

space and process

INTERNATIONAL CONGRESS OF
ARCHITECTURE AND PLANNING



ICONARCH IV PROCEEDINGS BOOK



13-15 October 2020
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ICONARCH IV

INTERNATIONAL CONGRESS OF ARCHITECTURE AND PLANNING SPACE AND PROCESS IN ARCHITECTURE AND PLANNING

INTERNATIONAL E-CONGRESS

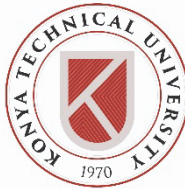
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13-15th OCTOBER 2020

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ICONARCH IV:
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SPACE AND PROCESS IN ARCHITECTURE AND PLANNING

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Department of Architecture and Department of City and Regional Planning

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FOREWORD

Dear Colleagues,

As Konya Technical University, we are proud to organize the fourth of ICONARCH congress series. The 4th International Congress on Architecture and Planning has provided a qualified scientific discussion environment on almost all issues concerning Architecture and Planning with a very intensive and comprehensive program.

ICONARCH congresses are organized every two years by Konya Technical University Faculty of Architecture and Design. We would like to organize this fourth congress by hosting our protocol members and guests in Konya, the cradle of civilization, the Seljuk Capital and the city of Mevlana. However, the pandemic conditions did not allow this. Despite everything, we held a very useful and successful congress.

The concept of "space", which has been handled at different scales within the education and practices of Architecture and Planning, has taken on a more complex structure with the meaning loaded on it in recent years. Analyzing and understanding this complex structure necessitates process-based perspectives. It also requires an understanding based on cooperation with different disciplines. ICONARCH IV aimed to bring together the profession of architecture and planning and disciplines that have strong relations with these professional fields. In a period where spatial approaches are heavily on the agenda, our congress was held with the theme of "Space and Process" at the center of new searches and discussions. In the congress, under the main theme of "Space and Process", within the scope of the themes determined under 9 different subtitles, the way the space was handled at different scales and the attributed meaning has been discussed.

Each society and production style creates its own space that meets its own needs, reflecting its lifestyle and culture. Architecture and planning disciplines recognize that space and society have the potential to mutually transform each other. In the history of humanity, we are living a period in which change is extremely rapid in every field. Technological developments, climate changes, ecological crises, growing socio-economic unrest, global migration, political conflicts, social, cultural and spatial transformations should be evaluated sensitively in the process of change of space. In this transformation process of the world, ICONARCH-IV is an important platform for those who want to explore the new global society and space dynamics. In this context, ICONARCH-IV has emphasized the metamorphosis and innovations through which space and spatial processes pass in the face of rapidly changing demographic, social,

economic, ecological and technological structures. Space is considered as the transformer, reflection and result of these changes.

An intensive exchange of information and interaction has taken place at the congress, where scientific studies addressing the versatile structure of spatial processes in various dimensions has been presented. On behalf of my school, I would like to thank the valuable scientists, invited speakers and keynote speakers who participated in our congress from Turkey and abroad, especially to Prof. Keith Halfacre, Prof. Robert Cervero, Prof. Simin Davoudi, Prof. Ayda Eraydin and Prof. Eva Stachura.

On this occasion, I would like to thank the Members of the Scientific Committee who played different roles in the organization of the congress and my friends in the congress organization committee. I would also like to thank Konya Technical University Rectorate, Architecture and City Planning Departments, which contributed to the organization of the congress, and TUBITAK, which provided financial support to the congress.

ICONARCH IV is a scientific event that guide researchers and practitioners working in the field of architecture and planning, stating that I wish to be together again in ICONARCH V, which will be held in 2022, and I present my respects.

