deformation of structural elements and the formation of cracks. Rainwater had a destructive effect on walls and foundations, and excessive moisture resulted in the destruction of the binder

in brick walls. The inventory of the initial state showed that in many places the mortar had been washed out or had become porous, which resulted in its loss of properties (Fig. 9) [17]. Another issue is chemical contamination related to the original industrial function. The fabric of the adapted buildings was for many years subjected to the action of aggressive chemical preparations used in the textile industry. The buildings of the former printing house, dye house, and bleaching plant were exposed to chemicals for almost 120 years. The brick walls were renovated by replacing damaged elements and by rebuilding to reconstruct the damaged fragments (Fig. 10). Damp wall sections were dried and disinfected, and damaged mortars were treated with fibrous insulation.



Fig. 9. The former printing house building before reconstruction—visible secondary brickwork, damage to the wall face, dampness and scratches, May 2005, photos by author



Fig. 10. Replacement and re-building of the facing layers of brick facades, marking the places where the facing bricks were replaced with different colours, May 2005, photo by author

The diagnosis of the possibility to adapt the industrial development and to determine the necessary interference in the nineteenth-century fabric was made based on strength tests of materials, tests of construction fragments, and checking the quality of bonds. Laboratory tests

of samples were performed in terms of plasticity and strength of ceiling beams and strength of bricks and lime mortar. Safety of use required not only changes in the statics of buildings but also adaptation of the facilities to contemporary regulations related to fire safety. The buildings mostly had brick ceilings, supported on cast iron columns, which should be covered with material with appropriate fire resistance.

The adaptation of historic buildings had to be protected in the event of exceptional events such as fire, explosion, and vehicle impact. This required strengthening the rigidity of the structure and, in some cases, replacing it with new elements. The scope of the planned changes required interference in the spatial and functional structure, materials, and structural layout. Design solutions were determined not only by the future function but also by emphasizing the post-industrial character of the place. Works interfering with the statics of existing buildings were carried out very carefully, with gradual dismantling of structural elements and constant monitoring of the existing condition. During the replacement or dismantling of structural elements, additional elements were used to strengthen and stiffen the structure for the duration of construction (Fig. 11). During construction, the condition of the structure was constantly monitored, also due to the emission of vibrations by construction equipment.



Fig. 11. On the left, the former printing house building during reconstruction, use of tie rods to stiffen the structure during construction; on the right, supports reinforcing the stiffness of the walls of the former repair workshop building, May 2005, photos by author

The interference in the historic fabric during the construction of the Manufaktura had a different scope, most often resulting from the requirements for introducing a new function. In some buildings, the structure was preserved and exposed. In the building of the former printing house adapted to the Museum of the Factory, Experimentarium, and climbing wall, the structure is a historical background for the current function. In the case of the adaptation of the former ironworks to restaurants and shops on the ground floor and a car park on the roof, the changes were much greater. In the ironworks, the adjacent ground-floor weaving mill was only partially preserved; most of it was demolished. In the part of the building where the car park on the roof is located, only the brick perimeter walls were preserved. Inside the preserved walls from the nineteenth century, a new reinforced concrete structure was inserted, which provides adequate load-bearing capacity for the new function. The brick walls were cleaned and rebuilt. The former street between the factory buildings was covered with a ceiling and was placed inside the service building (Figs. 12, 13).



Fig. 12. The current development around the Market Square of Lodz Textile Workers: one can see the partially preserved sawtooth roof of the former weaving mill, and the remaining part of the building of the former locksmith's workshop, repair workshops, and weaving mill was rebuilt in its entirety, with the preservation of the peripheral walls and the construction of a car park on the roof. source: www.foto.mpu.lodz



Fig. 13. The building of the former locksmith's workshop and repair workshops during reconstruction, the ceiling structure and the former street between the factory buildings, May 2005, photo by author

Adaptation of the Izrael K. Poznański's factory spinning mill into the Andels hotel

The former spinning mill of Izrael Poznański's factory is the largest industrial building erected in the 19th century on Polish soil. The form of the building refers to the defensive architecture of medieval castles; the solids of four towers are visible above the massive body of the building, and the elevations have rich detail. It is a five-story brick structure, with a length of the elevation of 170 m (Fig. 14). The building has an interesting structure. Sectional ceilings were used here,

based on cast iron girders, supported by cast iron columns. Between the girders, steel ribs with a cross-section of a railway rail were stretched; probably this is recycled material. The spacing of the columns parallel to the front elevation is 3.27 m, and in the transverse direction, 6.0 m.

