

**Re-Functioning Potentials of Industrial Heritage in
North Cyprus
Case-Study: Zeyko Olive Oil Mill**

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ABSTRACT

Historical buildings and monuments are the holders of previous cultures and life styles. Sustaining these buildings by restoring and re-using them with their original character is important for development of culture. Many industrial buildings are valuable heritage buildings that should be conserved for the future. Architectural heritage such as historic urban or sites, historic buildings and traditional houses are important evidences of the past life style. The conservation of these traditional values in the context of conservation and revitalization of architectural heritage is in a sense the continuity of culture. The main goal of conservation is to enliven cultural properties by evaluating their architectural, historical, environmental, visual and aesthetic characteristics.

Historically Cyprus is an agricultural Island, olive is one the most cultivated products of the Island, it always had an effective role in the economic field and there are one or more than one olive oil mills or factories in many villages around the Island. Vast of these mills or factories are abandoned and left with their original and ruined structure; these olive oil mills and factories are important elements of the industrial heritage of the Island.

The number of deteriorated olive oil mills in North Cyprus is high and unfortunately these industrial buildings have not been documented yet and they are abandoned without function. Conserving these types of buildings and giving a new function according to their location, size and their potential can help to future generations to

understand where they are coming from. By restoration and reusing them as public places, culture and history of past will be safe and kept for next generations.

The first chapter includes the problem definition, aim and Scope, limitation of study and methodology in detail. Chapter 2 includes general information about conservation, classification of industrial heritages and also some principles for conservation of industrial heritages; also some successful re-functioning examples from the world will be discussed. In chapter 3, an overview on the olive oil mills and factories in North Cyprus is given from different aspects like different processing methods. In chapter 4, the recommendations for new functions for conservation and reuse are proposed. Proposals are developed according to international contemporary charters and guidelines, which emphasize appropriateness to the tangible and intangible architectural values and the original style of the industrial heritage. The conclusion chapter includes guidelines for the reuse of the olive oil processing industrial heritage of North Cyprus in the particular case of Zeyko Olive Oil Factory.

Keywords: Conservation of industrial heritage, historical heritage, industrial building, olive oil Industry in Northern Cyprus.

ÖZ

Tarihi binalar ve eski eserler önceki kültürlerin ve yaşam tarzlarının taşıyıcısıdır. Kültürün gelişimi için eski binaları orijinal karakterlerine uygun bir şekilde restore ederek ve yeniden kullanarak sürdürmek önemlidir. Birçok endüstriyel bina değerli mirasa sahip binalar olduklarından dolayı geleceğimiz için korunmalıdır. Tarihi kentsel veya kırsal sit alanları, tarihi konutları içeren mimari miras geçmişe ait yaşam tarzının önemli kanıtlarıdır. Mimari mirası yeniden canlandırma ve koruma başlığı altında, bu geleneksel değerlerin korunması kültürün devamlılığı yönünde yorumlanabilir. 'Koruma'nın esas amacı, kültürel varlıkları, mimari, tarihi, çevresel, görsel ve estetik özelliklerini değerlendirerek canlandırmaktır.

Tarihi açıdan Kıbrıs bir tarım adasıdır. Zeytin, adanın en kültürel ürünü olduğundan, ekonomik alanda her zaman etkili rolü vardır, ve ada çevresinde birçok köyde bir veya daha fazla terkedilmiş, ve orijinal yapılarıyla harap olmuş yağ değirmenleri veya fabrikaları vardır. Yağ değirmenleri ve fabrikaları adanın endüstriyel mirasının önemli elemanlarından.

Kuzey Kıbrıs'ta büyük çapta bozulan bu yağ değirmenlerinin sayısı çok olmakla beraber ne yazık ki bu endüstriyel yapılar; listelenmemiş ve birçoğu işlevsiz bir halde bırakılarak terkedilmiştir. Bu tür binaları korumak; ve onlara bölgelerine, büyüklüklerine ve potansiyellerine göre yeni işlevler vermek, gelecek nesillere nereden geldiklerini anlamaları için yardımcı olacaktır. Bu mirası restore etmek ve toplumsal amaçlı olarak yeniden kullanmakla, geçmişin kültürü ve tarihi, güvenli bir biçimde gelecek nesillere aktarılacaktır.

Birinci bölüm, problem tanımı, amaç ve kapsam, çalışmanın sınırı ve kapsamlı bir şekilde metodolojiyi içermektedir. İkinci bölüm, koruma konusunda teorik bilgi; endüstriyel mirasın sınıflandırılması; endüstri mirasını koruma prensipleri; ve aynı zamanda bazı başarılı yeniden kullanım örnekleri tartışılmaktadır. Üçüncü bölümde, Kıbrıs'taki yağ değirmenleri ve fabrikalarına farklı işletim prosesleri gibi farklı açılardan genel bir bakış verilmektedir. Dördüncü bölümde koruma ve yeniden kullanım amaçlı yeni fonksiyonlar önerilmektedir. Öneriler, endüstriyel mirasın somut ve soyut mimari değeri ve orjinal stiline uygunluğuna vurgu yapan uluslararası çağdaş tüzükler ve yönetmelikler ışığında geliştirilmiştir. Sonuç bölümü, Kuzey Kıbrıs'taki Zeyko Zeytinyağı Fabrikası özelinde yiyecek işleyen endüstri mirasının yeniden kullanımına yönelik öneriler içermektedir.

Anahtar Kelimeler: Endüstriyel miras koruma, tarihsel miras, endüstriyel yapı, Kuzey Kıbrıs'ta zeytinyağı endüstrisi.

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Chapter 1

INTRODUCTION

During the late eighteenth and early nineteenth centuries, the Western World experienced the Industrial Revolution. It was a time when advances in technology led to massive economic changes. Before the Industrial Revolution, national economies tended to rely on artisans, merchants, and farmers. As a result, manufacturing was often slow as products had to be crafted individually by hand. With industrialization, however, factories that relied on mechanization (use of machines) began to transform manufacturing and replace manual labor with industry. The “Revolution” began in Great Britain, but it soon spread throughout the Western World, impacting trade and economies around the globe. (Howard, 2007)

The industrial revolution started with the British colonial period in Cyprus. This revolution led to economic and social development for the people of the island. During the British domination, most of the modern technological facilities were brought to this Island to use the Cyprus resources in a better way. In this period, in order to start production in the Island, new plants and buildings were required to be built. (Günçe and Hoşkara, 2009)

“The industrial heritage is the complex of technological, historical, cultural, social and architectural activities which had and continue to have profound historical

results. The motives for protecting the industrial heritage are based on the general value of these buildings, rather than its exclusive existence. In general the value of industrial heritage is referring to the cultural and architectural circumstances of the time being and so could be impressive as well as nostalgic.” (TICCIH, 2003)

“The industrial heritage has social value as a part of the life of ordinary men and women and technology and science that they have used to represent their history of manufacturing, engineering, construction and may also have the value for the quality of architectural design.” (TICCIH, 2003)

At the moment, most of these industrial buildings which were erected since the beginning of the British domination, (1878-1960) till 1974, can be conserved as architectural and historical heritage. As Quantrill states (1995), historical heritage are very important in our lives and they are meaningful and worthy. They are holding character and culture of our past people. The entire heritage tells that where we came from and what our spirit is. Architectural heritage shows the past people’s life style, and their achievements; and also can help us to create a better future. Architectural heritage are generally valuable and consisting the character and history of cities and their civilizations. They have to be preserved since they are reflections of the community spirit.

Historically Cyprus is an agricultural Island. The agricultural products in Cyprus are based on two categories, first is the precipitation based agriculture (olive, carrobs, grapes for wine, barley, tobacco, almond, etc) and second is irrigation based agriculture (citrus, potato, vegetables, grapes for dining, banana, etc). (URL 1.1)

Industrial buildings are the heritage that has come from industrial revolution to us and they are including and representing the knowledge and science of that period of time.

There are various reasons which can be caused to demolish these buildings such as earthquake, fire accident, increasing of population and consequently expansion of the cities. Hence, since these buildings are known as a part of history of the country's culture they have to be conserved and protected from ruining. (Prokhorov, 1982)

In cases where these buildings are no longer suitable for contemporary uses, they have to be upgraded and reused. It is generally advised to reuse them with new functions for the contemporary uses according to the need of the country. These buildings have to be adapted due to the need of society, but they have to represent their original character after conservation and renovation with their new function.

Cyprus is one the most historic places in the world with many historical heritages and has experienced different civilizations during different period of times till now, thus it has brought many kind of heritage including industrial heritage to the Island which are abandoned and worthy to be preserved. Since the Island was one of the British Empire colonies, many different kinds of industrial buildings with different functions were erected on the Island and they have remained as the industrial heritage of the Island. Industrial heritage of North Cyprus covers the heritage of CMC mine and related function buildings, textile factories, food processing factories such as tobacco, carob, wine and olive oil mills, after the transformation and changes of technology or other economical reasons, almost all of these buildings have been abandoned. Since olive is one the most cultivated products of the Island, it always

had effective role in the economic field. There are one or more than one olive oil mills in many villages around the Island, which are abandoned and left with their original and ruined structure. These olive oil mills are the industrial heritage and are representing the unique culture and also civilization, beside the improvement of the industry in the Island, they are valuable to be conserved and reused for new functions as symbols of industrial heritage for both the villagers and the next generations. Plans for the conservation of the industrial heritage should be joined into unique situation for economic improvement as well. Deteriorated Olive Oil Mills in North Cyprus as an important category of industrial heritage of the Island are included.

1.1 Problem Definition

After Industrial Revolution in late eighteenth century and early nineteenth century, Cyprus Island began to experience the changes and developments in economic, social and cultural matters as a British colony in that period of time. The Mediterranean's finest olive has brought the olive oil processing method to the Island and famous olive oil was being made. Archeological evidence of the existing olive pits and large-scale stone for olive oil processing for the first time on the Island refers to the late Bronze Age. As soon as the entry of British to the Island, different olive oil mills with traditional methods were replaced with larger scale ones for mass production with equipped machines and they brought the most modern technology to the Island to make the high quality olive oil for more benefit in order to increase their economical profit. (Günçe and Hoşkara, 2009)

Olive Oil Mills in North Cyprus are unique since they are holding the character of more than 100 years and come to us as the Industrial Heritage of the Island. They are valuable as their original character which is representing the science of the ancient

times and their industrial process on olive oil. Parallel to the changes of technology in the world, the olive oil processing in North Cyprus has changed day-by-day and new tools and machines replaced the traditional ones, and contemporary mills have been built and took the place. As it is observed in many different villages around the Island, there are one or more than one mills in many villages with their original demolished architectural feature as well as their traditional tools and machinery. To preserve the history and traces of industrial improvement of the Island, these olive oil mills should be conserved. Since the number of these mills is undocumented and there are many of them which are abandoned in many villages, the first important movement is to list them as industrial heritage and second step will be to create an organization for conserving them. As it is mentioned, number of these mills is not recorded and conserving and restoring them for the new function will cost too much and financial problems will appear and rise. Hence the new function of this kind of heritage for contemporary uses can be impressive for their own expenses of the conservation. New function should be in recognition of their original function. Since Cyprus is one of the most historic places in the world and has many visitors due to its mild climate and unique heritage, these mills have great potential of tourist attraction according to their original character and their new function; not only for the villagers and specific number of people but also into public uses for everyone. The following questions arise:

1. Can we use these mills by proposing different function other than producing olive oil?
2. How can we propose to change their original function within contemporary conservation and values?
3. How can we preserve these buildings from neglect and abandonment?

4. How can we propose the ideal function for these building after re-functioning?
5. How can we determine the conservation values for the industrial buildings which are valuable and precious for next generation?

1.2 Aim and Scope

Cyprus is listed in the world heritage list of historical heritage and industrial heritage is also included. Cyprus has rich unique culture which appears in different kinds of its own heritage. Not only it's specific historical buildings, and monuments or vernacular sites, but also industrial buildings are the holders of culture and improvement of science and technology in the Island for more than 100 years, Hence they are valuable to be conserved. Many changes in the method and technology of industry have been observed after industrial revolution which is a great topic to be discussed. Parallel to the whole world, Cyprus has also been affected by industrial revolution and the technological improvements coming after. Many of these industrial heritage and particularly the olive oil mills and factories are demolished and abandoned without function. Great potential of reusing the industrial heritage as an undivided part of the cultural heritage, into new functions for contemporary uses, coordinates us to conserve them as the great treasure of the society.

The aim of this study is to investigate the values to guide the conservation and re-functioning of industrial heritage with focus on olive oil processing industrial heritage of North Cyprus in case of Zeyko Olive Oil Factory. The scope of the study is to bring forward the principles of industrial heritage conservation for determining guidelines for Olive oil processing industrial heritage of North Cyprus.

1.3 Limitations of Study

This research will cover Olive Oil Mills in North Cyprus, specifically the Zeyko Olive Oil Factory in Kyrenia as an important example of food processing Industrial Heritage of the Island. Since Cyprus has different kinds of heritage to be conserved and Industrial heritage is included. These Olive Oil Mills are coming from different periods of time; Since Bronze Age (2500-1056 BC) till today with contemporary technology system and different architectural structure. Thus there are many olive oil mills and factories as industrial heritage existing in North Cyprus which is not conserved and deteriorating rapidly. The Mediterranean olive is known as one of the most cultivated products of the Island and was the main reason of emergence of the olive oil mills in North Cyprus. These buildings carry messages from previous generations and most of them are abandoned without function and hence they are deteriorating day-by-day due to different causes.