Prof. Dr. Rahmi ERDEM

Congress Chair

Dean of the Faculty of Architecture and Design

Konya Technical University

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Interior Design of Mosques and Madrasas Belonging to Seljuk and Ottoman Civilizations in Konya

ABSTRACT SPACE AND MODERN ARCHITECTURE: ADANA AND ANKARA POWER PLANTS*

*Yaren ŐEKERCİ**, Hilal Tuęba ÖRMECİOęLU****

ABSTRACT

According to Lefebvre's statement that "Space is a social product", production relations have an important role in space production. The transition from one production method to another is highly significant; because, this is the effect on the social production relations that can be involved in the space. Since each production method has its own space, a new space is produced during this transition. Based on this, Lefebvre proposes an important periodization of space. This periodization was created by taking into consideration the general production methods and the history and institutions of the societies in which these production methods prevailed. In the periodization, six spaces, "absolute space", "consecrated space", "historical space", "abstract space", "contradictory space", and "differential space" are mentioned. Abstract space, which includes the electric power plants built in between 1910-1932 in Turkey and which covered by this study is defined as a modern space with straight lines and geometric perspective.

After the first power plant was established in Turkey in 1910, fifty-two more built in Turkey until 1932. When the architectural features of these factories are examined, the number of those built in the modern style of Lefebvre's abstract space concept is quite limited. It's seen that there is a search for style in the power plants that go between national style and modern architecture and this shows that the traces of the style search of the period are felt in the industrial buildings. However, especially in power plants established by foreign companies, there are those which were built in modern construction methods and materials and modern architecture. Among these, the power plants in Ankara and Adana established by German E.L.G company stand out. Both of them built in reinforced concrete beams, with modern construction methods and modern architectural style

* This study is based on the Yaren Őekerci's master thesis titled "Electrification of Antalya and Antalya Old Powerplant".

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according to the conditions of the period. Ankara Power Plant has a square plan type in contrast to the common rectangular plan typology. The absence of a narrow edge of the structure has led to the need for a larger opening in the roof and therefore, the steel roof truss system of the structure stands out. The modern mass and facade of Adana Power Plant distinguish the structure from other power plants of the period.

In this study, it's aimed to highlight the importance of Adana and Ankara Power Plants, which were built in a modern style, in comparison with the other power plants in Turkey established in between 1910-1932 by investigating the architectural features over the abstract space defined by Lefebvre.

Key words: Abstract Space, Adana Power Plant, Ankara Power Plant, Modern Architecture

1. INTRODUCTION

According to Lefebvre's (2014) statement that "Space is a social product", production relations and manufacturer powers such as nature, work and organization of work, technique and information have important roles in space production. As he conveyed "Every society –and hence every mode of production with its sub variants create their own spaces" (Lefebvre 2014)". At this point, the transition from one production method to another which might also be called the change of technique has great theoretical significance; because, this is the effect on the social production relations that involves the space by making the space totally changed. Since each production method has its own space, a new space is produced during this transition.

Based on this, Lefebvre proposes an important periodization of space based on the general production methods and the history and institutions of the societies in which these production methods prevailed. However, it is supposed to be considered that in this periodization, when a new space is produced, the previous ones could be still valid and existing. Lefebvre (2014) mentions six types of spaces which are "absolute space", "consecrated space", "historical space", "abstract space", "contradictory space", and "differential space". Even though Lefebvre does not specifically mention the production methods and time frames for these, Marxists colleagues like Ronald Boer (2015) match the Marxist production methods with the Lefebvre's space periodization. As it is mentioned that Lefebvre doesn't give any time frame for the space types' birth, but there are some theological and political clues to understand the production method and the era.

In the production methods of the Marxist theory, absolute space is the space of the hunting and gathering production method. It is pure nature, the spaces that

nature offers us to shelter and live. With feudalism and the establishment of the first city-states, the consecrated space was born. Emergence of abstract space followed this by the rise of capitalism. With the late capitalism, contradictory space and by the communism differential space have been produced (Ghulyan 2017).

Other than the Marxist theory, this space periodization might also be fitted the theories of industrialization process and periodization of the change of production techniques. Freyer (2018) defines "technique" as the ability of a person to do something in a good, safe, subtle, precise and special way. It is possible to see that the technique has been progressing throughout the history of humanity, that more and more useful tools have been made, the variation of materials has been increased, the manufacturing methods have been developed and new energy sources have been discovered. Until the age of industry, people first wanted something specific and then found a special tool and energy source to realize this thing. The energy used in this technique, which goes back to the 19th century, is organic energy of human or animal power and natural energy sources used to produce motion energy (Freyer 2018). In this time line, nature is the most important provider for humanity for both living in and manufacturing. Therefore, the absolute space is the space of this period.