The spinning mill building was rebuilt into a four-star Andels hotel; the construction lasted two years, and the hotel was opened in May 2009. The change of function required a diagnosis of the technical condition, including strength tests of the original building structure. Elements of the 19th-century structure were exposed from the secondary cladding because the designers wanted to emphasize the post-industrial character of the building. Fire shields and concrete secondary reinforcements were removed, but the building structure required reinforcement to meet modern requirements for the planned function. To maintain the slenderness of the 19th-century cast iron columns, steel covers fastened with hidden screws were used, which allowed for the preservation of their historical proportions and character [26]. The segmental ceilings, with a characteristic brick layout and the layout of cast iron beams and columns, were preserved and emphasize the character of the former production workshops.



Fig. 14. The building of the former spinning mill of the I.K. Poznański factory before reconstruction. May 2005, photo by author

In the middle section, the original structure was removed, and the next floors are visible through elliptical openings in the ceilings, creating a multi-story atrium above the lobby (Fig. 15). History has also been preserved in the details. The secondary divisions of the production shops and towers were also removed to regain the original character of the building. The walls of the staircases were not renovated; they were left in their existing form, showing many layers of peeling paint. In the main entrances, cast iron plates, typical for industrial shops on the routes of trolleys, were exposed, and in the hall, huge fans referring to the former function of the building were exposed.

During the inventory of the building, it was discovered that there was a fire tank on the top floor. It was a cuboid measuring 8×18×1.5 m, made of 2 cm thick cast iron plates. As part of the adaptation of the building to a hotel, the tank was rebuilt into a swimming pool. The historical cast iron structure was subjected to conservation, and a stainless steel basin was installed inside. The blue shape of the pool and the wellness area with a terrace located next

to it are characteristic elements of the hotel and an attraction for guests (Fig. 16). The project is an example of a successful combination of history and modernity.

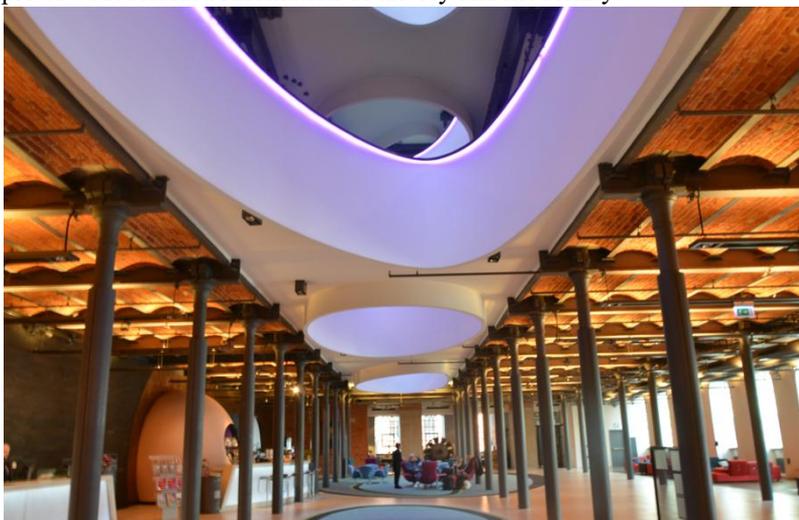


Fig. 15. Lobby of Andels Hotel, February 2025, photo by the author

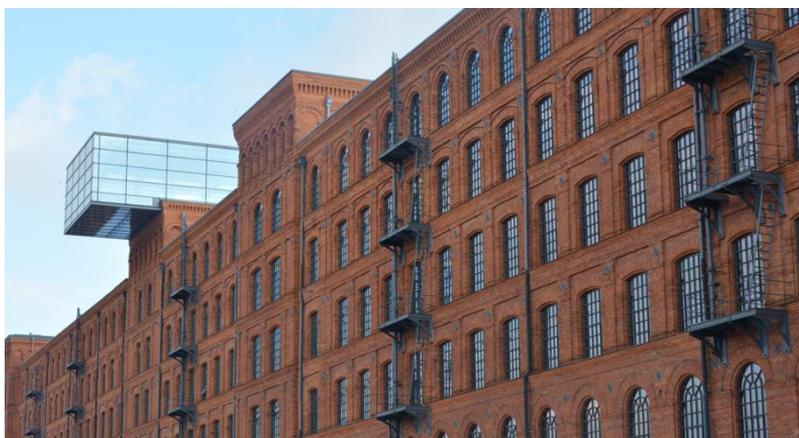


Fig. 16. The rooftop pool of the Andels Hotel on the site of an old fire tank, February 2025. Photo by author

The former Izrael Poznański's spinning mill is now a hotel with 278 rooms and apartments. The building houses a conference center offering 3100 m² of space in 7 rooms.

