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1960'S POLISH MODERNISTIC INDUSTRIAL BUILDINGS TODAY

POLSKIE MODERNISTYCZNE OBIEKTY PRZEMYSŁOWE Z LAT 1960–1970 DZISIAJ

Abstract

The 1960s in Poland was a period when formal boundaries of the Stalinist period were being shaken off. The economy, with its reliance on heavy industry, was in dire need of new production facilities, the shape of which was dictated by the available technology. The mounting restrictions imposed by the centrally controlled state and changing investment priorities did not affect production undertakings inasmuch as other construction industry disciplines. At that time, equipment and industrial unit designs were not subject to categorisation yet, and furthermore enjoyed privileged status when it came to acquiring building materials. Such a situation gave designers a free run at shaping their creations to accommodate technological requirements and in accordance with the modernistic line. Numerous outstanding examples of industrial architecture were created, constituting an important element of the Polish post-war architecture. Unfortunately, only a few survive to this day.

Keywords: industry, technology, architecture, construction

Streszczenie

W Polsce lata 60. XX w. były okresem odchodzenia od ograniczeń formalnych okresu stalinowskiego. Gospodarka, której podstawą był przemysł ciężki, wymagała nowych zakładów produkcyjnych, a ich kształt dyktowała technologia. Narastające ograniczenia narzucane przez centralnie sterowane państwo oraz zmienne priorytety inwestycyjne dotyczyły w mniejszym stopniu przedsięwzięć produkcyjnych niż innych dziedzin budownictwa. Projekty hal i urzędów nie podlegały jeszcze typizacji, a ponadto miały uprzywilejowany status w pozyskiwaniu materiałów budowlanych. W tej sytuacji projektanci mogli kształtować je zgodnie z wymaganiami technologii i w konwencji estetyki modernistycznej. Powstała grupa wybitnych, niestety w większości nieistniejących już dzieł architektury przemysłowej, stanowiących ważny element w historii polskiej powojennej architektury.

Słowa kluczowe: przemysł, technologia, architektura, konstrukcja

1. Growth of industry and growth of the country

Post-war industrial buildings erected under the Polish People's Republic (PRL) for various reasons constituted an exceptional group of investments. Industrialisation of Poland became the primary direction for developing the economy, which was also to be the driving force behind the country's growth. This favoured industrial and accompanying investments. In imposing functional solutions, production plant technologies determined the structure, which was decisive when it came to the formal aspect of solutions. The financing of these investments involved central and ministry specific grants in "exchangeable currencies" (i.e. West European), which made it possible to purchase Western materials and technological solutions. These were decisive when it came to the appearance of production halls and auxiliary buildings. The above factors meant that work in state industrial design offices was often better paid on account of the official "per volume" conversion tables and workers could afford more freedom, contact with Western technologies and materials, while also being provided with an opportunity to travel.

Kombinat Metalurgiczny Nowa Huta [Nowa Huta Steelworks] is a flagship example of the early "People's Republic" achievements. It is clear that only the representative buildings were in line with the "national" architecture of the Stalinist period. A city for 100 thousand inhabitants – Nowa Huta – was constructed together with the steelworks. The urban project took into account the terrain structure, but did not create a clear communication link with Kraków. However, the layout conveyed clear references to the Polish pre-war modernism. The buildings were erected in accordance with the social realism architecture principles of the 1950s.

2. Industrial architecture in Poland – more freedom of form and less technical restrictions

The 1960s were a period during which, after October '56, architects were able to return to modernism, which was the dominant European aesthetic formula. That return was difficult, as from year to year residential norms were becoming stricter and mass building systems were gradually stripped down. House factories were a visible sign thereof, whose products severely limited the potential impact of engineers and designers [7].

"Prestigious", high rank and influential buildings were also part of the privileged group. These included large-scale entertainment venues, train and bus stations, large sports facilities, some public use buildings, exhibition pavilions. A small sector of the private investors remained, providing church buildings and some private houses, which also afforded a larger degree of freedom.