According to Gimpel (1976), the Medieval Age was an era that brought machinery to Europe more than ever before. This will be one of the main factors in the dominance of the Western hemisphere over the rest of the world. In the Middle Ages, the mechanical use of wheels used since pre-Christ times became widespread and machines began to replace manpower. This means a change in production method and by this change, consecrated space was born.

Along with the Renaissance, there were important developments concerning the birth of modern science in the 16th and 17th centuries. Between the 15th and 17th centuries, when the foundations of the industrial revolution were laid, large-scale industrial structures were started to be established. However, a significant alteration in the manufacturing method cannot be mentioned in this period, so there is no new kind space produced.

With the steam engine and coal, which became the main symbol of the 19th century, the manufacturing technique had been changed and gained a whole new meaning in terms of function and quality (Freyer 2018). The first of the changes in the technique is the type of energy used. The use of primary (organic) energy sources in production is abandoned and the use of secondary (inorganic) energy sources begins. Secondary energy sources are not as limited as primary energy sources because they are not readily available in nature and can be

produced in the desired amount. When mechanical, thermal or electrical energy is being produced, it is possible to enlarge the energy production as much as desired and to increase the amount of produced energy by thousands of times (Freyer 2018). Here is when the new space which is the abstract space was produced.

Abstract space, which is covered by this study, functions objectively as a set of things-signs, with formal relationships such as glass, stone, concrete and steel, corners, slopes, hailstones and cavities. This formal and quantified space denies differences; it denies (historical) differences from nature and time, as well as those of body, age, gender and ethnic origin (Lefebvre 2014). The significance of such a cluster refers to a supersimilitude that escapes meaning: the functioning of capitalism, both conceived and hidden (Lefebvre 2014). It is reminded that abstract space has been explained with capitalism in the Marxist theory, too.

There is no simplicity in the abstraction of abstract space; it is not transparent, it cannot be reduced to logic or strategy. Abstract space works positively against its own implications such as techniques, applied sciences, power-dependent knowledge. Abstract space is not homogeneous; but the aim of it is homogeneity. It is multi-unit in itself. Geometric and visual complement each other and contrast (Lefebvre 2014). Haussmann was the pioneer of this space practice with an institutional basis like the absolute state. This order, supported by straight lines, alignment and geometric perspective, was supported by the supreme institution, the State. The continuation of this would be Bauhaus and Le Corbusier, who declared the "dictatorship of right angles" (Ghulyan 2017). Le Corbusier and the accompanying modern architects put sunlight, open space and greenery, which they define as the rhythms of nature and the conditions of nature, on the basis of their projects and carried out their projects on behalf of "freedom" (Lefebvre 2014).

The abstract space can be called as modern architecture when examined in the context of architectural style. Because of the emphasis on modernity, products, and changes in techniques; the power plants have been chosen for this paper to be examined since these buildings are the product of the modernism and space of producing electricity which is a very important step of industrialization and resource at the same time. Under these circumstances, in this study, it's aimed to highlight the importance of Adana and Ankara Power Plants, which were built in a modern style, in comparison with the other power plants in Turkey established in between 1910-1932 by investigating the architectural features over the abstract space defined by Lefebvre.

2. POWER PLANTS BUILT IN TURKEY BETWEEN 1910-1932

The space of production, which is an important part of the production of the space, differs due to the spatial and technical needs of the production of various

products. One of the spaces of production is power plant in which electricity is produced. In Turkey, the first power plant was established in 1910 (Arslan 2017) and fifty-three power plants had been built until 1932 in total. Fourteen of them were established by foreign companies¹ or local municipality & foreign company partnership². According to this information, it is clear that only a minor amount of these plants were established by foreign companies and the rest of them were built by Turkish local governments or Turkish investors and entrepreneurs. When these power plants are examined due to the architectural and structural way, those which were founded by Turkish source were built by old structural system like masonry and the materials used in these factories were mostly local materials like stone (Figure 1-A). These power plants are smaller than the ones established by foreign companies by both in structural and power bases (Figure 1-B).