Zeyko Olive Oil Factory in Kyrenia, which is the largest historical olive oil factory, abandoned without function; and seriously deteriorated by different reasons, is analyzed within this thesis as a representative of Industrial Heritage related to food processing of North Cyprus.

1.4 Methodology

The data are collected according to literature survey from primary sources such as books, journals, articles, and internet sources. Besides, site analysis is completed for Santralistanbul museum in Istanbul, Tate Gallery in London and Lanitis Carob Mill in Limassol. Also interviews with related people are included for data collection. Beside these, different olive oil mills with different processing methods are observed and photographed. At the same time inventory records of North Cyprus Department

of Antiquities are scanned. Zeyko Olive Oil factory as the case study is also sketched and the schematic drawings are done to achieve an architectural analysis of the building.

Chapter 2

AN OVERVIEW ON CONSERVATION OF INDUSTRIAL HERITAGE

“Conservation is the action taken to prevent decay. It embraces all acts that prolong the life of our cultural and natural heritage, the object to being to present to those who use and look at historic buildings with wonder the artistic and human messages that such buildings possess.” (M.Feilden, 1994)

This chapter aims to show the potential of industrial heritage and importance of conservation, and evaluation of industrial heritage is another topic which will be considered in this chapter. First of all, an overview will be given on the conservation of cultural heritage and categories of cultural heritage in architectural conservation will be outlined. The industrial heritage will be handled by classification and evaluation of industrial heritage. Institutions working on conservation of industrial heritage will be overviewed. Principles of conservation of industrial heritage will be handled and successful re-functioning examples from the world will be examined.

2.1 Contemporary Conservation Concept

Conservation is the way to preserve the past's heritage which has brought several messages to us, safe from the abandonment and neglect for the future and next generations.

“Culture is that complex which includes knowledge, belief, art, morals, law, custom and any other capabilities and habits acquired by man as a member of society.”
(Tylor, 1974, p:60)

“Culture is also defined as an integral part of every society. It is a learned pattern of behavior and ways in which a person lives his or her life. Culture is essential for the existence of a society; because it binds people together” (Kartha, 2001). Also according to Hofstede (1994:84), culture is defined as “the collective programming of the mind which distinguishes the members of one group or category of people from that another”. “It is also defined as a shared, learned, symbolic system of values, beliefs, and attitudes that forms and affects on perception and behaviour.”
(Hobbs, 2009:4)

Cultural heritage includes the mystery of past, for that reason, the preservation and conservation is not only the responsibility of each country and its nation, but also it is the world’s need. According to Jukilehto, (2007:84) “the cultural heritage should be considered both in time and in space. First it no longer stops at the down of the 19th Century, but now also embraces the records left behind by the 20th Century. Second, the aim is not only to preserve increasingly numerous items of cultural property but also to safe guard complexes which go far beyond single large monuments or individual buildings. The idea of the heritage has been broadened to include both the human and the natural environment, both architectural complexes and archeological sites, not only the rural heritage and the country site, but also the urban, technical or industrial heritage, industrial design and street furniture.”

Matero, (1997, p:1), states that, “Architectural conservation deals with issues of prolonging the life and reliability of architectural character and integrity, such as form and style, and /or its constituent materials, such as stone, brick, glass, metal and wood. In this sense, the term refers to the professional use of a combination of science, art, craft and technology as a preservation tool; and is allied with its parent fields of historic environment conservation and art conservation”. Berrow (2000, p:129) defines conservation as “an integral part of the management of places of cultural significance and is an ongoing responsibility.”

Conservation of heritage buildings cover various processes such as, restoration, rehabilitation, and renovation.

“Conservation is a profession dedicated to the preservation of cultural heritage for the future. Conservation activities include examination, documentation, treatment, and preventive care.” (URL 2.1)

In some of the heritage buildings, unfortunately some parts have been lost, but remaining parts are really important and should be protected and conserved. These heritages have really affective impression in public and society even if there are variations from public buildings to residential buildings, shop fronts to bridges or either from mills and stone walls. Regularly conserving these kind of existing heritage buildings has become a big challenge of today’s architectural science. (Tomaszewski, 2008)

Conservation is the action which is covering the other conservation processes such as Preservation, Restoration, Repair, Rehabilitation, Renovation, Adaptive re-use, Refurbishment, etc.

Preservation is conserving a building in its current situation and taking measures to prevent further decay.

“*Restoration* is the process of returning the artifact to the physical condition in which it would have been at some previous stage of its morphological development.” (Fitch, 1990) “Restoration and reconstruction should be considered as the action of returning heritage buildings to a known earlier state, without the introduction of a new style. Also known as refurbishment; restoration is the physical intervention of the actual fabric of the buildings to ensure the continued performance of its structure and fabric. Restoration includes repair, consolidation, and reintegration, renewal of fabric, reconstruction, replication and reconstitution.” (Steven Tiesdell, 1996) “The object of restoration is to revive the original concept or legibility of the object. Restoration of details and features occurs frequently and is based upon respect for original material, archaeological evidence, original design and authentic documents. Replacement of missing or decayed parts must integrate harmoniously with the whole, but must be distinguishable on close inspection from the original so that the restoration does not falsify archaeological or historical evidence. In a sense, the cleaning of buildings is also a form of restoration.” (Feilden, 1994, p: 9)

“*Restoration* is also known as refurbishment, refurbishment is the process of maintenance or major repair of an item, either aesthetically or mechanically. It is the

physical intervention of the actual fabric of the building to ensure the performance of its structure and fabric.” (Ahunbay, 1996 in Türker, 2002)

Repair includes dealing with existing damage and directly carrying defects in the frame work of the building. Apart from the restoration of the framework of the building, restoration of minor structural work may be required, Repairing includes all the damages of the building that are in structural parts or also it may be by any water related damages. (Francis, 2009)

“*Rehabilitation* is the preferred approach because more freedom is given in repairing or replacing the existing historic fabric. Also only rehabilitation includes an opportunity to “make possible and efficient contemporary use through alternation or additions.” (AIA, 2010) Rehabilitation which is one of the basic ways of preserving historical buildings includes those actions and processes that make it possible to adopt historical buildings for a compatible contemporary use. This action is dealing with the significant changes of structure due to deterioration rather than historical preservation of the structure.

Rehabilitation in comparison with restoration is more concerned with the practical responses which are made to the needs of using the structure, rather than responding to the historical image of the building. (Houban & Guliad, 1994)

Renovation is an implement for carrying the old buildings into future both physically and socially. As Kurtich and Garret (1993) states: “Renovation is the act of renewing and updating older buildings, original uses, to satisfy contemporary needs”. (Eakin, 1993) Also renovation of building is more complicated than building a new one, not

only because of the historic values of the part that must be preserved, but also many other reasons. This is the ability to give a new look to a structure that has been marked by years of deterioration where in some cases only the care of structure remains. (Jeffwray, 2008)

2.1.1 Main principles for conservation

“Athens Charter of 1931 was the first agreed international principles of conservation. This charter was considered and updated consequently in 1964 in the Venice Charter which deals with the conservation of historic buildings, the Burra charter for the conservation of places of cultural significance (1979) and the Washington charter of 1987 which deals with historic towns and districts. These charters were published by ICOMOS, the International Committee for Monuments and Sites.” (TICCIH 2003)

According to Venice Charter (1964), “conservation includes the characteristics and approaches on concept and decision; whereas restoration includes general subjects and methodology during the concept of an historic monument embraces not only the single architectural work but also the urban or rural setting in which the evidence of a particular civilization, a significant development or an historic event is found. This applies not only to great works of art but also to more modest works of the past which have acquired cultural significance with the passing of time.”

How are historic values protected under the heritage system?

According to the Venice Charter (1964), “the historic monuments of generations of people remain to the present day as living witnesses of their age-old traditions. People are becoming more and more conscious of the unity of human values and regard ancient monuments as a common heritage. The common responsibility to

safeguard them for future generations is recognized. It is our duty to hand them on to the future generations, in the full richness of protection.”

“It is essential that the principles guiding the preservation and restoration of ancient buildings should be agreed and be laid down on an international basis, with each country being responsible for applying the plan within the framework of its own culture and traditions.” (Venice Charter,1964)

“The Burra Charter (1999) provides guidance for the conservation and management of places of cultural significance (cultural heritage places), and is based on the knowledge and experience of Australia ICOMOS members.” (ICOMOS, 1999)

These Charters define the general principles on conservation of Historical Heritage. There are various sub committies for the conservation of vernacular architecture; conservation of monuments and sites; conservation of industrial heritage and etc. Since this thesis is about the industrial heritage, main conservation principles for the industrial heritage which are defined by TICCIH (2003) will be discussed:

- Retention or restoration of historical significance;
- Conservation process based on research;
- Minimum physical intervention;
- Repair rather than replace.

2.1.1.1 Retention or Restoration of Historical Significance

The aim of conservation, as it is in the Burra Charter (ICOMOS, 1965), has to be hold regain, or display the importance of the historical heritage object, whether it is building or it is art / craft. Provide its safety, repairing and supporting should be

considered as a part of this goal. Using this conserved and restored building is because of its high significance, like any new use has got to be in harmony with the needs of the original building.

2.1.1.2 Conservation Process Based on Research

Before the start of conservation work, one of the most important steps is to know and understand the history and background of the building, and also its current physical situation. Otherwise highly prized mistakes can happen and the finished project can be demolished.

2.1.1.3 Minimum Physical Intervention

Accepting the basic guiding principles of minimum physical intervention is required to support all of those works in case of conservation and renovation of cultural heritage. This means that minimum change should be done to a historic building or place, in order to keep and protect the original character and structure of the building. It means for instance, repairing windows or shop fronts should be done instead of replacing them. As it is mentioned in TICCIH (2003), there should be a careful work and balance between the necessary repairs, to eliminate problems.

2.1.1.4 Repair rather than Replace

A logical result of the principle of minimum intervention is the idea of repair rather than replace. Unfortunately the original features, such as floor boards or old lime plaster, are generally replaced without a second thought. In many cases, on detailed investigation, original plaster or joinery can be kept and restored or repaired, and it is no necessity for expensive replacement. The consequence is a more reliable building which conserves the feeling of age and history, and respect the fabric and original craftsmanship. (URL 2.2)

2.2 Categories of Architectural Conservation

In this section, definitions of cultural heritage and the classification of industrial heritage as cultural heritage will be discussed.

2.2.1 Definitions of cultural heritages in conservation

“Cultural heritage is the things, places and practices that define who we are as individuals, as communities, as nations or civilizations and as species. It is that we want to preserve, share and pass on.” (Donald Horne Institute for Cultural Heritage, 2009)

“Preservation of the architectural heritage is considered a basic issue in the life of every society. In addition to their historical significance, cultural heritage buildings are valuable because they donate significantly to the economy by providing key attractions in a context where tourism and leisure are major industries in the 3rd millennium. The need of preserving historical constructions is thus not only a cultural requirement, but also an economical and developmental demand.” (Francis, 2009) Architectural heritage is the inherited traditions foundations and monuments from our past culture. Most important considerable part is the range of contemporary activities, meanings, and behaviors that we draw from this architectural heritage.

Architectural Conservation describes the process through which the material, historical and design integrity of mankind’s built heritage are prolonged through carefully planned interventions. Decisions of when and how to engage in an intervention, are critical to the ultimate conservation of the immovable objects. Ultimately, the decisions are value based, in some cases a decision “not to intervene” may be the most appropriate choice. (Frederic, 2010:84)

After a general consideration on the content of cultural and architectural conservation we will face with different kind of heritages to conserve. Cultural Heritage can be divided into three main groups as; Historical heritage; Industrial heritage; and Modern heritage. These different types of heritage belong to the different period of time; historical heritage belongs to before industrialization, industrial heritage belongs to after industrialization and modern heritage is a contemporary heritage. According to the architectural and historical classification, we can categorize conservation of cultural heritage into three main headings.

- Conservation of Historical heritage
- Conservation of Industrial heritage
- Conservation of Modern Heritage

Historical heritage can include historical buildings, rural or urban historical settlements, historical monuments, gardens, landscapes, archeological sites and many other types of valuable places as well as, street furniture, etc. (Nash, 1977)

During the late eighteenth and early nineteenth centuries, the Western World experienced the Industrial Revolution. It was a time when advances in technology led to massive economic changes. Before the Industrial Revolution, national economies tended to rely on artisans, merchants, and farmers. As a result, manufacturing was often slow as products had to be crafted individually by hand. With industrialization, however, factories that relied on mechanization (use of machines) began to transform manufacturing and replace manual labor with industry. The “Revolution” began in Great Britain, but it soon spread throughout the Western World, impacting trade and economies around the globe. (Howard, 2007)After the industrial revolution, more different types of industrial buildings emerged within different countries which ought

to be accepted as our industrial heritage. Some of these heritage buildings have been preserved but unfortunately many of them are deteriorated.