During the period in question, rivalry between the two European political systems was predominantly taking place on the heavy industry stage, and that is why in Poland construction of industrial facilities of this type received support at every level. The prefabrication of repeatable elements, preferred and enforced in other sectors of the construction industry,

was fully justified when it came to large production halls. It facilitated the creation of an open space to accommodate changing technological processes and was also economically sound.

The above conditions, faced by Polish architects in the 1960s, meant that many new industrial plants, similar to those built all over Europe, sprung up. Undisputed achievements of this trend in Poland, arising from engineering and formal freedom, were publicised only to a small extent. Similar to other areas of life, censorship kept a close watch over the secrets of heavy, and sometimes not so heavy industry. As a result, only small photographs, outlines and fragmentary publications found their way to professional press. This meant also that not all works were in the public knowledge. Even a thorough review of the professional press from the period does not present the entire picture.

This paper outlines the history and subsequent fate of a number of selected, formerly flagship heavy and light industry plants, mentioned in professional press:

- ▶ a complex of cooling ventilators at Skawina Power Station (1960–1961),
- ▶ „Runotex” in Kalisz (1962),
- ▶ Furniture Factories [*Fabryka Mebli*] in Wyszyków (1962),
- ▶ Elana in Toruń (1963),
- ▶ Lime Production Plant [*Zakłady Przemysłu Wapienniczego*] in Bukowa (1964), today’s Lhoist, Bukowa Cement Plant,
- ▶ Tank Furnace Hall at the Sandomierz Glassworks (1965), today’s Piklington Sandomierz,
- ▶ Ski Factory in Szaflary near Zakopane (1966).

3. Modernism – theoretical assumptions and industrial logic

Modernistic architecture referred to geometric divisions, rhythms, sequences, dominant colours. It drew inspiration from arts that developed its non-objective, abstract line. In the first decades of the 20th century, theoreticians and young architects also assumed a similar, ascetic framework for creating functions, structures and building spatial forms. The “box” [10, p. 91] architecture popularised by Bauhaus, accepted and employed by the Polish pre-war architectural avant-garde, was abruptly interrupted by WW2 and the Stalin era. European modernism was changing during that time. In architecture of the 1940s and 1950s, purism introduced a new, soft line and sleek shapes, expressionism, although out of the limelight, still persevered, from time to time making an appearance on the European stage. Op-art, which began in the USA, appeared in European art in the 1950s. It made use of optical illusions. in the form of “eye catching” black and white, sometimes colour compositions. Repeatability of elements in large-scale units, light façade areas and dark windows, linear perspective and scale provided similar experiences. That is probably why the buildings themselves, as well as the methods used to draw them, bear resemblance to op-art aesthetics [6, p. 12].

Technical equipment, such as pipelines, fans or filters, constituted attractive counterpoints in the geometric environmental compositions. Curved installations set against rectangular halls appeared in general plans next to tanks; they were dominant in façades and hand drawn

perspectives. The layout of buildings and systems was imposed by technological processes, and as such, the spatial freedom of composure relied heavily on media distribution and communication – which was determined by the general blueprints for the facilities. In its level of abstraction, the convention for presenting architectural designs was similar to abstract art pieces. One of the reasons for this was the fact that at working meetings of all levels, both the designers as well as the investors, were professionals who paid attention to the essence of the matter at hand. The graphical presentation and how the project was drawn were down to the architect [5, p. 13]. Here, it would be difficult not to mention the impact of the then architecture guru, Le Corbusier, and his famous and specific method of drawing.

The search for industrial plant aesthetic expression was conducted under the influence of European solutions glimpsed in rarely obtainable professional publications. A small group of Polish architects and designers was able to verify their experiences abroad, during business trips. Despite that, in the 1960s, works were created in Poland, which were subsequently cited in foreign literature. This stands testament to the quality of Polish industrial architecture on a European scale. Teams of architects, engineers, technicians and artists employed at large, often specialist design firms were engaged in solving problems associated with designing industrial plants. In comparison with functional solutions, up-to-date forms and structural concepts, workmanship, building materials and available details and finishes were of a poor quality.