On the top floor there is a ballroom with an area of 1300 m² for 800 people, isolated from the rest of the building by an acoustic capsule. On the ground floor in the entrance area there is a restaurant with 330 seats. The total area of the building is 40100 m². The adaptation project was carried out by the Vienna office, OP Architekten, Wojciech Poplawski, and Andrzej Orliński; the interiors were designed by the London company Jestico + Whiles.

Discussion – Towards a resilient city

Cities should build their resilience through the optimal use of their resources, including the appropriate use of space and its potential, including that related to their cultural heritage assets. Building resilience depends on several elements, including the ability to adapt and the ability to transform. Reusing former factory areas for new functions, in this case a shopping

mall, is an example of increasing the resilience of a place through great flexibility and adaptability. The urban system is subject to constant changes, and its resilience depends on the ability to continuously transform by adapting to changing external conditions. Changes in the area of the former I.K. Poznański's factory are an example of the ability to transform while maintaining identity. The ability to adapt to new functions requires synergistic cooperation between the private and public sectors, which was necessary when carrying out such a large investment [27], [28], [29]. The use of wastelands and post-industrial vacancies is an example of the flexibility of land development, the adaptability of development, the elimination of urban barriers, the reduction of the area of urban wastelands, and the elimination of spatial barriers. After changing its function, the previously inaccessible, vast area in the city center became part of a network of publicly accessible spaces and a place bustling with life [12].

Adaptation of historic structures is always a compromise between preservation and creation. Protection of post-industrial buildings is not easy; preservation of the object is almost always connected with the necessity of changing the function, because technological and economic changes exclude the return to the original way of use. Changing the function is connected with interference in the form, structure, and materials and is always a kind of compromise between protection of historic values and creation of a new function and fulfilling the needs of the user [24], [25].

The scope of changes in the spatial layout of the area after the Poltex Cotton Industry Plant sparked discussions during the construction and immediately after the opening of the shopping center. Some of the scientific community claimed that the scope of interference in the spatial layout of the textile factory was too large because the layout of the entire complex, the proportions of openings, and the layout of internal streets were changed. Doubts were also raised by the scale of the new development and the obliteration of the trace of the former narrow-gauge railway. The investment was accused of façadeism and an overly radical approach to the historic fabric [14], or Disneyfication of the post-industrial landscape [13]. Currently, the entire investment is perceived very positively as an example of a model policy of reuse of post-industrial wastelands in the city center. The area of the Manufaktura shopping mall became part of the common spaces. The adaptation of the post-factory development for commercial purposes contributed to the change in the perception of industrial heritage. In subsequent reconstructions, post-industrial developments were no longer perceived as a nuisance but rather as a desirable element that emphasizes the history of the place and builds the investment brand.

Conclusion

Lodz has a specific history and a different cultural heritage from other cities in Poland. The rapid development of the textile industry resulted in the rapid expansion of the city and the multinational structure of its inhabitants. The rapid development of industry was associated with the creation of factory complexes in river valleys. One such complex was the Cotton Industry Factory of Izrael Kalmanowicz Poznański. It was a huge industrial complex, located in the vicinity of the Old Town, covering an area of 27 ha. The production of textile products developed here very quickly from the 1870s, survived two wars and the crisis of the 1930s, and was continued in the years of socialism. Textile factories, including those founded by I.K. Poznański, did not survive the change of the political and economic system in Poland in 1989. They were unable to compete on the global textile market. Fabric production was stopped, and the vast resources of land, buildings, and equipment were gradually degraded. The post-industrial areas of textile factories became urban wastelands and were not perceived

as valuable cultural heritage. Discussions on the protection of these resources began in the 1970s, but for a long time they did not bring satisfactory results. It was not until the 1990s that the way of treating the post-factory heritage changed, and it began to be perceived as an element of building the city's identity and evidence of its 19th-century power.

The adaptation of the area of I.K. Poznański's factory has shown that it is a resource of both great historical value and great commercial potential. The construction of the Manufaktura Shopping Mall is an investment success that has contributed to the popularization of the city and its heritage. It is also an example of increasing the city's resilience through its ability to transform, adapt to new conditions, and reduce spatial barriers.

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