2.2.2 Classification of Industrial Heritage

According to Nan (2006), “it is widely believed that industrialization is the basis of economic growth and the development of industrial technology. The further establishment of the knowledge system of industrial philosophy is a prerequisite for the progress of human society, but this belief was shaken by the first oil crisis in 1973. Since the 1990s, the world has entered a new era deeply influenced by information society, international exchange and global economy that are growing tremendously fast. Meanwhile, sustainable development has gradually become a basis consensus due to the continued deterioration of global environment. Generally, according to the current trend of development, the world in early 21st Century is approaching the information era from the industrial era advancing society to post-industrial society and marching from urbanization to an urban century”.

In the broad cast sense a production system is anything that produces something. With production system, we normally think of the portion we can see, usually the transformation processes. Generally these systems are divided into two as *discrete system* and *continous system* according to the physical flow of material. In the discrete system, discrete units are produced, also there are several physical arrangements for these systems according to volume product such as flow shop (produces a high-volume standardized product) and job shop (produces low-volume highly customized products (Sipper & Bulfin, 1997).

Factories are categorized into two main groups according to their production processes:

- Assembly type (discrete)
- Process type (non-discrete/continuous)

Assembly type of factories include the industrial buildings which are engaged with assembling machines, instruments, tools and etc, whereas Process type of factories include the industrial buildings which are producing different type of production such as textile factories, material factories, energy production, food production and etc. (Authy, 1975) A detailed list of factories can be found in Appendix B.

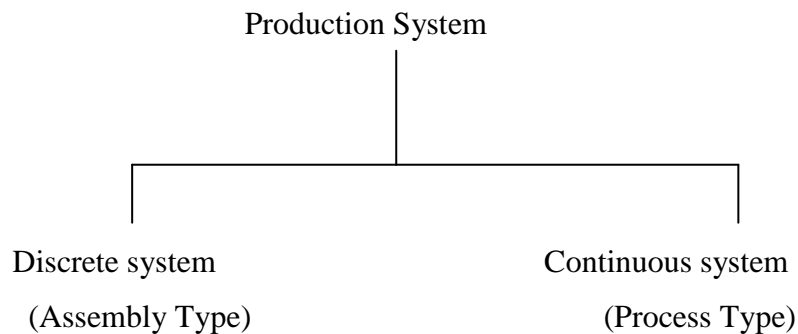


Figure 2.1: Production Processing Categorization (Adapted from Sipper & Bulfin, 1997).

As Alfery (1992; p:4) states “Industrial heritage is considered as being the ensemble of industrial exploitation elements generated by each society's economical activities. This heritage responds to a given production process, that is a specific technological system that is characterized by mechanization, within a manifestation of a capitalist social relationship”. Since the industrial buildings are symbols of our culture, as well as production styles and technology, they should be conserved very carefully. “The architectural heritage of modern movement appeared more at risk than during any other period .This built inheritance glorifies the dynamic spirit of the machine age .at

the end of 1980s, many modern masterpieces had already been demolished or had changed beyond recognition. This was mainly due to the fact that many were not considered to be elements of heritage, that their original functions have substantially changed and that their technological innovations have not always endured long-term stresses”. (DOCOMOMO, 1988; p:32)

2.3 Conservation Values for Industrial Heritage

The industrial heritage is the complex of technological, historical, cultural, social and architectural activities which had and continue to have profound historical results.

The motives for protecting the industrial heritage are based on the general value of these buildings, rather than its exclusive existence. In general the value of industrial heritage is referring to the cultural and architectural circumstances of the time being and so could be impressive as well as nostalgic. The general value is a combination of aesthetic, historic, scientific or social values as well as artistic, contextual, and informational values. “The industrial heritage has social value as a part of the life of ordinary men and women and technology and science that they have used to represent their history of manufacturing, engineering, construction and may also have the value for the quality of architectural design.” (TICCIH, 2003)

“These fundamental values are belonging to the site itself, its fabric, ingredients, machinery and setting, industrial landscape and also human memories. Rarity, in terms of the continuation of existence of particular processes, site classification or landscapes, adds particular value and should be carefully assessed.” (TICCIH, 2003)

The number of historical buildings is decreasing because of contemporary urbanization problems, deterioration of building materials, neglect, natural disasters and strain caused by new constructions. Decision of conservation depends on the importance of structure or a group of structures according to the 'historical document character'; 'character of age; and 'aesthetic value'. "A historical heritage has architectural, aesthetic, historic, documentary, archaeological, economic, social and even political and spiritual or symbolic values." (Türker, 2002)

The industrial heritage should be considered as an undivided part of the cultural heritage in general. However, its legal protection has to be considered as a special industrial heritage. In addition to the advantages of implementing such projects it logically seems that in the very first steps of the Post Industrial revolution era, the idea of conversion and renovation mostly came up from the force behind making the best use of vacant urban areas. The regulations of the countries like UK, force construction companies to conserve and preserve old buildings regardless of the date they were built in. In addition to this, 'between destroying a closed power station or to take advantage of converting it, the later sounds more rational'. (TICCIH, 2003)

According to Altinoluk (1998), "in the case of reuse of building into the new function, the building values provide the objective basis for functional changes. These values are classified as: Intellectual values, Emotional values and Material values as a usage value." (Altinoluk, 1998 in Türker, 2002)

Feilden (1994) states that briefly, "A historic building is one that gives us a sense of wonder and makes us want to know more about the people and culture that produced it." According to various classifications by Türker (2002), Feilden (1994), Jukilehto

(2002), Forsyth (2007) Asoobar (2006), Peyravi (2010), these values can be categorized into these three major headings which include all of the above mentioned ones:

- Emotional values
- Cultural values
- Use values

2.3.1 Emotional Values

By observing the historical buildings which include the traditional architecture and structures, sense of the feeling of the past life styles may arise as a memory.

“Historical buildings give us a sense of wonder to know more about our past. Conservation of these historical buildings must preserve and if possible develop the messages and values of cultural property. These values help systematically to set overall priorities in deciding proposed interventions, as well as to establish the extent and nature of the individual treatment.” (Feilden, 1994)

According to Feilden (1994), emotional values are including:

- (1) wonder,
- (2) identity,
- (3) continuity,
- (4) spiritual and symbolic values.

As Feilden has stated (2003), “The first impact is always emotional, since it is a symbol of our cultural identity and continuity, a part of our heritage” and he adds, “differentiation between the emotional factors may be difficult, but collection of them from the weak to the strong one can be healthful. The wonder in the Emotional

values is defined as the sense and the feeling of the people while they are observing the structure and raise the curiosity in them.”

The identity of the building can make the historical background feeling for the people. The continuity of the buildings shows the sustainability of the building which should be preserved for the future. The spiritual and symbolic senses in emotional values are the most important values since they are directly connected with the beliefs of people.

2.3.2 Cultural Values

Feilden, (1994) has classified the cultural values under seven main groups:

- (1) documentary,
- (2) historic,
- (3) archaeological and scarcity,
- (4) aesthetic and symbolic,
- (5) architectural,
- (6) townscape, landscape and ecological,
- (7) technical and scientific values.

The documentary is one of the important factors in cultural values because the documentaries help us to figure out the historical background of the buildings. Historic values as important factors of the values can be found in the documentary of the building. Archeological, age and scarcity values show the potential and unity of the buildings.

Architectural values in the cultural values are representing the characteristic and vernacular architecture of the buildings while showing the environmental purposes.

Thus the other factors such as townscape, landscape and ecological values are also as important as the other factors in cultural values.

Technological and scientific values in the cultural values are among other important factors and can be determined for observing the structural technique of a specific period from the building. (Feilden, 2003)

Feilden and Jokilehto (1998.p, 18) state that “cultural values, which are associated with heritage resources and their present day status to observe, are subjective which is necessary for the assessments, they determine the degree of general interest in the object and its settings, the interpretation of its intrinsic cultural character and the development of treatment policies. The recognition in world heritage sites and their resultant treatment show how important these assessments are.”

2.3.3 Use Values

According to Feilden, (1994) use values are divided into four items:

- (1) functional,
- (2) economic,
- (3) social,
- (4) political and ethnic values.

The use values, which are also called functional values, are related with the potential of a heritage in terms of convertibility to new functions. Economic values are important factors of the use values since the proposed function of the building can support the continuity of the building financially.

The social value as an undivided part of the re-functioning of the building is really important and can be affective to the society according to the ethnic and political values. According to James (1998), conservation process is the action to maintain the

world's diversity due to the people's conflicting values. Historical buildings have important effects on tourism attraction. "The function of these kinds of buildings is directly related to the economical situation of the society, and should be carefully considered." (Feilden, 1994)

2.4 Conservation of Industrial Heritage

Industrial heritage is the treasure which includes the way of production processing, its exclusive architectural features which are constructed according to the specific architectural needs. Therefore they are holding the character of the past style of each society and they are worthy to be protected from the different causes of damage and sustained into future.

"The Industrial Revolution was a period of time between the 18th to the 19th Century where major changes in agriculture, manufacturing, mining, and transport had happened." (Hackett, 1992) After this revolution, there were much different types of industrial buildings which emerged in different countries and some of them have deteriorated due to functional obsolescence. Some of these heritages have been fully protected and some of them are not.

"The earliest periods of human history are defined by the archaeological evidence for fundamental changes in the ways in which people made objects, and the importance of conserving and studying the evidence of these changes is universally accepted." (The TICCIH, 2005)

Industrial archaeology has developed as an important aspect of conservation during the second half of the twentieth century in the Western World and there have been great opportunities in transition countries since 1989 on account of economic restructuring and the importance given to 'niche' tourism¹. While the core interest lies with machines and industrial buildings, attention is also given to transport systems and the social context, with respect to relations between owners, managers and workers. Moreover, the desirability of maintaining old industrial installations within their traditional landscape settings enables industrial archaeology to make a contribution to sustainable development. (N, M, & D, 2001)

2.4.1 Re-functioning of Industrial Heritage

What forced architects towards the re-functioning and conversion of closed factories into new concepts are not only because of the proper understanding of the mentioned advantages in (2.1) such as preserving the affective impression of industrial heritage since they are holding the character of the past life style for the next generation but also is conserving the resources of the world. After the industrial revolution, human beings faced developments in various certain areas. The growth of the economy in the developed countries brought more population to the cities. This caused the cities to become larger and larger every day. Industrial areas, which were previously far from the city centers, are now inside the urban areas. Interestingly enough in many cases they are in the downtown, while in other cases, they are a bit further. As the industrial land was originally having been located on the edge of a city and after the enlargement and expansion of lands and cities, they have gradually become within the city, urban environmental pollution became worse. This would be known as the

¹ The concept of 'niche tourism' has emerged in recent years in counter-point to what is commonly referred to as 'mass tourism'.

major cause of closing factories followed by the cheap labor force in the developing countries. (Answers, 2010)

“The conservation and adaptive-reuse of historical industrial buildings is one of the most important issues to be solved in today’s urban development.” (Jianguo Wang, 2007)

The starting point of industrial conservation is that industrial heritage is valuable and worthy of protection, preservation, restoration and even development. As these industrial heritages bring us the method and the way that the people in those times have witnessed productions methods and also show the cultural and architectural fundamentals, they are valuable and they should be protected. In general the value is referring to the cultural, architectural and industrial heritages which are undividable items and support each other during conservation and should be considered.

2.4.2 Institutions Working on Conservation of Industrial Heritage

There are different international institutions which are working on the conservation of industrial heritage.

“As these industrial heritages are valuable and dealing specifically with buildings and artifacts of industry that they are inherited from the past culture to new generations and should be preserved for future. There are different institutions have been emerged, working for keeping and protecting these valuable heritages.” (Mannon, 2006) Institutions such as TICCIH, ICOMOS, ICCROM and UNESCO are the institutes which are working on the conservation of industrial heritage.

TICCIH is The International Committee for the Conservation of the Industrial Heritage. Usually known by its acronym TICCIH, it is an international society

dedicated to the study of industrial archaeology and the protection, promotion and interpretation of the industrial heritage. It is ICOMOS scientific committee for industrial heritage. TICCIH was founded after the First International Conference for the Conservation of the Industrial Heritage in Iron Bridge, England, in 1973.

ICOMOS Is the International Council on Monuments and Sites (ICOMOS) and is a professional association that works for the conservation and protection of cultural heritage places around the world. ICOMOS was founded in 1965 in Warsaw as a result of the Venice Charter of 1964. Since its establishment in 1965 as a worldwide organization of heritage professionals dedicated to the study, documentation, and protection of cultural heritage sites, ICOMOS has striven to promote the conservation ethic in all its activities and to help enhance public appreciation of humanity's material heritage in all its forms and diversity.

ICCROM is an intergovernmental organization dedicated to the conservation of cultural heritage. Its members are individual states which have declared their adhesion to it. It exists to serve the international community as represented by its Member States, which currently number 129. It is the only institution of its kind with a worldwide mandate to promote the conservation of all types of cultural heritage, both movable and immovable. ICCROM aims at improving the quality of conservation practice as well as raising awareness about the importance of preserving cultural heritage.

UNESCO is the United Nations Educational, Scientific and Cultural Organization, is a specialized agency of the United Nations system. The organization was created more than a half century ago, with the mission to build the defenses of peace in the

minds of men. The Constitution was adopted by the London Conference in November 1945.

UNESCO works to create the conditions for dialogue among civilizations, cultures and peoples, based upon respect for commonly shared values.