Fig. 1 a, b. “Runotex” weaving mill building in Kalisz in early sixties [12, s. 24] and now

The “Runotex” weaving mill building in Kalisz from 1962 is one of the more interesting, discussed in Polish as well as foreign publications and textbooks [8, p. 237], [2, p. 413], [11, p. 73], [9, p. 31], [8, p. 299]. It was designed by architects Stanisław Sikorski and Jerzy Głowczewski as well as engineers Waclaw Zalewski, Zenon Zieliński and Jan Kocy [12, p. 24]. The distinctive feature at “Runotex” is a flat, “saw tooth” elongated modular façade of the weaving mill. This is a result of the adopted roof structure for covering the 30-m span of the hall. It is made up of concave trough-like forms, interspersed with bands of windows. The white façade plaster is in stark contrast to the triangular, dark, recessed wall surfaces of the ground floor. Such a composition was a formal solution, only partially stemming from the structural system: the aim was to create a powerful, recognisable spatial form. It was soon

to be the inspiration for the logo displayed on products manufactured at the factory, now changed despite the fact that the unit still stands today.

The Furniture Factory building in Wyszków near Warsaw is one of the most interesting light industry buildings erected in the 1960s (1962) [2, p. 413], [12, p. 23], [8, p. 236], [9]. At the foundation of the structural solution lay the freedom to arrange changing production lines and an entirely flexible interior space. That is why the staff facilities were located on the mezzanine inside the hall, leaving an unobstructed ground floor space. The designers used a repeatable shell elements in the shape of a wide “V”, 1.5 m long and 6 m wide, with the lower rib prepared for pre-stressing. The elements aligned next to each other and pre-stressed made up groove girders supported at their ends by reinforced concrete pillars. These were used to cover two production halls, 30 m and 15 m wide.

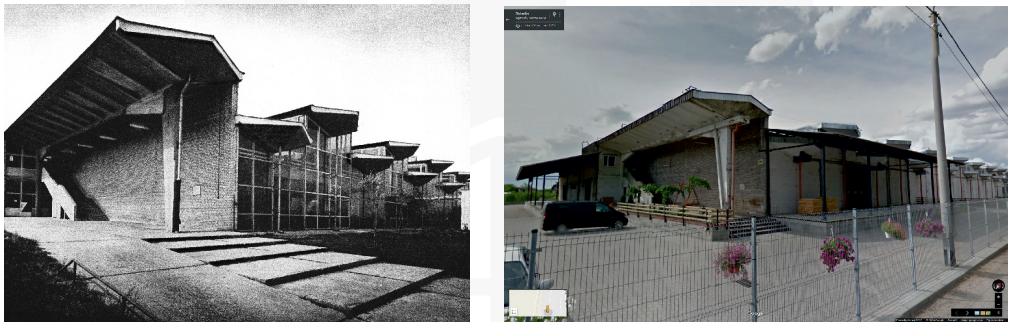


Fig. 2a, b. Wyszków, main production hall of the Furniture Factory in 1965, [13, p. 86] and now, author's own photograph

The effective shape of the spatial form was achieved by alternating the heights of subsequent roof “girder” sections. This also made it possible to achieve uniform lighting of the interior through bands of windows. Extreme segments of each girder were extended creating characteristic, triangular canopies, sheltering and casting shadows on the flat, glass façade. It opened a view of a greenery contained within the plant. At the ends of the halls, the “girders” were left open, providing a roofed staircase to the mezzanine and ground level entry to the hall. Bicycle stands are also located therein. The technical difficulties encountered during construction were described in the documents: the rubber window gaskets “... within a short time were cracked and not tight...” [2, p. 415] and “the contractor had innumerable problems with the glass adhesion technology at the construction site” [2, p. 415]. As it can be seen these were pioneering struggles, aiming to create architecture far and above the mundane technical reality of PRL. The furniture factory in Wyszków was designed by architects Andrzej Dzierżawski, Zbigniew Pawelski and Maciej Siennicki as well as engineers Waclaw Zalewski and Aleksander Włodarz [12, p. 23]

The Skawina Power Plant was built between 1957 and 1961 and at that time, it was the largest enterprise of this type in Poland. The most interesting technical and formal solutions within this facility included the complex of cooling ventilators. Constructed in