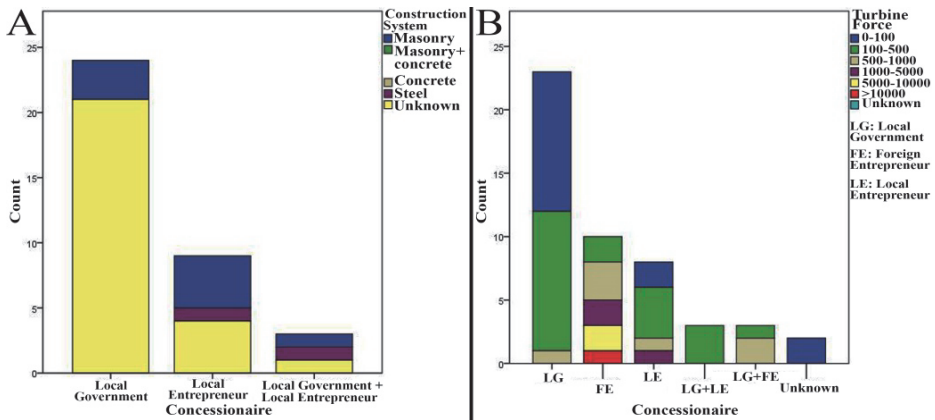


Figure 1: (A) Construction Systems of Turkish Investment Power Plants, (B) Turbine Force of the Power Plants examined by Concessionaire

Some of the power plants built by Turkish investment have national architectural style and Turkish decoration figures on them. Bandırma, Ödemiş and Aksaray Power Plants could be given as examples for it (Figure 2). The National Style is seen in some of the power plants established by foreign companies like Edirne, Balıkesir and Bursa Power Plants.

¹ Bursa (1926), Ankara (1928), Adana (1929), Balıkesir (1930), Edirne (1930), Tekirdağ (1930), Antep (1932), İstanbul (1914), İzmir (1928), Zonguldak (1924) and Malatya (1928) Power Plant (Işıkpınar 1932)

² Konya (1927), Eskişehir (1926), Kastamonu (1930) (Işıkpınar 1932)

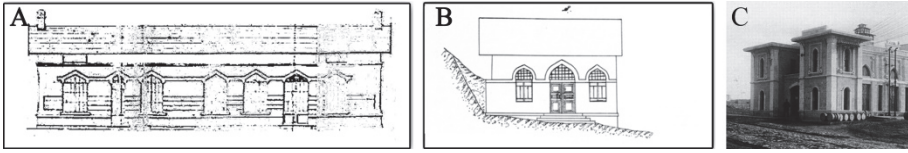


Figure 2: (A) Aksaray Power Plant, (B) Ödemiş Power Plant, (C) Bandırma Power Plant (BCA 230-0-0-0/33/41/4, BCA 230-0-0-0/118/10/1, Güney 2012)

Abstract space of Lefebvre as it is defined before has a modern/geometrical architectural style and it is as if it doesn't belong anywhere and at the same time it belongs to everywhere. Therefore, even though a power plant building type is both a tool and a product of modernism; if it is examined in economic terms, it is also a product of capitalism which is the era of abstract space. Hence, the power plants have national style cannot be fully considered as abstract space because of their local architectural style.

According to the architectural style, construction system and material, most of these fifty-three power plants are hardly defined as modern and abstract space of Lefebvre. Only a few power plants established in Turkey during this period distinguish themselves from others by architectural wise in terms of modernism and stand out. These power plants are İstanbul (Silahtarağa), İzmir, Zonguldak, Adana and Ankara Power Plants. All of them were established by foreign companies. These could be divided into two different categories by the construction systems. The first group which has steel carrier system includes İstanbul, İzmir and Zonguldak Power Plants and the second group which has reinforced concrete carrier system includes Adana and Ankara Power Plants.