2.4.3 Principles for Maintenance and Conservation of Industrial Heritage

Conservation of industrial buildings can be considered as the process preventing decay and to extend the life time of architectural heritage of our country. The conservation action should be done without the structure being damaged, and without ruining the historical evidence. “Conservation goal is to ensure the long term lasting of our heritage for our own pleasure and entertainment, also for our future generations.” (Feilden, 1982)

“It should be capable of protecting plant and machinery, below-ground elements, standing structures, complexes and ensembles of buildings, and industrial landscapes. Regions of industrial waste also have ecological value as well as archaeological values that should be considered. Plans for the conservation of the industrial heritage should be joined into unique position for economic development as well.” (TICCIH, 2003)

There are some principles have mentioned in the Nizhny-Tagil charter (2003) for the conservation of industrial heritage which are shown below:

“I. Conservation of the industrial heritage depends on preserving functional integrity, and interventions to an industrial site should therefore aim to maintain this as far as possible. The value and authenticity of an industrial site may be greatly reduced if

machinery or components are removed, or if subsidiary elements which form part of a whole site are destroyed.

II. The conservation of industrial sites requires a thorough knowledge of the purpose or purposes to which they were put, and of the various industrial processes which may have taken place there. These may have changed over time, but all former uses should be examined and assessed.

III. Preservation in situ should always be given priority consideration. Dismantling and relocating a building or structure are only acceptable when the destruction of the site is required by overwhelming economic or social needs.

IV. The adaptation of an industrial site to a new use to ensure its conservation is usually acceptable except in the case of sites of especial historical significance. New uses should respect the significant material and maintain original patterns of circulation and activity, and should be compatible as much as possible with the original or principal use. An area that interprets the former use is recommended.

V. Continuing to adapt and use industrial buildings avoids wasting energy and contributes to sustainable development. Industrial heritage can have an important role in the economic regeneration of decayed or declining areas. The continuity that re-use implies may provide psychological stability for communities facing the sudden end a long-standing sources of employment.

VI. Interventions should be reversible and have a minimal impact. Any unavoidable changes should be documented and significant elements that are removed should be recorded and stored safely. Many industrial processes confer a patina that is integral to the integrity and interest of the site.

VII. Reconstruction, or returning to a previous known state, should be considered an exceptional intervention and one which is only appropriate if it benefits the integrity of the whole site or in the case of the destruction of a major site by violence.

VIII. The human skills involved in many old or obsolete industrial processes are a critically important resource whose loss may be irreplaceable. They need to be carefully recorded and transmitted to younger generations.

IX. Preservation of documentary records, company archives, building plans, as well as sample specimens of industrial products should be encouraged.” (URL 2.3)

Conservation of industrial buildings can be considered as the process preventing decay and to extend the life time of architectural heritage of country. The conservation action should be done without the structure being damaged, and without ruining the historical evidence. “Conservation goal is to ensure the long term lasting of our heritage for our own cultural recognition and protection, pleasure and entertainment, also for our future generations”. (Feilden, Bernard, 1982; p: 32)

Conservation of industrial buildings is a very sensitive and accurate work, cause if some parts are removed by mistake, or any element of machinery is taken out, the building may lose the whole meaning and its character. (ICOMOS, 1992)

According to TICCIH (2003), “Conservation should be capable of protecting plant and machinery, below-ground elements, standing structures, ensembles of buildings, and industrial landscapes.”

2.4.4 Successful Re-Functioning Examples from the World

There are too many valuable and capable industrial buildings in the world, which survived and architecturally remained preserved today. These heritages are conserved and re-functioned for new usage according to their potential. They are good examples to be considered as their successes as well as weak points.

Among the well known successful examples, we can propound about ‘Tate Modern Art Gallery’ (Bankside power station) in London, UK; The ‘Gasometers of Vienna’ (Europe’s largest gas plant), Vienna, Austria, ‘Santralistanbul Museum & Art Gallery’ (Silahtrağa electricity power station); ‘Istanbul Museum of Modern Art’ (warehouse), ‘Kadir Has University and Rezan Has Museum’(Cibali tobacco and cigarette factory) in Istanbul, Turkey; ‘Lanitis Carob Mill Complex’ (Limassol carob processing factory) in Limassol, Cyprus Nicosia Municipal Art Centre, (Nicosia electric house building) in Nicosia, Cyprus, etc. Among successfully re-functioned industrial buildings, three of them; one from Europe, one from Turkey, and one from Cyprus will be examined in detail within this study.

Santralistanbul Museum & Art Gallery, which is located in an old power plant and has been fully preserved and re-functioned. Santralistanbul is an art and cultural

complex located at the upper end of Golden Horn in the Eyüp district of Istanbul, Turkey. The center is consisting of a modern art museum, energy museum, amphitheater, concert halls and a public library which is situated within the Silahtarağa campus of Bilgi University, Istanbul. The Silahtarağa power plant was the first urban-scale power plant of the Ottoman Empire, founded in the Golden Horn district which is the oldest industrial zone in Istanbul. It provided electricity to Istanbul from 1914 until 1983.

“The project's concept has similarity with Tate Modern in London, however much more comprehensive is having a technology museum, amphitheater, concert halls, a public library and residents for visiting artists. İhsan Bilgin, Dean of the School of Architecture at Istanbul Bilgi University, was responsible for the architectural coordination, while the master plan was carried out by the architects Nevzat Sayın (public library) and Emre Arolat (multi-purpose hall). Han Tümertekin joined the team for the design work on the energy museum. The architectural work was completed in three years. Santral Istanbul's preliminary opening was held on July 17, 2007.” (URL 2.4)

The other mentioned successful example is Tate Modern Art Gallery in London, England. “It is based in the former Bankside Power Station, in the Bankside area of Central London. the former Bankside Power Station, which was originally designed by Sir Giles Gilbert Scott, the architect of Battersea Power Station, and built in two stages between 1947 and 1963. The power station closed in 1981. The building was converted by architects Herzog & de Meuron and the Gallery opened in 2000.”(Powell, 1999)

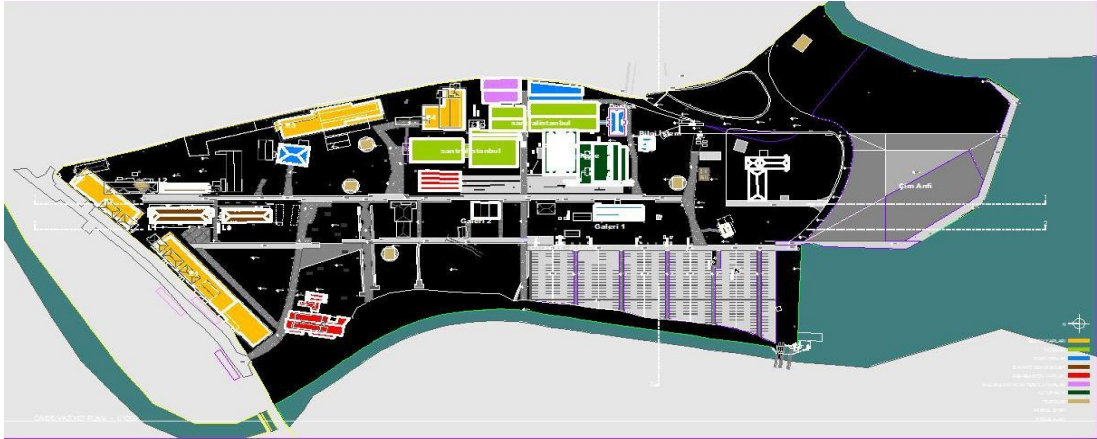



Figure 2.2: Bilgi University Site Plan, (Bilgi University, 2006)

( Santralistanbul Buildings)

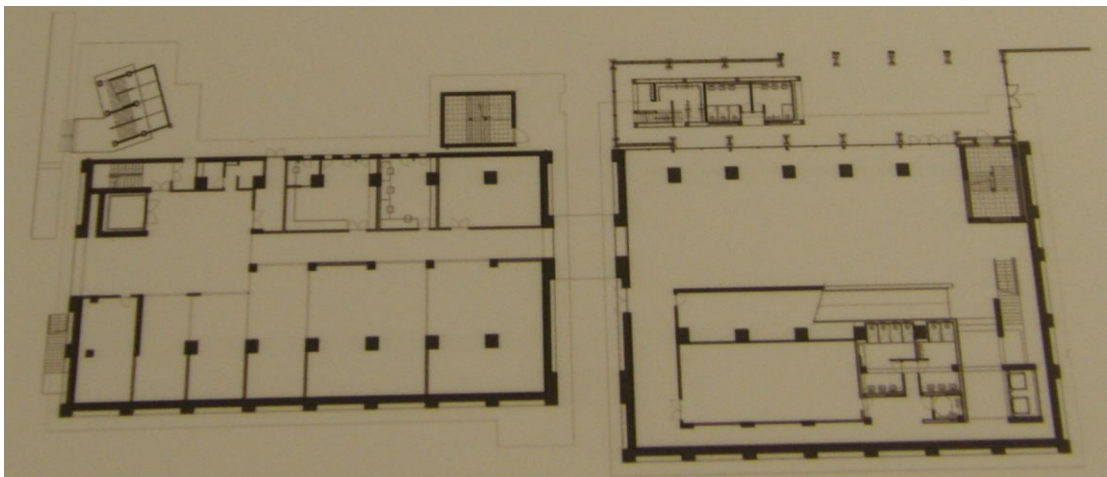


Figure 2.3: Ground Floor Plan of Santralistanbul Museum, (Bilgin, et all 2010)

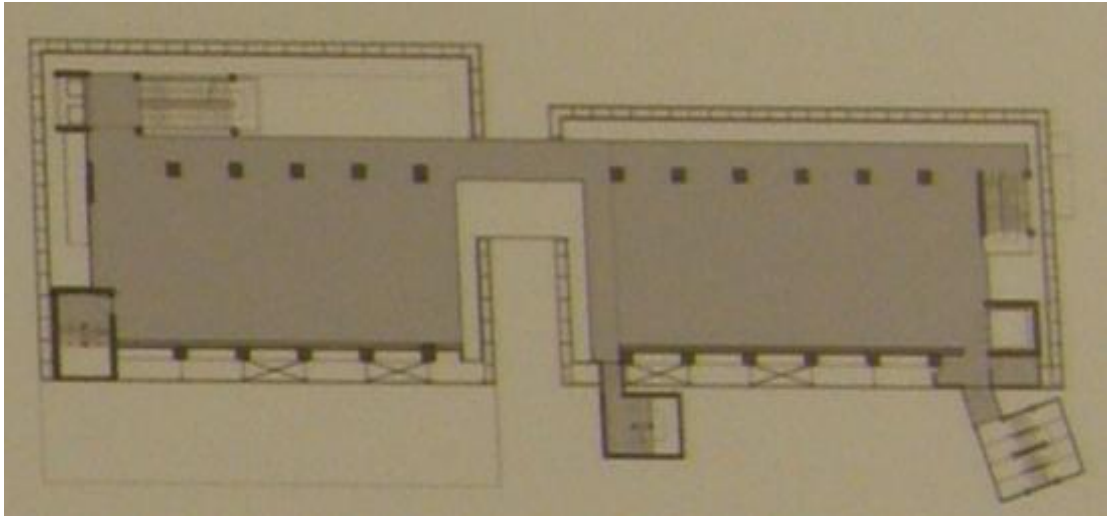


Figure 2.4: Art Gallery Block of Santralistanbul Museum Plan, (Bilgin, et al 2010)

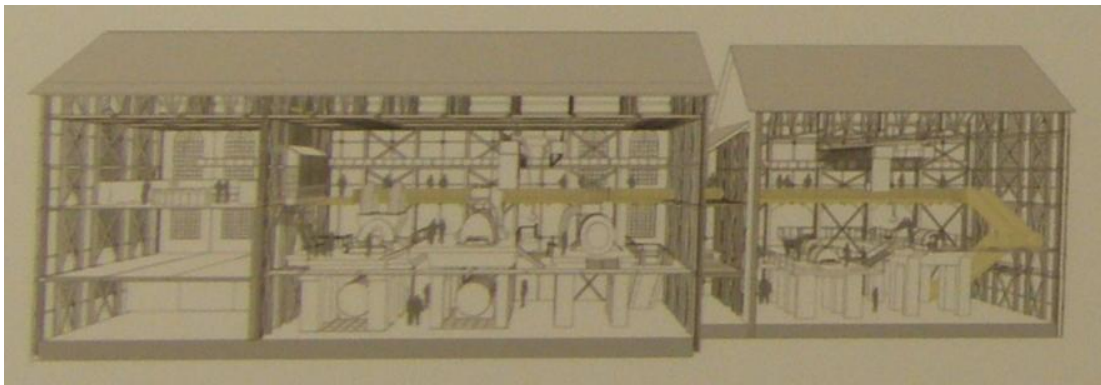


Figure 2.5: Section Perspective of Santralistanbul Energy Museum (Bilgin, et al, 2010)

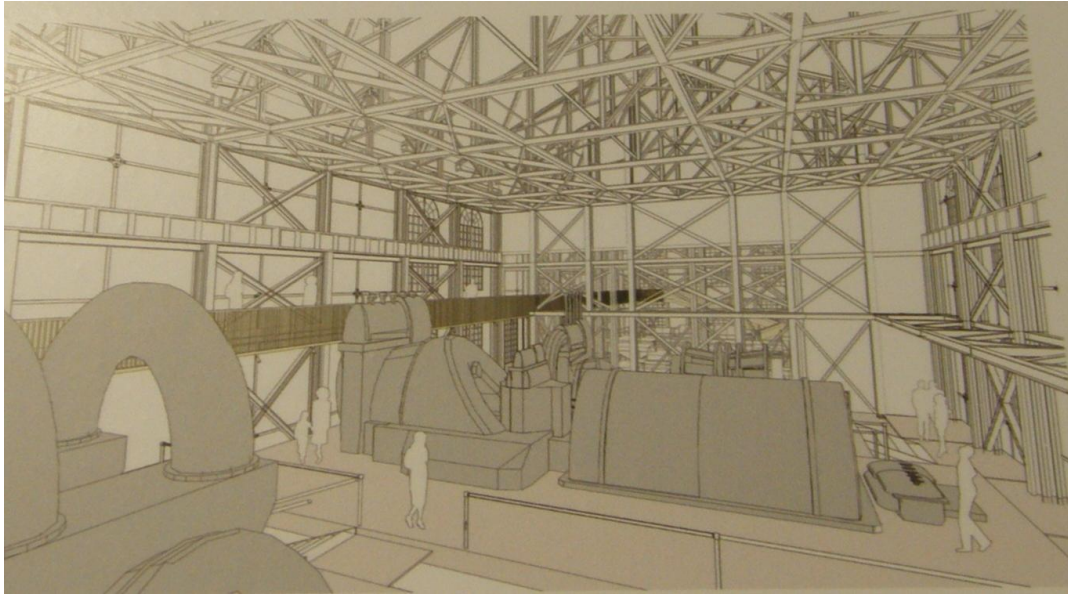


Figure 2.6: Interior Perspective of Machinery System in the Energy Museum (Bilgin, et al, 2010)

Left block is Art Gallery and the right block is the Energy Museum converted from Silahtarağa power station.

