



The use of old architectural objects for new functions - a case study

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ABSTRACT:

The article presents the issues of managing the cubature of buildings that exist for the use of higher education in the Silesian region in the post-war period, particularly focusing on the example of the Częstochowa University of Technology. Based on the author's design and research materials, a selected project is discussed regarding the modernization and extension of the former military coach house for educational purposes. The issue of the possibility of transforming old resources used for military purposes with the transformation into didactic buildings of technical/technological universities is also highlighted. The experimental and eco-energy aspects of the applied design solutions in the field of architecture and construction are also discussed.

KEYWORDS:

facility modernization; architectural and construction design; changing the function of the object; technologies and energy-saving materials

1. Introduction

The history of the Częstochowa University of Technology and the development of its material base is part of a broader context - the development of higher education institutions in post-war Poland in the 20th century,

What connected newly-established universities in the post-war era - after World War II, was the frequent use of existing large-scale buildings, becoming the seat of the university. For example, the Cracow University of Technology was established in the post-war years and acquired its headquarters in the buildings of the Austrian army barracks. Also, colleges founded later (end of the 20th century) used post-military buildings for higher education (e.g. Opole University, the University of Fire Service in Częstochowa, etc.).

These buildings can be adapted to the needs of teaching facilities because they are characterized by parameters suitable for the function of a school-type building. For architects creating a new function, these objects are a challenge, requiring the connection of various aspects of architectural and construction design, as well as often conservation requirements.

The Częstochowa University of Technology was established at the turn of the 1940s and 1950s and acquired its headquarters in a building that was leased to Tsarist troops at the beginning of the 20th century. During independence - in the interwar period (1919-1939) - the building was used by the 27th Infantry Regiment of the Polish Army [1].

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2. Modernization and extension of the existing main building at the Czestochowa University of Technology (segment D)

2.1. Historical outline of the described object

At the beginning of its existence (end of the 1940s), Czestochowa University of Technology established its presence in a post-military building, which was located on the peripheral areas of the city of Czestochowa and where, during the 1950s, practically all administrative and research activity represented by the various faculties of the University were conducted. The building's structure is characterized by separate „segments”, which have been marked with subsequent letters of the alphabet. Subsequent faculties of the Polytechnic were also located here. For example, in the 1975/76 academic year, the Institute of Civil Engineering (with the rights of Faculty) of the Czestochowa University of Technology was established [2]. The department had a significant advantage; it was housed in a segment of a fire-fighting building (so-called „segment D”), which was part of the building described above (Fig. 1). Segment „D” constituted the locum of the Institute of Civil Engineering and, at the time of 1970s, required extensive renovation and modernization.



Fig. 1. Tsarist barracks building in Czestochowa, School Str. (currently: Dąbrowski Str.). Photograph from 1907 - from the archival collections of the Czestochowa University of Technology. On the right, in the depth of the photo, the lower segment of the building is visible, subject to the process of modernization and superstructure

2.2. Characteristics of the design task

Pre-project and design preliminary work was undertaken a decade later at the turn of the 1980s and 1990s. At the time, the facility was hosted by the Institute of Sanitary Engineering and Environmental Protection, a field of study that was part of the Faculty of Civil Engineering at the Czestochowa University of Technology [2]. The design was three-phase, including the technical design phase. The project was developed in 1989-1990. The authors of the project were: arch. L. Nowotarski, arch. M. Zadworny (architecture). The construction design was made by doc. dr inż. W. Kucharczuk (cooperation: J. Tworek). The complexity of the design problem determined the close cooperation of architects and constructors in all phases of the project.

The subject of the study was, therefore, the planned modernization of the so-called „D” segment of the Main Building of the Czestochowa University of Technology together with

the design of its superstructure with an addition of one floor (Fig. 2). The building, dating from around 1907, is a structure made of limestone with a reinforcing brick thread (lintels, bows, etc.). The functional and utility program developed was intended for the user of the facility, the Institute of Sanitary Engineering. The building has a basement, a gable roof with an attic and a wooden roof structure. The existing building (within the „D” and „E” segments) is a basement with ground floor and first floor. This part of the building is lower than the other segments, which has become one of the reasons for raising the building by one story (Fig. 2). The building has a basement, a gable roof with an attic and a wooden roof structure.

