

Contemporary Industrial Architecture in Bulgaria

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Industrial architecture in Bulgaria is undergoing a uniquely difficult period of development. A tremendous amount has been built in the past fifty years, greatly expanding the nation's industrial capacity. The requirements placed on industry by the new free market economy, however, are quite different from those posed by the previous centrally planned economy. What is the current condition of Bulgarian industrial architecture, what problems is it going through, and what developmental trends?

Theme WORKSPACE DESIGN

INDUSTRIALIZATION HAS BEEN and continues to be a prominent trend in the economic development of Bulgaria. But while industrial technologies have developed freely, spurred on by advancements in science and engineering, industrial architecture remains a captive of the limitations placed on it by lagging construction technology.

Industrial architecture in Bulgaria is following several trends common in the rest of the world: large industrial plants are being built (fig. 1, 2, 3); facilities incorporating new technologies to meet entirely new functional and micro climatic requirements are appearing (fig. 4); smaller industrial companies are popping up in urban areas as private enterprise is allowed to flourish beside state-owned businesses (fig. 5, 6); and existing plants are being remodeled and modernized on a vast scale. These developments occur in an atmosphere of comprehensive democratization of society accompanied by a

great deal of political activity and social tension.

During the past few years, several large-scale industrial facilities have been constructed: the metallurgic plant near Burgas, the heavy engineering works near Radomir, the ore-dressing plant (Assarel), the underground pumped storage electric power station (Chaira), and the nuclear power plant on the Danube. While specialists may admire their fully modern equipment and high degree of automation, some of these facilities are in fact not particularly efficient, are rather too big for a country like Bulgaria, and adversely affect the environment (releasing toxic substances and causing considerable disturbance to the surrounding landscape).

The strong popular concern for protecting nature and human life from the harmful effects of industries, heightened by the nuclear disaster at Chernobyl, forced the Bulgarian Parliament to grant the public's demands that it discontinue the construction of a nuclear power plant in Belyane and shut down or rebuild others.

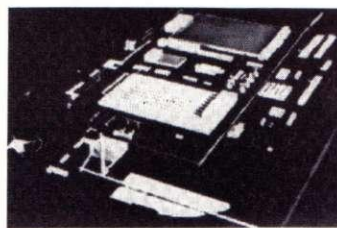
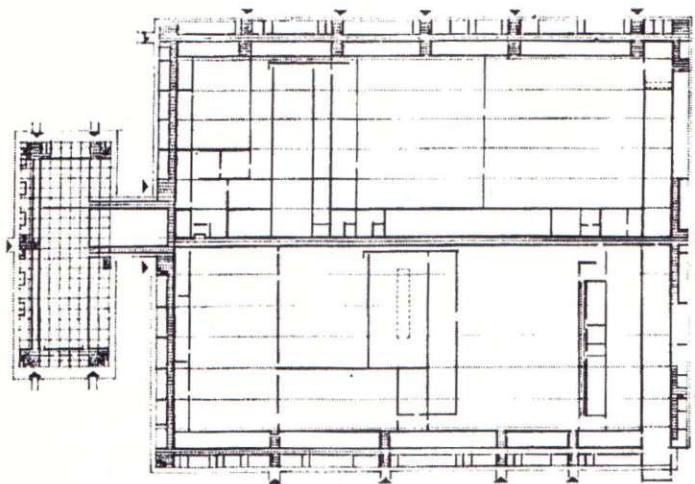


Fig. 2. Chemical plant in Vidin

These large-scale projects were built using the traditional construction technology of prefabricated reinforced concrete units based on common conceptions of building and structure. The architecture of these facilities is granted a degree of freshness by the periodic use of light metal structures. The buildings' performance, however, has been unsatisfactory. The architects found their creative work to be

dependent upon a complicated system of investment and burdened with a series of difficulties and construction limitations which inhibited the implementation of their architectural ideas.

The design and construction of facilities for new technological fields is the second important trend in Bulgarian industrial architecture. It includes factories for biotechnology, microelectronics, optics, and computers. The