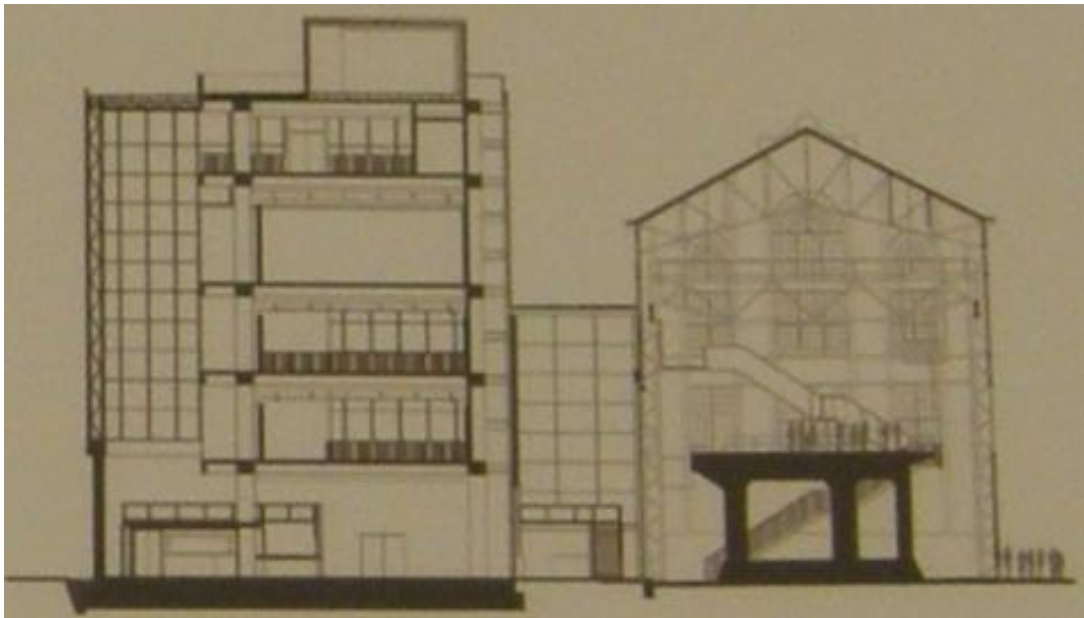


Figure 2.7: Section of Santralistanbul Museum (Bilgin, et al, 2010)

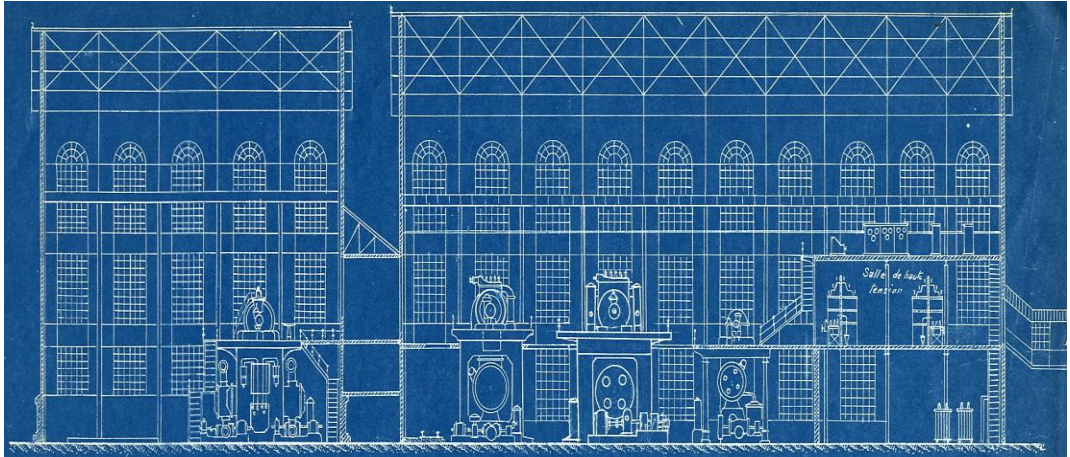


Figure 2.8: Original Section of Silahtarağa Power Station (Bilgi University Archive, 2010)

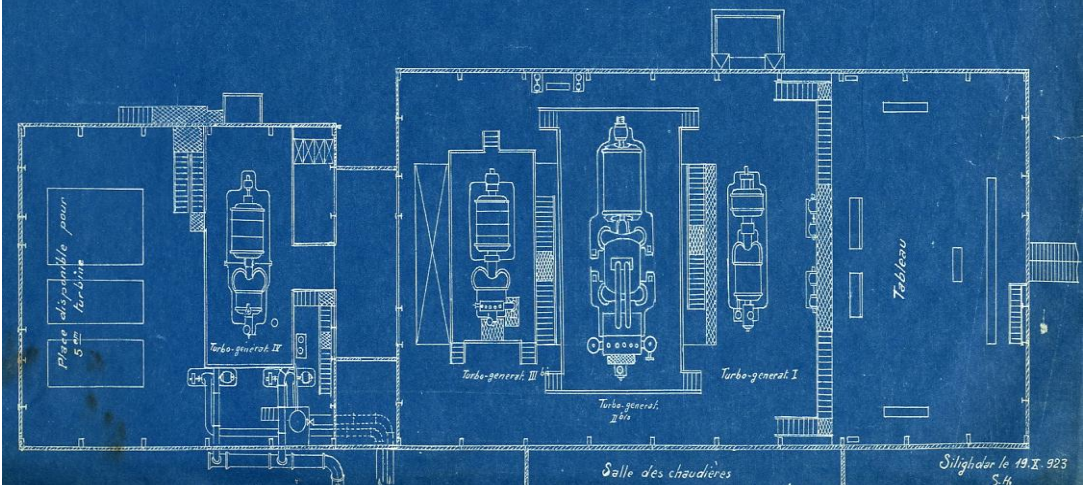


Figure 2.9: Original Plan of Silahtarağa Power Station (Bilgi University Archive, 2010)



Figure 2.10: Santralistanbul Museum Façade, (Golmakani archive, 2009)

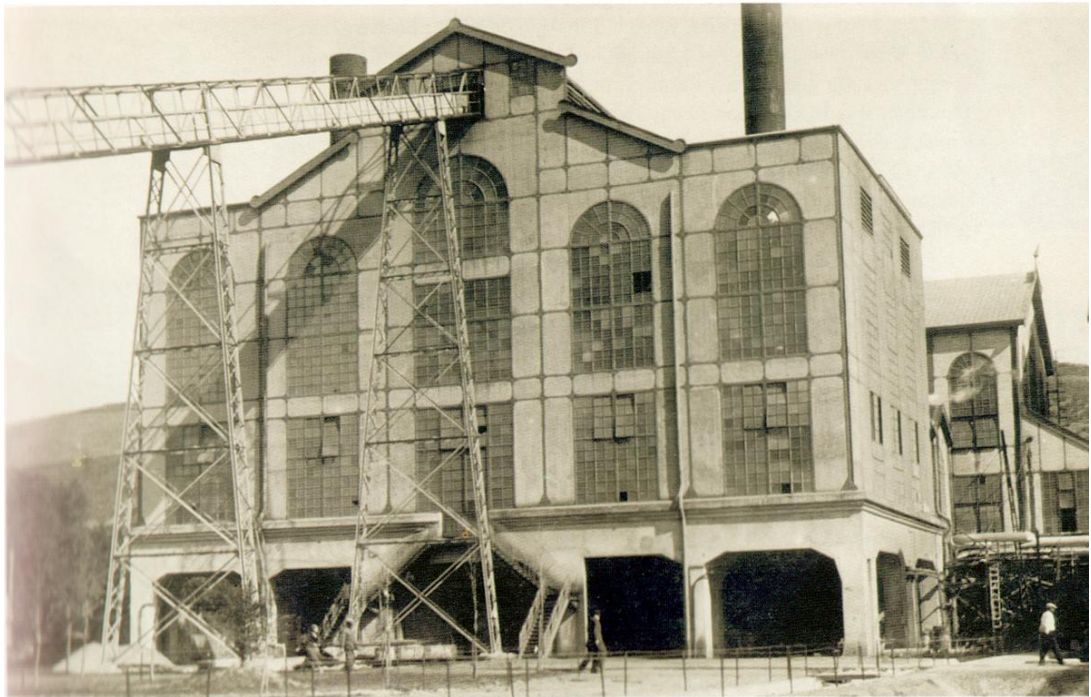


Figure 2.11: Santralistanbul, Former Power Station, (Bilgi University Archive, 1926)



Figure 2.12: Silahtarağa Power Station Interior Space before Conservation (Bilgi University Archive, 1986)



Figure 2.13: Control Room of Silahtarağa Power Station (Bilgi University Archive, 2010)



Figure 2.14: Santralistanbul Control Room Interior after Re-functioning (Türker archive, 2008)

According to the principles for conservation in TICCIH (2003), minimum intervention has been done to the Santralistanbul building and the original character of the building has not been disturbed. Added parts include glass material, therefore the structure is visible. There is stair case as well as the ramp inside the building for access to the different floors. Not only the building has been conserved and has become the attraction center for people, but also the urban context has been preserved according to the changes and conservation. This new function of Museum within a University had an important role in the regeneration of the Haliç area.

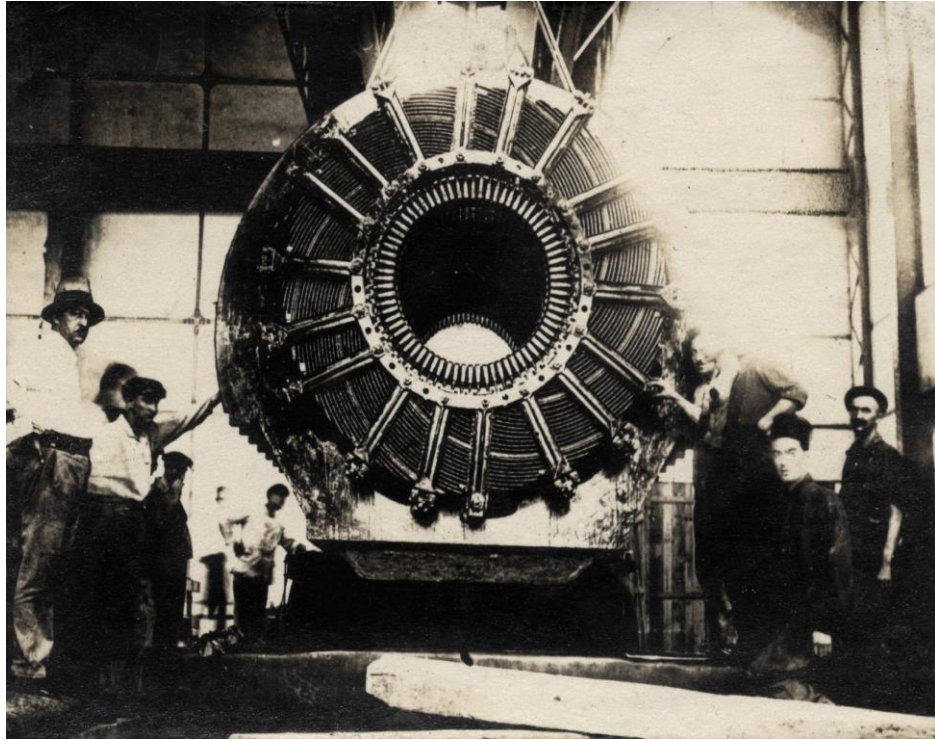


Figure 2.15: Machinery System of Former Power Station, (Bilgi University Archive, 2010)