1960–1961, according to a design by architect Władysław Zembaty and engineer Zygfryd Napieraj [12, p. 22], it was a technological novelty. It replaced traditional cooling towers and its structure was simpler and could be constructed in less time. The ventilators were arranged into a single battery and the exhaust tubulars from each one pointed upwards, crowning a concrete cuboid standing on thin pillars “cut off” from its wall. The whole form is reminiscent of abstract modernistic compositions. Vertical grey stripes were painted on the steel ventilator “chimneys”, which together with the rhythm of their outside metal sheeting resulted in a Mondrian monochrome composition [1, p. 241]. The flat, reinforced concrete “cube” housing the technological levels is 15 cm thick and it is in stark contrast with the rich structure and colour of the “tubulars”.

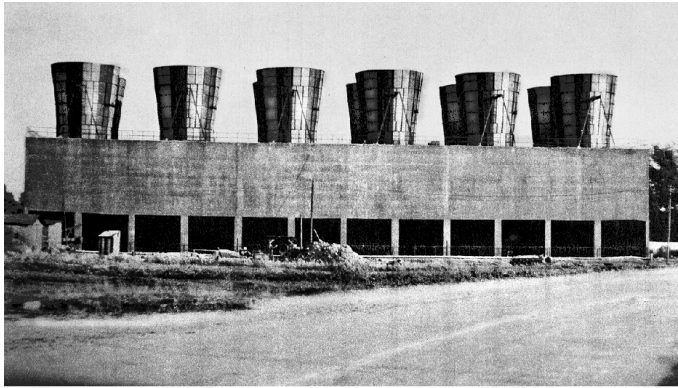


Fig. 3a. Skawina, power plant, ventilators complex [1, p. 241]

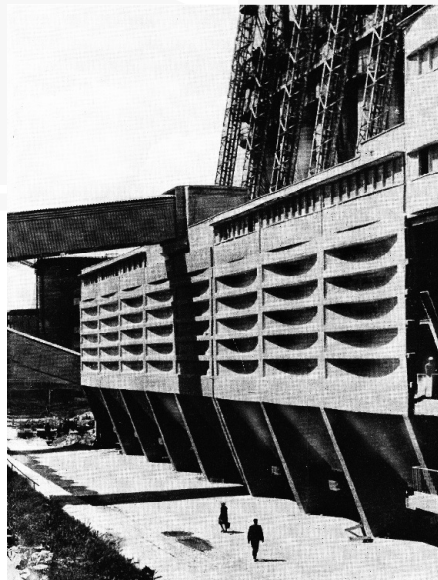


Fig. 3b. Bukowa, Lime Production Plant, rock and aggregate containers [3, p. 16]

An equally interesting optical effect resulted from the stone and coke containers structure at the Bukowa Lime Production Plant (1964), located in Świętokrzyskie Province. This work was coined by architects Alina Dębska and Aleksander Dębski as well as engineer Stanisław Srokowski. The containers supplied adjacent lime furnaces. Traditionally, siloses were installed at such locations. A repeatable structural module of the containers yielded tangible economic benefits, and the structural requirements dictated their interesting visual form. A monolithic reinforced concrete skeleton, which holds the container shells, forms bold triangular supports, separating particular chutes. [3, p. 16]. Concrete shells supported by horizontal ribs allow free movement of the contents.

Elana, the synthetic and mixed fabrics plant was built in Toruń in 1963. At that time, its buildings were fitted with an annealed glass façade on an aluminium framework – a novelty in Poland. This modular façade, already well established in the West, made its home in the Polish industrial construction industry for good when, at the beginning of the 1960s, national production of this universal system commenced. A vast glass front wall provided the light for Elana's main production hall. The same system, appropriately scaled, was used for the office building and smaller units. The design of the plant was prepared by architects Stanisław Turczynowicz, Zbigniew Bobrowski, Henryk Marconi, Barbara Rogińska, Jerzy Romański, Leszek Szycht and a team of engineers. [13, p. 77], [4, p. 231]