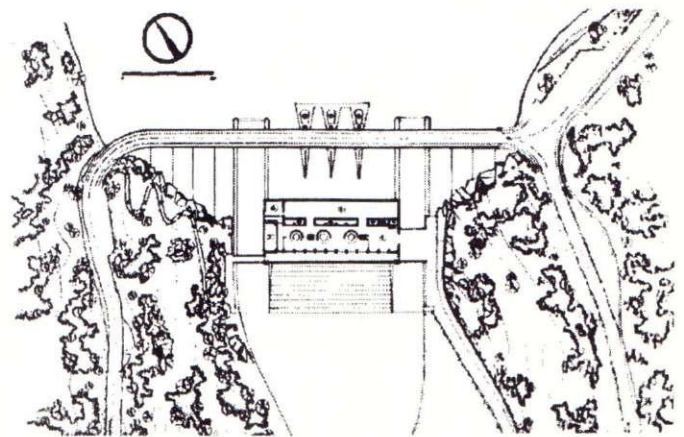
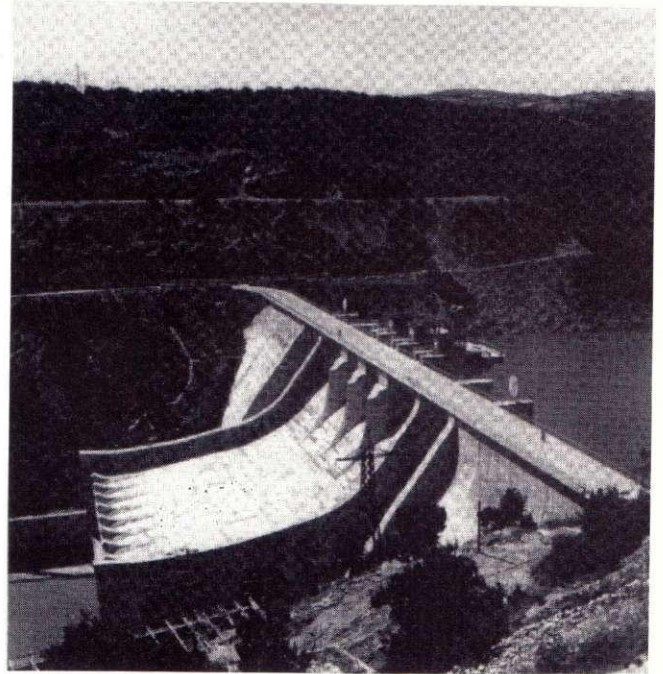


Fig. 3. Hydroelectric power station in Ivailovgrad

design of such facilities involves new specifications for a super clean industrial micro climate a hundred times more rigorous than conventional factories. New types of buildings are appearing in which the majority of space is allocated to the technical devices required by strictly regimented hygienic procedures. There is new legislation regulating provisions for public sanitary facilities, employee services,

and the working environment in industrial buildings. The psychological aspects of industrial labor, such as concern for employees put in unfamiliar situations, are coming to the fore.

The requirements of the new kinds of businesses are generating new types of buildings. Here the need for new construction technologies which correspond to progressive new industrial

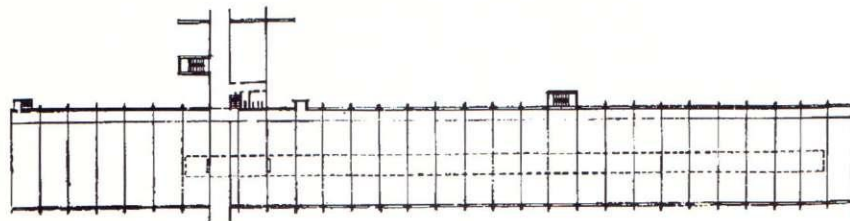
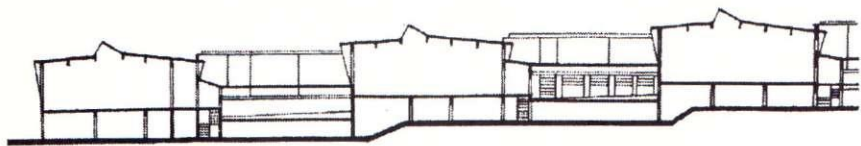
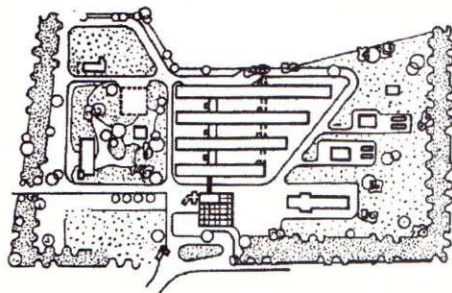
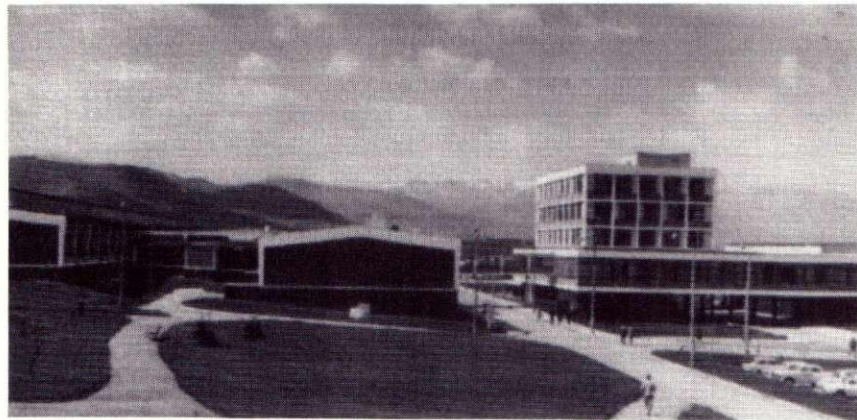