Even though the first group of power plants has a modern construction system, they cannot be defined as abstract space fully because of the roof type (Figure 3), because all three of them have gable roofs. However, in modern architecture which is defined in this paper as abstract space has flat roof. Therefore, due to the roof type, they could be eliminated from being abstract spaces. Secondly, as a very powerful modern architectural statement of Sullivan, "form follows function", it is hardly possible to understand the function of the spaces from these buildings. For example, when Zonguldak Power Plant is examined from outside of the building, it cannot be understood which part of the building is the producing space and which part is the administration/other functions. Both volumes of the building and the window quantity are equal. Since the plan of the power plant cannot be found, there is no chance to understand if both of the volumes have the same function or not. Unfortunately, the architecture of the building does not help to understand, either. Last but not least in these structures, more than one roof had to be constructed in order not to pass wide

openness. The concern of passing long span started with the bridge constructions and was tried to make adjustments ever since then. Until the modern and new solutions were found, the buildings which had rectangular shaped plan and had a short length side were built. However, in modern time there are new constructional solutions for that and in modern architecture cube/square form in plan and similar side lengths of the buildings have been chosen.

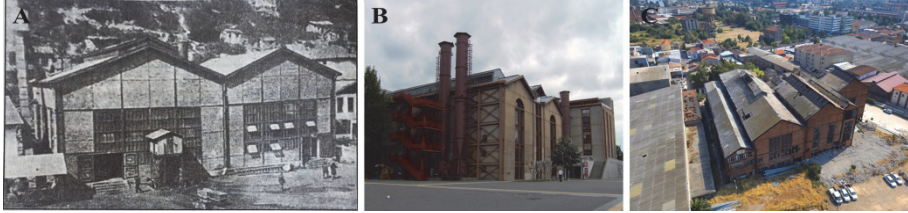


Figure 3: (A) Zonguldak Power Plant, (B) Istanbul Silahtarağa Power Plant, (C) İzmir Power Plant (Kaya 2014, Yaren Şekerci's Archive 2018, Yaren Şekerci's Archive 2018).

Under these circumstances, these factories could be eliminated from being abstract spaces without denying that they are quite modern compared to their peers. On the other hand, the second group which includes Adana and Ankara Power Plants could be considered as abstract spaces due to the modern construction system, architectural style and materials.

3. ADANA AND ANKARA POWER PLANTS AS ABSTRACT SPACES

While Işıkpınar (1932, 1933) informed that the establishment date of Ankara Power Plant was between 1928 and 1930, Artel (1976) stated that it was established in 1924. The first attempt for the electrification of Ankara was realized by Ganz company in 1916, but this attempt was not successful (Karayaman 2014). The first electricity factory in Ankara was established in 1925 by the Municipality of Ankara with a direct current dynamo of Bentderesi, which was rotated with a 50 horse-power locomotive (Karayaman 2014). An attempt was made to establish a diesel power plant in Ankara in 1926 with the partnership of German MAN and AEG companies due to the lack of electricity needs. The concession right for this power plant was granted to Elektrizitäts Lieferungs-Gesellschaft (ELG), headquartered in Munich. The construction of the factory was completed on September 26, 1928. Since the diesel generator group bought for this factory started to serve in another structure between 1927 to the finish of the construction of the factory, Ankara got electricity one year before the construction of the power plant had been finished (Karayaman 2014). Ankara Power Plant (Figure 4), which was established as a diesel power plant, was transformed into a thermal power plant operating with Zonguldak coal since 1936 with a decision taken in 1933 (Saner and Severcan 2009).



Figure 4: Ankara Power Plant (Işıkpınar 1932)