The modernization project provided for the functional and program changes, introduced a number of laboratory rooms on the basement and ground floor, storage rooms on the basement floor, as well as lecture and training rooms on the first floor (Figs. 3-5). The design of the superstructure of the second floor of the „D” segment was a continuation of the design documentation prepared in the scope of general renovation and modernization of existing floors.

The functional and utility program of the superstructure provided for an extension of the didactic area to maintain the continuity of education of students of the Institute of Environmental Engineering, as well as the possibility of using the designed auditorium hall for inter-faculty use by other units of the Czestochowa University of Technology. Within the planned superstructure of 2 floors, the following program was foreseen:

- aula for 200 people with the main hall,
- two classrooms,
- teaching rooms,
- plumbing node,
- communication surfaces.

The superstructure floor is accessible from two rebuilt staircases (Fig. 6).

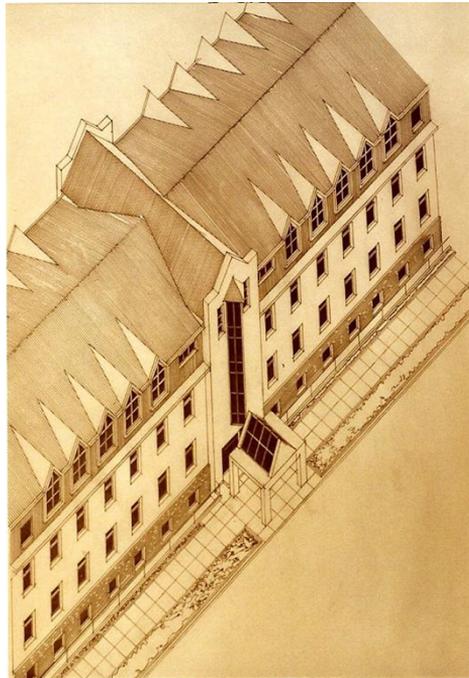


Fig. 2. Axonometry of the planned modernization and superstructure of the D segment and additionally E segment of the main building of the Czestochowa University of Technology - conceptual design phase, drawing - ink technique, author M. Zadworny [3]

- height to the eaves (in the superstructure) - 3.8 m,
- ridge height (in the superstructure) - 5.4 m,
- usable area - 704.5 m²,
- total area - 820.0 m²,
- volume - 3850 m³ (Fig. 7) [4].

3. Conclusions

The protracted implementation phase of the facility's modernization and superstructure had undesirable consequences in the form of documentary changes, which were introduced via an annex by designers acting on behalf of the contractors.

In general, the modernized building gained a new architectural expression and significantly increased its volume. New, improved conditions for work and study for scientists and students were provided. Currently, the 'D' segment of the building is used as an independent building for the Faculty of Engineering and Environmental Protection, separated from the structure of the Faculty of Civil Engineering.

The author of this article also monitored the Auditorium Hall built as a result of the superstructure (for 200 people). The Auditorium Hall has received very good reviews from academic teachers conducting classes there, and such is a source of extreme satisfaction.

The possibility of transforming old resources used for military purposes into teaching buildings for technical/technological universities is also highlighted. The experimental and eco-energy aspects of the applied architectural and construction design solutions are also discussed.

References

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Wykorzystanie starych obiektów architektonicznych do nowych funkcji - studium przypadku

STRESZCZENIE:

Przedstawiono zagadnienia zarządzania kubaturą budynków istniejących na potrzeby szkolnictwa wyższego na Śląsku w okresie powojennym ze szczególnym uwzględnieniem przykładu Politechniki Częstochowskiej. Na podstawie autorskich materiałów projektowych i badawczych omówiono wybrany projekt dotyczący modernizacji i nadbudowy dawnych koszar wojskowych z przeznaczeniem na cele edukacyjne. Podkreślono kwestię możliwości przekształcania starych zasobów wykorzystywanych do celów wojskowych przy przekształcaniu w budynki dydaktyczne uczelni technicznych/technologicznych. Omówiono także eksperymentalne i ekoenergetyczne aspekty zastosowanych rozwiązań projektowych w dziedzinie architektury i budownictwa.

SŁOWA KLUCZOWE:

modernizacja obiektu; projektowanie architektoniczne i konstrukcyjne; zmiana funkcji obiektu; technologie i materiały energooszczędne