Figure 2.16: Santralistanbul Museum's Machinery System after Conservation, (Türker, 2008)

Tate Gallery of Modern Art in London is another considerable successful conserved project with the new function. The former Bankside Power Station has been

conserved and converted into the Art Gallery in 1994. Aim of the conservation was to retain the best qualities of the old building while infusing it with elements that are entirely new and innovative. The project has started in two stage competition (1994-5) and has been designed and realized by the winner architect Sir Gilbert Scott. The Bankside Tate is linked to the City by a new bridge, designed by Sir Norman Foster and Sir Anthony Caro. The focus of the building is the turbine converted hall into a huge public galleria and it is approached by a ramp from the west with additional entrances from the river terrace and bridge. The retention of the 99 meter chimney is a key of ensuring that the structure has remained. The glass box as additional material at the top is the minimum intervention that has been done. (Powell, 1999)



Figure 2.17: Tate Modern Art Gallery, Bankside, London, 1994 (Powell, 1999)



Figure 2.18: Tate Modern Art Gallery, Façade of the Building, (Türker Archive, 2008)



Figure 2.19: Interior Converted Turbine Hall into the Main Public Space, (Türker archive 2008)

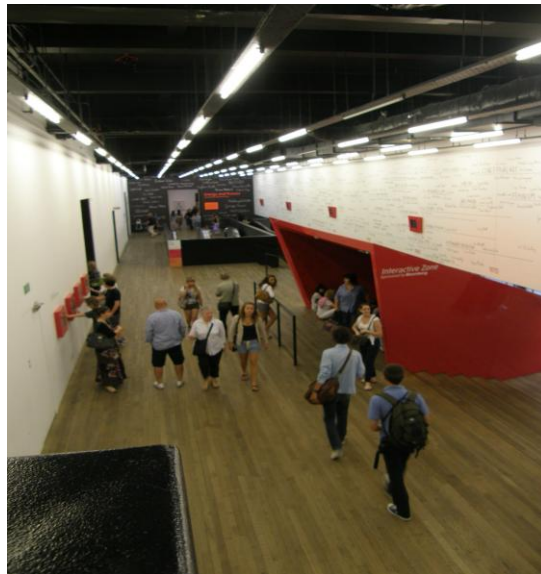


Figure 2.20: Tate Modern Exhibition, (Türker archive, 2010)

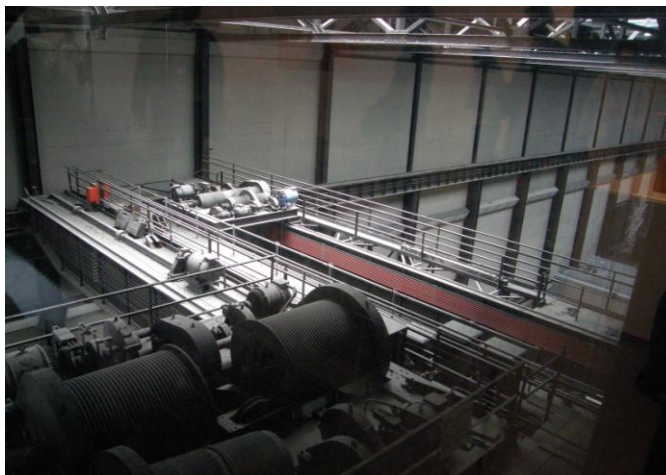


Figure 2.21: Tate Modern Museum, Machinery System, (Türker archive, 2008)



Figure 2.22: Tate Modern Art Gallery Interior Spaces, (Türker archive, 2008)

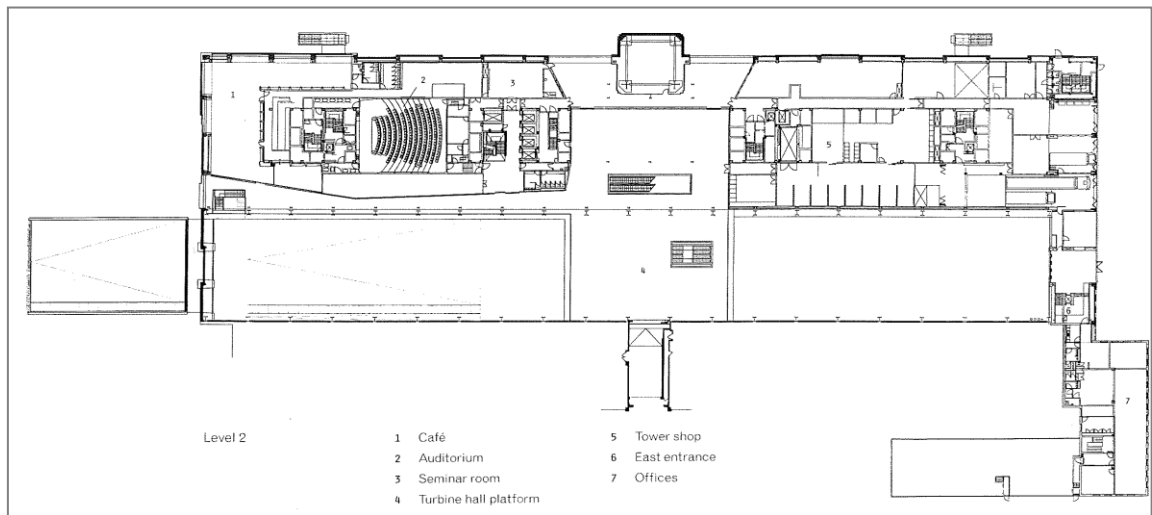


Figure 2.23: Tate Modern's plan (Powell, 1999)

The other successful example of conservation project is 'Lanitis Carob Mill Complex' in Limassol, Cyprus. Renovation and all the changes of the industrial building to the multi cultural center have been done by the architect Christian Christou. This multi cultural center includes a high-tech theater "The Time Elevator", restaurants, cafes, a cultural center as well as public areas and parking facilities. The project has been completed in April 2002. (MDA, 2006)



Figure 2.24: Lanitis Carob Museum (Türker archive, 2010)



Figure 2.25: Main Entrance of the Lanitis Carob Mill Museum (Türker, 2010)



Figure 2.26: Interior of the Lanitis Complex, Theater Entrance (Türker archive, 2010)



Figure 2.27: Interior of the Carob Mill Museum, Machinery System of the former Carob Mill (Türker archive, 2010)

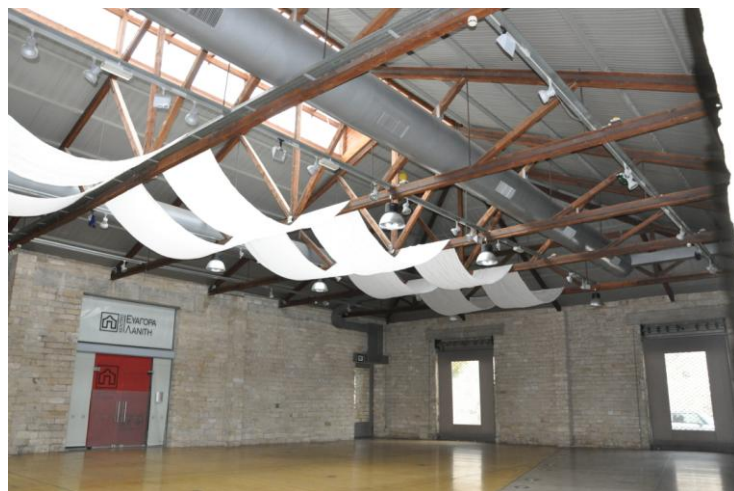


Figure 2.28: There is a Visual Connection between the Restaurant and Multi Functional Space with additional Elements such as Pipes and Lighting Elements (Türker archive, 2010)



Figure 2.29: The additional Elements are Contemporary while the Building is Old (Türker archive, 2010)

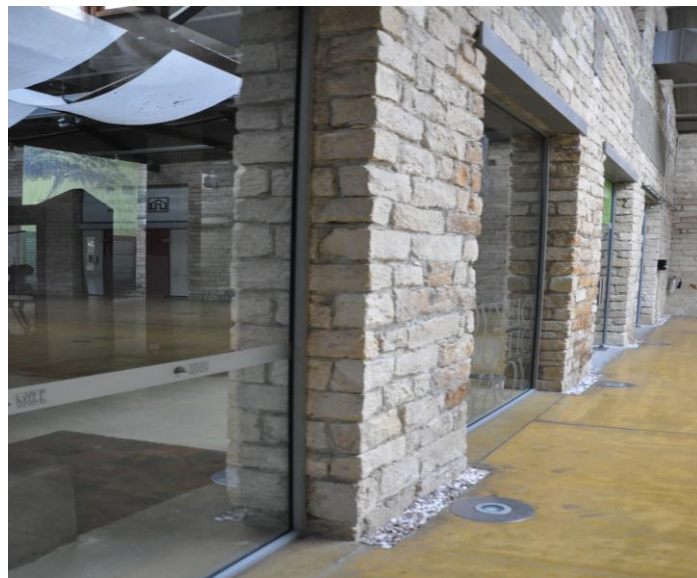


Figure 2.30: Finishing of the Building (Türker, 2010)



Figure 2.31: Mezzanine of the Museum (Türker archive, 2010). Transparent Balustrade has been used to Avoid Disturbing the Unity of the Building.



Figure 2.32: Information Panel in Carob Museum (Türker, 2010)



Figure 2.33: Carob Museum (Türker archive, 2010). The other Photos on the Wall Show the Process of Production.



Figure 2.34: Fire Security System (Türker Archive, 2010) Minimum Intervention has been achieved in the additional Systems.



Figure 2.35: Bar Entrance from the Road. (Türker archive, 2010).The Traditional Façade Keeps the Original Character of the Building.



Figure 2.36: The Souvenirs Shop (Türker archive, 2010) Local Products are sold in the Souvenirs Shop.



Figure 2.37: Semi-Open Sitting Areas across the Carob Mill Museum's Restaurant (Türker archive, 2010)



Figure 2.38: The Secondary Entrance from the other Façade of the Building (Türker archive, 2010)



Figure 2.39: Multi Functional Space with Contemporary Furniture and Finishing
(URL2.5)

Successful examples from the world can be useful for conserving the industrial heritage in North Cyprus.

The chart below shows the values analysis of the successful examples which were discussed above according to the chapter (2.3).

Name of the successful examples		Tate Modern art gallery&museum	Santralistanbul musuem	Lanitis carob mill museum
Emotional values	Wonder	✓	✓	✓
	Identity	✓	✓	✓
	Continuity	✓	✓	✓
	Spiritual and symbolic	✓	✓	✓
Cultural values	Documentary	✓	✓	✓
	Historic	✓	✓	✓
	Archeological and scarcity	-	-	-
	Aesthetic and symbolic	✓	✓	✓
	Architectural	✓	✓	✓
	Townscape, landscape and ecological	✓	✓	✓
	Technical and scientific	✓	✓	✓
Use values	Functional	✓	✓	✓
	Economic	✓	✓	✓
	Social	✓	✓	✓
	Political and ethnic	-	-	✓

Figure 2.40: Value analysis of the successful examples (Golmakani, 2011)

Name of the successful example		Tate Modern art gallery & museum	Santralistanbul musuem	Lanitis carob mill museum
Charter No:	Charter Items:			
I	preserving functional integrity	✓	✓	✓
	preserving machinery or components	✓	✓	✓
II	Reflecting various industrial processes	-	✓	✓
	examining and assessing all former uses	✓	✓	✓
III	Preservation in situ	✓	✓	✓
IV	respecting the significant materials	✓	✓	✓
	maintaining original patterns of circulation and activity	✓	✓	✓
	being compatible with the original or principal use	✓	✓	✓
V	psychological stability for communities	✓	✓	✓
VI	reversible Interventions	-	-	✓
	minimal impact	-	-	✓
	Documenting unavoidable changes	✓	✓	✓
	safely recording and storing elements that are removed	✓	✓	✓
VII	Avoiding reconstruction, or returning to a previous known state, except for integrity of the whole site	✓	✓	✓
VIII	Preserving documentary records, company archives, building plans, sample specimens of industrial products	✓	✓	✓

Figure 2.41: Evaluation Table for the successful examples in terms of the Principles in Nizhny-Tagil Charter (2003) for the conservation of industrial heritage

As indicated in the table above, the successful examples show sensitivity in the contemporary conservation values and besides the applications are parallel to the principles which are mentioned in the Nizhny-Tagil Charter.

2.5 Chapter Conclusion

After the industrial revolution in late 18th century, parallel to increase in the population, people's needs have been increased, more workers were needed in the factories to grow the production, also the other problems like different kind of pollution has occurred and all these factors caused to relocate the factories to the edge of towns and get bigger. Therefore too many Industrial buildings are abandoned without function and have architecturally deteriorated by different causes such as natural causes. Since these Industrial buildings are accepted as industrial heritage and are the holders of art, culture, tradition, architectural system, aesthetic and past people production style, they are valuable to be conserved. These exclusive values according to chapter 2.3.3 include Emotional values, Cultural values and Use values. The Original character of the building is the most important factor that should be considered during conservation of Industrial buildings. Since conservation and restoration of the old buildings are very sensitive, accurate work should be done by an expert team through the successful achievement. According to the different committees of Conservation of Industrial Heritage, process should be done due to the principles of conservation.