Işıkpınar (1932, 1933) states the establishment date of Adana Power Plant as 1929-1930 and Artel (1976) as 1925. Adana's first electrical center is the power plant established in 1919 (Çanak 2013). The electricity produced in this power plant was used to illuminate the old municipality and the government mansion area. This situation continued in the same way in the first years of the Republic (Çanak 2013). The factories in Adana produced the necessary electricity by themselves. Osman Vehbi Bey, who realized the need for electric tram in Adana during the construction of the Istanbul-Baghdad railway, received the city's electrical concession in 1915 with the Public Works Minister of the time, Abbas Hilmi Pasha (Çanak 2013). Osman Vehbi Bey handed over the concession to the municipality in 1927. Municipality also handed over the concession of electricity production and distribution to ELG company (Çanak 2013). Adana Electricity Turkish Anonymus Company was established on May 15, 1929. The company, located next to Demirköprü, has two diesel engines of 1500 horsepower at its power plant (Figure 5). The company, which started its activities by undertaking the privilege of ELG Berlin, had all its facilities built by ELG Berlin. Due to the "Great Depression", the company consistently suffered between 1929 and 1929. Due to this situation, the partnership structure of the company has changed in a short time. The company was purchased by the government on 7 July 1939 and given to the management of the municipality (Çanak 2013).

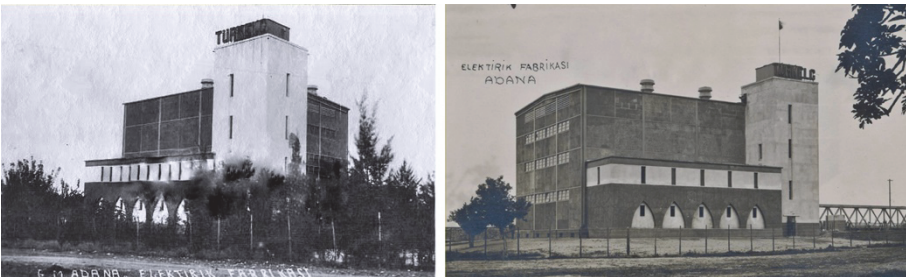


Figure 5: Adana Power Plant (URL 1)

Both of the power plants in the second group were established by E.L.G., were built in modern construction system, which is reinforced concrete and modern architectural style by evaluating them in the conditions of the period. Unlike the common rectangular plan typology, Ankara Power Plant (Figure 6) has a square plan scheme and this factory distinguishes itself from the power plants with steel construction by it, because the absence of the narrow edge of the structure has led to the need for a larger opening on the roof. Therefore, the steel roof truss system of the structure stands out. This modern way of construction and square geometry are one of the features of the modern architecture thus abstract space.

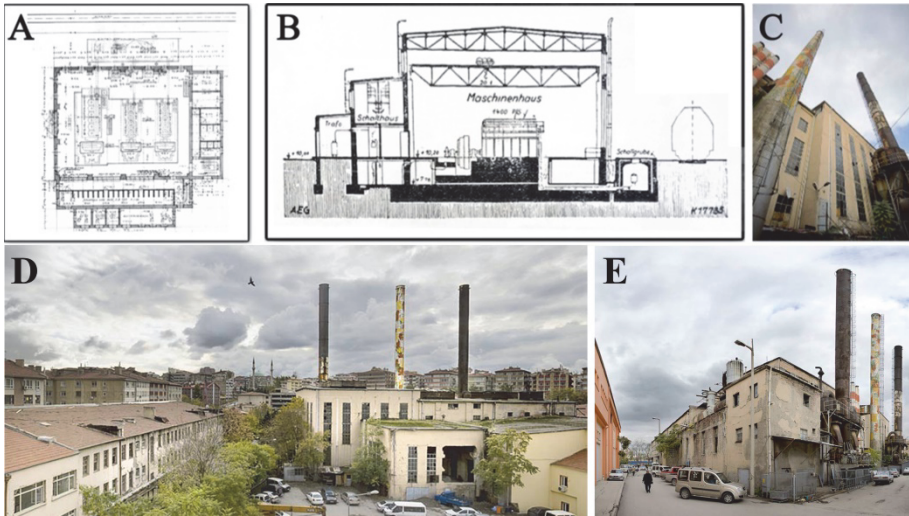


Figure 6: (A) Ankara Power Plant Plan, (B) Ankara Power Plant Steel Roof Truss System, (C), (D), (E) Ankara Power Plant (BCA 230-0-0-0/5/17/1, URL 2)

The modern mass and facade of Adana Power Plant distinguishes the building from other power plants of the period. The cubic volumes, which have different heights and different sizes combined in one building and this led to make a first impression to the people from the outside about the functions of the spaces. For example, the biggest volume of the building is the electricity production space and the other volumes are the service, administration, etc. (Figure 7). This power plant is also significant due to having a production technology ahead of time.