Fig. 4. Semiconductor factory in Botevgrad

technologies becomes obvious: fully equipped production in super clean climates demands a flawless physical and technical shell, and suggests a similarly progressive architectural aesthetic. Bulgarian architects expect that the introduction of ultra modern industrial technology will engender a great leap forward in construction technology, thus enabling the creation of an industrial architecture appropriate to this new technological age. Improved building performance should result from and support even the boldest architectural and structural designs, keeping the building industry apace with parallel developments in science and technology at the end of this century.

The design and construction of smaller factories with modern equipment is a third important aspect of industrial development in Bulgaria. This trend corresponds to political initiatives intended to encourage private producers. The strategy is manifested by a new complex of small industrial companies in Izgrev, Sofia and by Yanitza, an off-the-rack clothing factory in Elhovo. Since these businesses are not disturbing to the surrounding environment, they can be located in urban areas, even neighboring residential areas.

These projects exemplify the trend toward integrating industrial and residential areas. This integration makes it possible to break the monotony of some rather dull residential neighborhoods by incorporating new industrial structures into their fabric. As the trend continues to develop, it will offer new possibilities for the enrichment of urban life. The construction of light industries in an urban environment requires the architect to research each individual case more thoroughly to determine the project's positive and negative effects on the "dwelling" function and to determine the extent to which services may be shared by the area's industries and homes. Combining industrial activity with habitation, by horizontal integration or vertical arrangement in multi-functional structures, will help create a richer urban environment with more interesting architectural and urban

design compositions.

The modernization and renovation of existing industrial buildings is considered the most important trend in industrial developments today. The material and technical foundations of Bulgarian industry are currently undergoing a process of gradual modernization to allow it to more adequately meet the needs of the scientific and technological revolution. This process becomes increasingly prevalent as the country makes the adjustment to a free market economy. Remodeling, modernization, and expansion are different ways of reorganizing existing plants which are applied in all fields of industry. Flexible new automation technologies are being incorporated into industrial engineering: examples include the machine tool plant in Sofia and the Beroe robot plant in Stara Zagora.

The authors recently initiated and participated in the research of a number of factories with the aim of improving their working environment as part of the process of remodeling and modernization. While this approach may not apply equally well in other countries, it is both appropriate and well timed in Bulgaria. In many factories with outdated production techniques and machinery the working conditions and workers' services and facilities have worsened. The democratization of society and the introduction of free market economic policy demand a concerted effort at solving the problems of the work environment. Some measures which address those problems are: better connections between functions, separation of transportation and pedestrian routes, improved social services, greater attention to exterior landscaping, and general advances in the quality of the interior work space, including ergonomic, micro climatic, architectural and aesthetic improvements.

The research group defined the scope, contents, and methodology of the research needed to insure the improvement of working conditions as businesses develop and especially when they remodel.