As a result of the observation on successful examples in the World, new function of the conserved building is an important achievement item that should be carefully selected; and it has to be reflecting the current period of renovation; with respect to the original character of the building. New additions have to be clearly recognized and in respect with the original character. The original tools and machinery in the industrial buildings should be displayed within the new function. The accessibility by public is very important when the symbolic value of a heritage is very high to be sustained for next generations.

Chapter 3

OVERVIEW ON OLIVE OIL FACTORIES IN NORTH CYPRUS

“Heritage is our inheritance from the past; what we live with today, and what we pass on to future generations. Our cultural and natural heritage is both incomparable and unique sources of life.” (UNESCO, 2010) Since many values of Cyprus are listed in the world heritage list, the Island has too many cultural heritage including historical and industrial buildings with their exclusive cultural characteristic. During different period of time and different styles; the Island has great potential in terms of cultural heritage. It is vital to document them and to introduce to the world.

This chapter aims to show the potential of conservation of Olive Oil Mills and Factories in North Cyprus as important examples of industrial buildings related with food processing. For enlightening the sensitive conservation process, the history, processes, values and also evaluation of Olive Oil Industry in North Cyprus will be discussed in this chapter.

3.1 Evolution of Olive Oil Industry in North Cyprus

“Some estimates suggest that there are about 800 million olive trees under cultivation around the world, and nearly all of them are in the Mediterranean countries.” (Albertch,M, Salaman,R, Jemal, H, 2007)

“Cyprus is the third largest island in the Mediterranean Sea after Sicily and Sardinia, the Island is situated in the northeastern area of the Mediterranean ideally located at the crossroads of Europe, Africa and Asia and in close proximity to the three continents and their trade’s routes.” (Tofallis, 1983 & 2002)

Cyprus is a Mediterranean Island which regardless of its touristic attractiveness is known as a popular commercial port. During the past, due to its significant geographical position always had been as a market place in which commodities could be exchanged between east and west of the world. But after opening the Suez Canal in 1869 which connects the Mediterranean Sea to the Red Sea, the importance of this commercial route increased. (Günç and Hoşkara, 2009)



Figure 3.1: The Map of Cyprus (URL3.1)

In North Cyprus, as in other Mediterranean countries the Olive tree can be seen everywhere, in the wild and under cultivation

Olives were first cultivated in the Eastern part of the Mediterranean at 5000 B.C. Olive trees were planted throughout the Mediterranean under Roman rule. In ancient

times, the precious oil, described by Homer as 'liquid gold', was used for food, as a fuel for lamps, and as a basic ingredient in things like medicinal ointment, bath oils, skin oils, soaps, perfumes and cosmetics. Olive and Olive Oil had played a central role in ancient economies and culture across the Mediterranean region. Even before the Roman Period Cyprus was known for its olive oil, as indicated by Strabo (1960,p:383) when he said that "in fertility Cyprus is not inferior to any one of the islands, for it produces both good wine and good oil and also a sufficient supply of grain for its own use". "There are evidences for both local trade of Cypriot oil and for a larger trading network that may have reached as far as the Aegean, though most of the oil trade was probably limited to the Eastern Mediterranean. Many olive oil presses have been found on Cyprus, and not just in rural areas, where they might be expected for personal, local use. There is also an evidence that olive oil was traded locally, around the island and also indicate that the olive oil produced in these areas was mostly used locally or shipped to nearby towns that were larger." (Panareti, 2010)

Cyprus produces throughout the Century's high quality olive oil and is one of the main producer countries worldwide. The combination of advanced technology, innovative gathering methods and fertile land, gives unique quality of extra virgin olive oil. It is reported that olive oil products has started in the island from early antiquity and most of the wreck ships found in the surrounding sea are those carrying the oil for trade. The olive oil has played a significant role for the island history as it was one of the main trading goods and has helped Cypriot economy to flourish throughout history. It is noticed that olive oil is one of the main ingredients in the local cuisine and the local tastes are strongly connected with it. Archeological

evidences are the witnesses of improvement of the olive oil industry in North Cyprus since the ancient time. (Yorgancıoğlu, 1999)

Olive oil was produced in Cyprus as early as the Bronze Age (2500- 1050 BC). This is known since various archeological excavations from early in this period began to uncover large capacity installations, all employing the lever-and-weight press (Figure 3.6), for the first time. During the fourth century BC, there was another growth in production through a series of innovations in oil producing installations. The most important was the circular crushing basin (Figure 3.7), which made it possible to use animal power for the first time. Since this increased production from these mills, twin presses began to be employed. Cyprus made use of all recorded types of presses referenced in classical literature through the Roman period (30 BC – 330 AD). However, during the Roman period there was also a transition from the drum to the screw press. It is even possible that the single screw direct press was introduced in Cyprus during the Roman period as it was known in Pompeii, Italy, before its destruction. The screw press was a major technical improvement in the pressing operation. It was more efficient and enabled press to be set up indoors (no pulley mechanism was used which had hung from rafters). This type of screw press working in combination with a single millstone was in use to the introduction of machinery on the island. (USAID, 2010)

The very first traditional method has been used in North Cyprus since more than 3000 years ago. As an observed historical industrial Olive Oil Mill in Cyprus, Sazlıköy Olive Oil Mill which is belonging to 1000BC can be discussed. Sazlikoy Village is the witness of the method which has been used for that period of time. Due to the interview with Mr. Hasan Tekel who is the manager of the Antiquity

Department of Gazimağusa, North Cyprus, this historical industrial place which belongs to 3000 years ago, has been built not only for the mass production of olive oil but also for producing wine; and has deteriorated by different causes of nature and has almost demolished. The technical excavation for conservation of the site has started in 2004, but unfortunately it has stopped after 3 years because of the financial deficiencies from the government. Since the soil was suitable for plant growth, there were many wild Olive trees which surrounded the mill. Also there has been a river around 200km far from the foundation which has had an impressive effect on the fertility of the area. This historical heritage is a combination of natural lime stone which has left as a foundation and also interior space similar to cave structure. According to the all investigation on this site the cave doesn't belong to the same period of time and has been added later by villagers during they were digging the ground. According to the excavation of Archeologist, as an architectural feature of this site; the existing foundation has been supported by the wooden beam structure. This deteriorated foundation is containing 27 pits and two local famous ovens which are showing the organized processing system in ancient time. It is thought that, since the method has changed by the time, the users have left the place. (Figure 3.2)



Figure 3.2: Ancient Olive Oil Processing, Sazlıköy 1000. BC. (Golmakani archive, 2010)



Figure 3.3: Connection Holes between Indoor and Stone Pits, Sazlıköy (Golmakani archive, 2010)

From the 4th to the 7th century AD, the eastern province of the Byzantine Empire (Cyprus, Cilicia, Syria, Palestine) were the economic centers of olive growing in the Mediterranean, with extensive cultivation and organized processing installation. Cyprus, being part of the eastern provinces, participated actively in the production process and trade in olive oil. Oil merchants transported their product either on land or by sea to Constantinople and other major centers of the Byzantine Empire. (USAID, 2010) The Mediterranean is a combination of landscapes, cultures, and people with much in common, yet with many differences. It is however, united by the olive and the benefits it bestows. According to Tofallis, (1983) & (2002) it is no surprise that the Roman agronomist Columella called the olive tree “Queen of all trees”.

The cultivated tree found throughout Cyprus-Olea European-most probably derives from the wild plant *Olea Chrysophylla* through the wild olive *Olea Oleaster*. The wild olive likely preceded the appearance of man on the island as Cyprus is well within the range of its natural distribution. The earliest known evidence of olives in Cyprus is from carbonized olive pits found in Stone Age archaeological site (8200-3900 BC) and in all later periods. Today wild olives still grow in great numbers in local forests. The olive was first domesticated in the Jordan Valley. As maritime commerce developed, the oil was conveyed to the west and was soon followed by the distribution of the plant itself. Dry farming dominated, which depended primarily on seasonal rainfall of the ancient agriculture triad (olive-vine-wheat), so much praised by classical authors like Strabo (1960), olive, is the most frequently cultivated in the region. In fact the remains of ancient olive press scattered around the Karpaz Peninsula verifies this. (USAID, 2010)

3.2 Evolution of Olive Oil Processing Technology in North Cyprus

New methods and new elements of olive oil mills have replaced the old and traditional ones according to the needs of villagers, parallel to the economic or technological improvements in time. According to the available researches in North Cyprus and all existing evidences and interview with different people, olive oil mills can be categorized into four different types in terms of their methodology point of view.

Olive oil production is a three-step process that involves: 1) crushing; 2) pressing; and, 3) separation (Figure 3.1). These three elements of the process have remained unchanged from prehistoric times to today; however, the technology used to execute this process have evolved through the ages, making olive oil production increasingly less labor-intensive and much more large-scale. Current manufacturing renders these three stages indistinguishable as olives are poured into a machine and olive oil comes out at the end. Some would argue that this has come at a cost to purity and flavor (USAID, 2010). Depending to the technique of extraction, the taste and flavor of the olive oil change. Extraction without crushing the seed is preferred.

According to various researches about the history of Cyprus and various documents, there are four categories of olive oil processing observed in the villages of Northern Cyprus.

- Olive Oil Processing Using Traditional Methods with no Machines
- Olive Oil Processing Using Donkey/Man Power with the Machines
- Olive Oil Processing Using Machine Power

- Olive Oil Processing Using Contemporary Machines

3.2.1 Olive Oil Processing Using Traditional Methods with no Machines

Observations in different villages and also the documents showed that the very first method of producing olive oil have been done by the human power, specially village's women. The method that they have used was as simple as the ancient method in family scale. They have used a basin stone to crush the Olives same as what they have used in Sazlıköy in the Ancient times. (Figure 3.4)

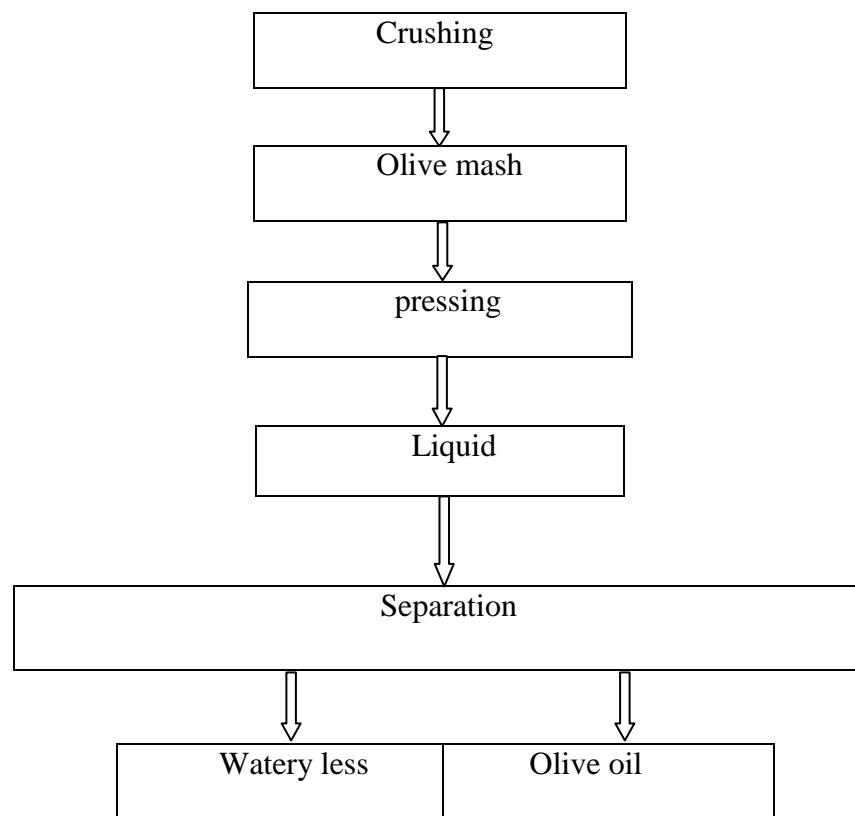


Figure 3.4: Adapted from Chart of Olive Oil Processing (USAID, 2010)

Generally human needs grow parallel with the population, and products grow according to the needs. Therefore in the history, villagers produced olive oil for their family's requirements. That was done with the very basic and traditional method. After picking and collecting olives, they were put them in the sun to get dry for more

oil. Then olives were fixed in the basin to get crushed with the basic instrument which was a stone or wood used by human hands.

As it was for the family scale and was done in the house scale, there were no any defined building for this production, and have been in the outdoor spaces such as courtyard or back yard of traditional houses.



Figure 3.5: Primitive Instrument which is the Basin Stone (Golmakani archive, 2010)

3.2.2 Olive Oil Processing Using Donkey/Man Power with the Machines

Since Olive became one of the main productions in each village, moreover as a trade product of the Island, there were a few one storey building with vernacular architecture feature which had been designed as Olive Oil Mills. According to this improvement, instruments have improved in village scale and have fixed in indoor spaces, protected from nature such as rain.