The largest group of industrial buildings erected during that period were production halls of various types. The main problem associated with roof coverings spanning more than 24 meters was solved using pre-stressed or cable tensioned reinforced concrete girders arranged on different levels. A variety of shell shaped net-concrete covers were laid on these, facilitating uniform distribution of light to the entire units. The buildings were as a rule based on a rectangular plan, featuring reinforced concrete or brick walls between reinforced concrete pillars. Diversified forms of roofs enriched simple, cubic volumes of industrial halls and were signalized by copings and saw-rhythms of the outer walls. The frame based structure and flat walls facilitated unobstructed installation of side windows, conveyor belts, ventilators, entrances and gates in accordance with the technological requirements.

The 1965 Sandomierz Glassworks structure was an exception. The Tank Furnace Hall was a hyperbolic shell closed at both ends by glass walls. It was designed by architect Zdzisław Bajtyngier and engineer Zbigniew Piwowarczyk [9]. Similar curved sculpture forms were rarely seen in industrial architecture – here, the massive cooling towers, dominating industrial landscapes, were an exception. It is difficult not to associate the Tank Furnace Hall shape with the 1952 *Laboratorio Rayos Cósmicos* in Mexico by Félix Candela.

The smallish ski-manufacturing hall in Szaflary near Zakopane designed by Stanisław Karpel and built in 1966 was another atypical solution. Despite its reinforced concrete structure, the spatial form reflects the Podhale region construction character: a steep roof, low set windows in characteristic triangular “lunettes”, use of stone on façades. At first sight, it blends in with the surrounding greenery and seems nothing like an industrial facility. It may be considered a precursor example of Polish vernacular architecture.

There was one further group of industrial plants, the documentation of which was not published due to a confidentiality clause. These were buildings associated with the arms

industry or, to a large extent, working for the needs of the country defence. Mikrohuta, built in the mid-1960s near Katowice, was one such example. The buildings of this complex, the main hall including, feature cuboidal forms, as dictated by technological requirements. Roof skylights, extractors, ventilators pipes and scattered windows enrich the volume. The façades and roofs were covered by imported Thyssen corrugated steel sheets, a novelty at the time. Mikrohuta units represented a new trend: steel framework structure was covered by corrugated plate sandwich type walls. Today, this is a standard solution.