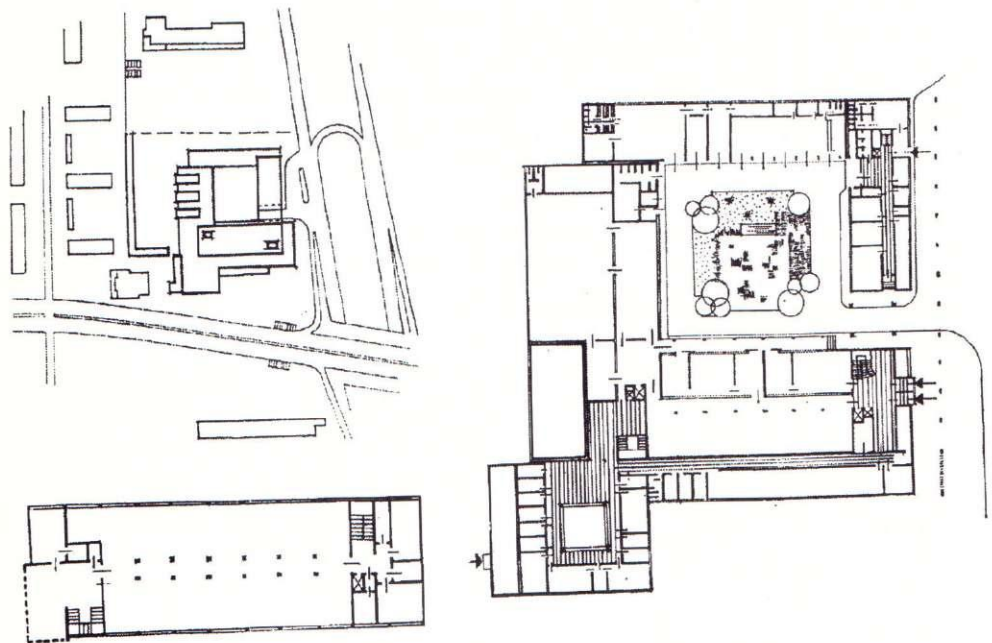


Fig. 5. Clothing factory in Varna

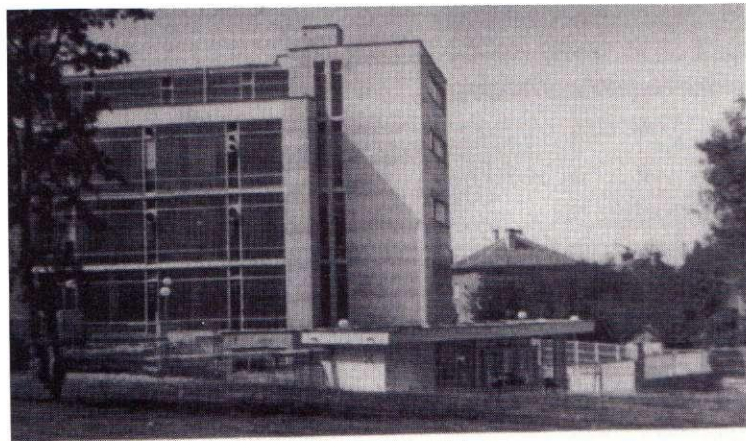
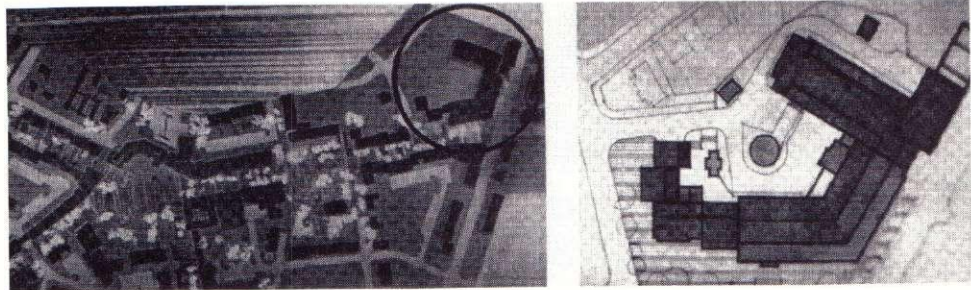


Fig. 6. Yanitza clothing factory in Elhovo

The task of reshaping industrial facilities has profound implications for the overall appearance of towns in Bulgaria, since existing industrial zones often cover 30–40% of the total urban area. It is imperative that the public services, utilities, and architectural and aesthetic character of these industrial areas be raised to the level of the other parts of town.

Problems and Developmental Trends

From the analysis of the state of industrial architecture in Bulgaria and of its course of development, **the main issues confronting Bulgarian architects can be determined:**

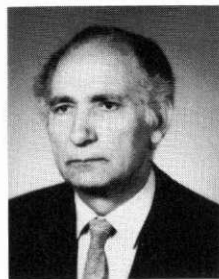
- The flourishing process of social revitalization should be used to promote the adoption of the most modern industrial technologies. Comparable technologies should be employed by the construction industry in new industrial building projects to increase productivity and

at the same time allow architects unrestricted freedom for creative thought in solving design problems.

- The efforts of businesses and those of the local councils on whose property the businesses lie should be coordinated to insure that they are mutually beneficial. Planners should consider the interests of both in developing public amenities, improving the architectural and aesthetic environment of workplaces, and livening up the character of towns by a suitable integration of industrial and residential areas.

- We should take advantage of the current trend toward opening up Bulgaria to the rest of the world to expand upon contacts between Bulgarian industrial architects and their colleagues in other parts of Europe and throughout the world in order that we might benefit from their experiences.

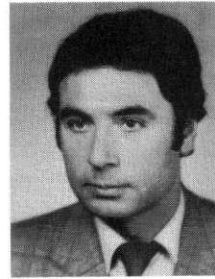
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