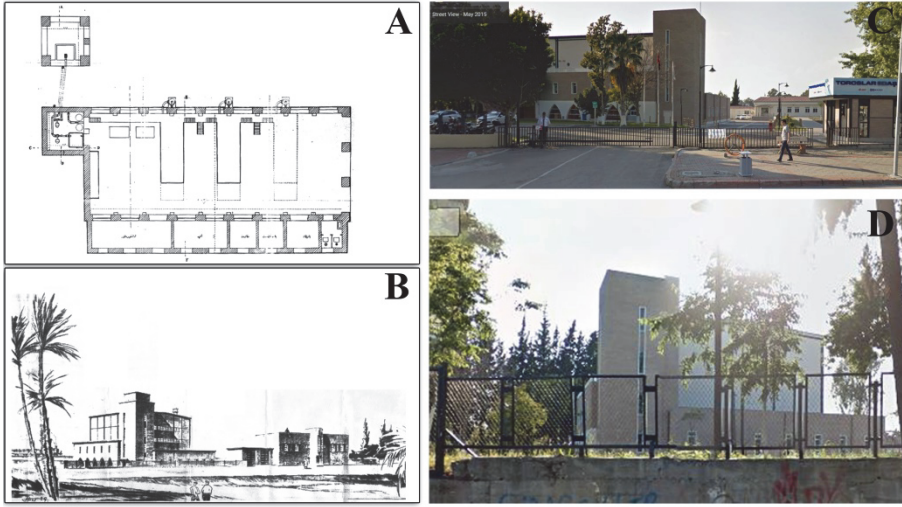


Figure 7: (A) Adana Power Plant Plan, (B) Adana Power Plant Perspective Drawing, (C), (D) Adana Power Plant's Current Condition and Function (Adana Toroslar EDAŞ General Directorate (BCA 230-0-0-0/3/8/1, URL 3))

While most of the power plants could produce electricity with 0-100 total power, in Adana Power Plant there were two turbines, which had 3150 total power. The generators of the power plant were AEG. In Ankara Power Plant, there were five turbines, which had 5500 total power, and the generators were AEG and Siemens Schuckert (Işıkpınar 1932). This makes Ankara Power Plant the third most powerful power plant in the period after Istanbul and Izmir Power Plants and makes Adana Power Plant the fourth one.

While Ankara Power Plant was destroyed in 2017, Adana Power Plant is still being used as a space but in different function, which is still relevant to electricity. Adana Power Plant is currently Adana Toroslar EDAŞ General Directorate Office.

4. CONCLUSION

Based on Lefebvre's (2014) "Space is a social product" statement, in this context, the spaces of production in Turkey's industrialization and modernization period have been tried to be examined. Under these circumstances, the power plants produce electricity that is the most important resource for all types of factories and one of the steps of industrialization have been chosen. Since electricity and the factory buildings are significant in modernization and industrialization, Lefebvre's abstract space is examined because of the similarities with modern architecture. Among the first established fifty-three power plants of Turkey, only Adana and Ankara Power Plants stood out as abstract space. Both of the power

plants have reinforced concrete carrier system, flat roof and high total power of producing electricity.

In time, while the new spaces have been produced due to the economic impacts, the abstract space left its space to the new spaces such as contradictory and differential spaces. In new world order and new spaces, unfortunately the old ones are being replaced or they are excluded. However, it should not be forgotten that these previous spaces thus buildings represent the era of they were established in an unwritten way. Therefore, even though the time is not for abstract space anymore, the buildings of that time have to be preserved as an evidence of that period. In the upcoming decades, there will be new production techniques, new economical conditions and new kind of thinking of humanbeing. Since the only thing that does not change is change, there will be new space types in the future. Our duty is to preserve our spaces that reflect previous periods and to transfer and adapt them to the future.

In this context, two very important factory of the modern era of Turkey have been examined and tried to been highlighted the importance of them. Unfortunately, only one of them is still in use but have a different and new function.

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