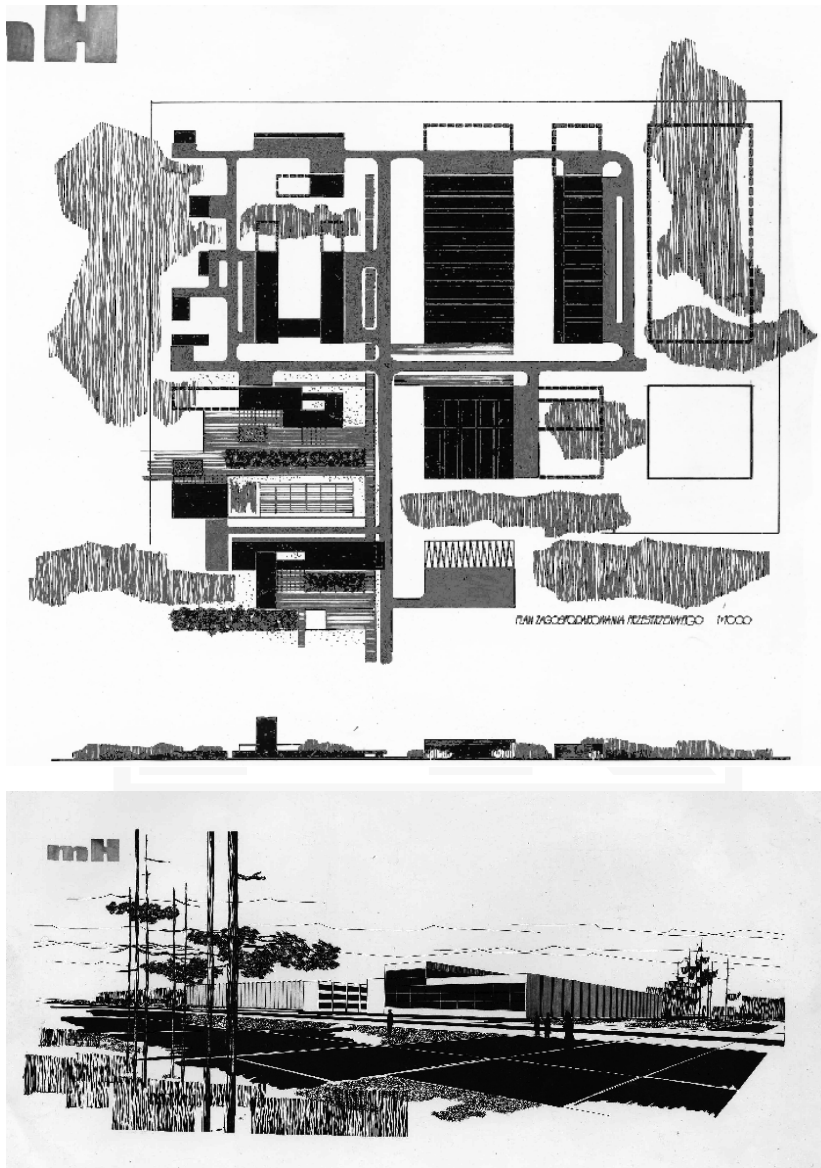


Fig. 4a, b. Dąbrowa Górnicza, Mikrohuta, initial general layout and main plant (arch. Z. Stanik), author's archive

4. The fate of 1960s industrial architecture

Few industrial buildings dating back to the first half of the 20th century managed to find new, better roles in the new, better reality. At the turn of the century, Bytom's Orzeł Biały mine lamp room was converted onto the architect's own apartment. However, this is an isolated event.

It is often difficult to find out what is happening with former industrial units and factories. The new owners: Lhoist in Bukowa, Piklington in Sandomierz and others are not forthcoming with information and restrict access to their properties.

Some of the buildings described herein survive to this day:

- ▶ “Runotex” in Kalisz (1962): the industrial unit is still standing and production still takes place there, the building is in a deplorable state despite the fact that the private enterprise is doing well;
- ▶ There is not much left of the Furniture Factory in Wyszków. The plot is criss-crossed with fences and divided between eighteen owners. The hall structure still stands, the glass units have been bricked up, some are still visible in bands of trough roof coverings. The yard between the industrial units has been built up as well as the North manoeuvring yard. The East side of the plot has been sliced away. It included: the office building, workshop, flammable materials storage, fire water reservoir;
- ▶ The ski-manufacturing unit Szaflary near Zakopane: the structure is still intact, the premises are also used by multiple owners, the spatial form is slightly changed on the outside and the interior is partitioned;
- ▶ Magnificent halls of Warsaw Pump Factory and Cracow Steel Constructions Plant are still in use as before;
- ▶ The ventilator complex at Skawina Power Plant: not there anymore, new installation is working on this place;
- ▶ Lime Production Plant in Bukowa (today's Lhoist, Bukowa Cement Plant): the rock and coke containers are most probably gone. Information is not available, but observation (Google) shows that the buildings are no longer there;
- ▶ Elana in Toruń ceased to exist in 2008, production buildings are dilapidated, office buildings split into small units and rented out;
- ▶ Tank Furnace Hall at the Sandomierz Glassworks (today's Piklington Sandomierz): not there anymore;
- ▶ In the last years, Mikrohuta was also abandoned, its main hall dilapidating.

The technological and technical maturity for all units discussed herein is long gone. They were often in the way of the new private owners' or Western companies' and corporations' development plans. Modernizations and upgrades of technological buildings are not practiced in industrial reality. New owners often refuse to refer to the past days of the plant they own. The history starts for them with the day it was taken over or bought – in Poland, usually at the end of the 20th century.

There are however people who take care of the past, and in their blogs they publish old photographs referring to the past events and people who were working in the plants long ago.

It would be a loss for Polish culture if, after the disappearance of buildings, which used to be a significant part of Polish post-war achievements, the buildings as well as the names of their designers and constructors were to be forgotten.

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