The most important instrument was the circular crushing basin, which made it possible to use animal power for the first time. By increasing the population and human's development olive oil production has changed into a new method with new instruments and machines. Although villagers built olive oil mills in each village for their olive productions, but also they had outdoor machines. (Figure 3.5 and 3.6)

They put olive in the crushing basin with mass amount of olives; a human has rounded the mill stone for crushing them. By passing the time human has used donkey's power to round the mill stone and closed the eyes of the donkey against dizziness. (Figure 3.7)

As this kind of producing has improved into mass production, storage has been used. So it was like a combination of indoors and outdoors architectural features that have been used in that period of time. The building material was a local material such as mud brick or local stone which has been used in that time. The mill was one story building which had made up of two or three connecting rooms and has separated from each other according to their functions. (Figure 3.8 and 3.9)

As an observed example, Büyükkonuk Olive Oil Mill can be considered.



Figure 3.6: Man's Power Method Used in Olive Oil Mills (USAID, 2009)



Figure 3.7: Outdoor Olive Oil Instrument Using Man Power, (USAID, 2010)

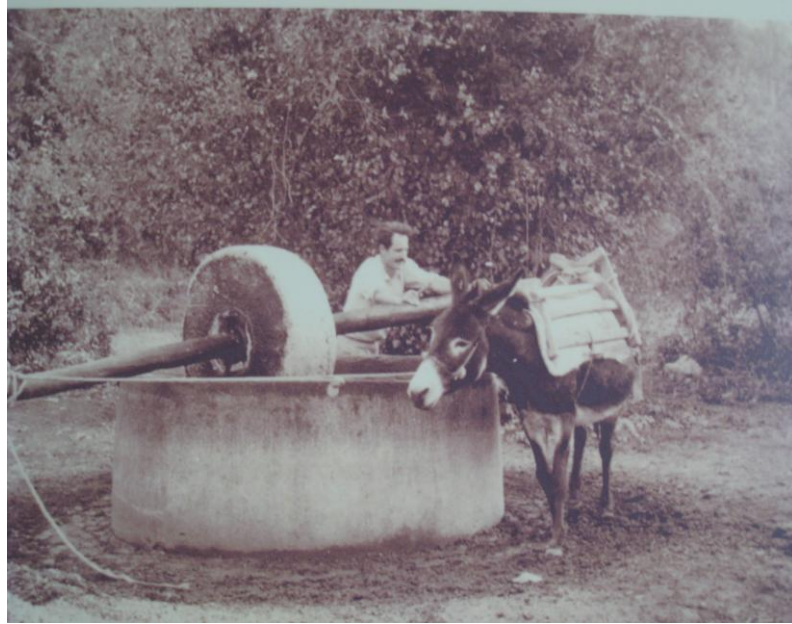


Figure 3.8: Donkey's Power Method Used in Olive Oil Mills (USAID, 2009)

Press machine



Figure 3.9: Indoor Space of Olive Oil Mill Including Connecting Rooms (Golmakani archive, 2009)



Figure 3.10: Büyükkonuk Olive Oil Mill Building after Conservation
(Golmakani archive, 2009)

3.2.3 Olive Oil Processing Using Machine Power

By passing time and increasing the population and emergence of business, machinery system has replaced the donkey/man power system. Press machine has taken a place of crushing olives in a basin. Since this increased production from these mills, twin presses have begun to be employ. However, during the Roman period there was also a transition from the drum to the screw press in Cyprus.

The screw press was major technical improvement in the pressing operation. It was more efficient and enabled press to be setup indoors or outdoors. This type of screw press working in combination with a single millstone was in use up to the introduction of machinery on the island. Parallel to the changes in the methods; the architectural features have been changed into such industrial buildings, which have had all the necessary parts of the production.

Bellapais Olive Oil Mill in Kyrenia is a good example for using machinery system which is not active any more. Figure 3.9 shows former Olive Oil Mill at the left side with an earlier version of machinery system (Figure 3.10) which has deteriorated and at the right side the Olive Oil Mill with Machinery system which is not active anymore.



Figure 3.11: Exterior View of the Bellapais Olive Oil Mills, Bellapais, Kyrenia



Figure 3.12: The Machinery System in Former Bellapais Olive Oil Mill (Golmakani archive, 2009)



Figure 3.13: The Indoor Machinery System of later Bellapais Olive Oil Mill (Golmakani archive, 2009)

3.2.4 Olive Oil Processing Using Contemporary Machines

Nowadays parallel to the method changes, instruments and machines are modernized with different operations. All the machines are connected to each other and the oil processing is done constantly and without using man power. Therefore the three stages of production are indistinguishable as olives are poured from one side and olive oil comes out at the end.

According to the method development, architectural features also have improved into modern buildings with modern facilities with new materials.

The Diner Olive Oil Mill, which is active today, is an example for the ones which use contemporary machines. (Figure 3.12)



Figure 3.14: Exterior Façade of the Diner Olive Oil Mill, Karpaz (Golmakani archive, 2009)



Figure 3.15: Dinner Olive Oil Mill Machinery Processing System, Karpaz (Golmakani archive, 2009)

According to the inventories listed by the Department of Antiquities in North Cyprus (check appendix A), the below list shows the name of the villages which are holding one or more than one olive oil mill(s):

Name of the village	Number of the olive oil mill
Kumyalı	1
Büyükkonuk	2
Dipkarpaz	1
Başpınar	1
Tepebaşı	1
Bellapais	2

3.3 Chapter Conclusion

All of these industrial buildings and their architectural features are inherently carrying the same features parallel with the vernacular architecture of Cyprus Island. Cypriot-mud brick walls, stone foundation, or stone walls are used in the walls. Stone arches, juniper rafted roof, angled grain beams on the wall, wall plaster and wooden door and windows are other common features. These heritage buildings need to be conserved for the future and next generation as they are symbols of culture, architecture and production of the Island.

Chapter 4

RECOMMENDATIONS FOR ZEYKO OLIVE OIL MILL AS AN INDUSTRIAL HERITAGE OF NORTH CYPRUS

Industrial heritage has recorded the lives and production of normal men and women and it provides a significance character and identity of the society. The examples of industrial heritage in North Cyprus have witnessed various periods and events on the Island and have been part of the economic life which has also influenced the urban development in major cities. “Industrial heritage of North Cyprus are exemplifying the existing technologies and use of local/traditional construction materials and techniques on the Island”. (Günçe and Hoşkara; p: 10)

Although Cyprus was once part of the colony of the British Empire, it is also a Mediterranean Island which is maintaining its rich cultural heritage despite many changes in social, cultural, economic and political conditions after industrial revolution. Appreciating Cyprus past is one way of ensuring a more peaceful future for people and next generations. Cyprus has one of the richest and fascinating histories of Europe and Middle East. The recent excavations about Cyprus show that Cypriot civilization date back to 7th millennium B.C. There are different types of Heritage buildings existing in Cyprus and historical industrial buildings are included. By preserving these industrial buildings as a symbol of industrial improvement, an important part of Cyprus historical heritage will be sustained.

As explained in Chapter 3 Olive Oil production had an important role in the industrial production of the Island. Zeyko Olive Oil factory was the largest Olive Oil factory in Northern Cyprus therefore it will be analyzed with its historical background, architectural character and different values aspects. Due to the documentation and analysis of the Zeyko Olive Oil factory, potentials of the building will be considered and new functions will be suggested.



Figure 4.1 Location of Zeyko Olive Oil Factory in the Map of Cyprus (adapted from URL3.1)

“Conservation includes the characteristics and approaches on concept and decision; whereas restoration includes general subjects and methodology during application at the technical level. In these regulations, historical monument is defined as covering not only an architectural work but also an urban or rural settlement that is historical evidence or the witness of an important improvement”. (Türker, 2002; p: 127)

Industrial heritage buildings are as important as historical heritage. To preserve the industrial heritage, first important issue is full documentation of the existing condition; then according to the different analysis and conservation of the building will take place and industrial building will be returned to safe and functional conditions by using traditional materials, tools and techniques where possible, to express its original character.

In this chapter, Zeyko Olive Oil factory, which is not active any more, will be analyzed in terms of different aspects such as, historical, social and cultural potential as an Industrial Heritage of North Cyprus.

4.1 Documenting the Building

Zeyko Olive Oil Factory is a historical industrial heritage of North Cyprus which has brought messages from the past for new generations. Due to the exclusive values of the building, it has to be conserved and returned to the safe functional position. According to the interview with Mr Ali Bağlarbaşı (2009), the former manager of Zeyko Olive Oil Factory, the building was built before 1940 as an Olive Oil Mill and storage of olive's stone which belonged to Severis, a Greek Cypriot man. Olive's stones were sent to the Brick factory and were burned to make brick as a local construction material of the time.

After the Peace Intervention in Cyprus in 1974, government took this building as a plunder and lent it to the corporative company. The new company has started their production in 1974; they were importing sunflower oil from Turkey and were doing the refining process to decrease the acid's rate, and bottling the filtered oil and

distribute them through the Island. Beside the refining production, they have also produced olive oil in this factory.

In 1995 Zeyko Olive Oil factory has stopped working, and all the machines were sold to a Turkish company and have been sent to Turkey. (Bağlarbaşı, 2010)

According to TICCIH (2003), there are main principles for conserving the industrial heritage such as research and analysis. To achieve a successful conservation, analysis of the building from different points of view, such as site analysis or architectural analysis should be carefully done by experts.

Zeyko Olive Oil Mill, which is not active any more, has demolished structurally by natural and other causes. Unfortunately the original architectural drawings of the building are not available therefore schematic drawings are prepared by the author.



 A photograph showing the Zeyko Olive Oil Factory from a south-east perspective. The building is a large, multi-story structure with a yellowish facade, showing signs of decay and structural damage. A tall, brick chimney is visible on the right side of the building. The sky is overcast.	 A photograph showing the Zeyko Olive Oil Factory from a north-east perspective. The building is a large, multi-story structure with a yellowish facade, showing signs of decay and structural damage. A tall, brick chimney is visible on the right side of the building. The sky is overcast.
<p>Figure 4.2: South-East View of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)</p>	<p>Figure 4.3: North-East View of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)</p>



Figure 4.4: South-West View of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)



Figure 4.5: North-West View of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)

4.1.1 Site Documenting

Zeyko olive oil building is an important piece of industrial heritage in North Cyprus which is located in the Northern coastline of Mediterranean Sea in Kyrenia.

The site has easy access from the Kyrenia-Guzelyurt main road and it is surrounded by the residential buildings and Mediterranean Sea. There is a vacant area at the South-West part of the building with the green vegetation. The most important opportunity of the site is amazing view of the sea shore, and view of the mountain from the other side.

According to the closeness of the site to the sea, the re-functioning proposals have a great opportunity for functions related with sea.



Figure 4.6: Site Plan of Zeyko Olive Oil Factory, Kyrenia (TRNC, Department of Land Registry)



Figure 4.7: Location of Zeyko Olive Oil Factory, Kyrenia (Google Earth, 2009)

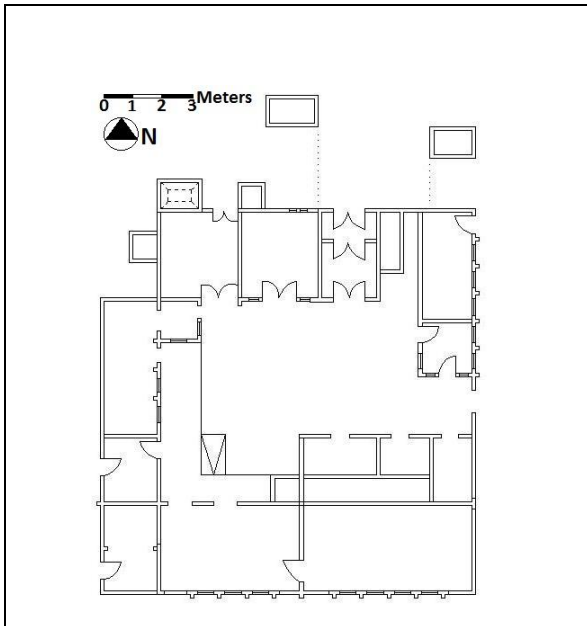


Figure 4.8: Schematic Ground Floor Original Plan of Zeyko Factory, Kyrenia

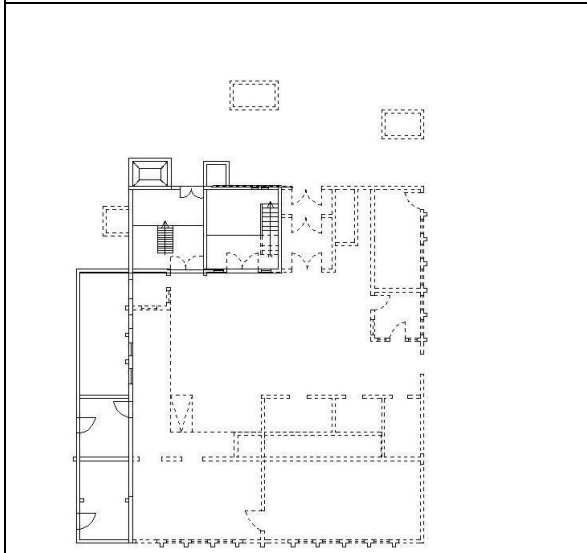


Figure 4.9: Schematic First Floor Original Plan of Zeyko Factory, Kyrenia

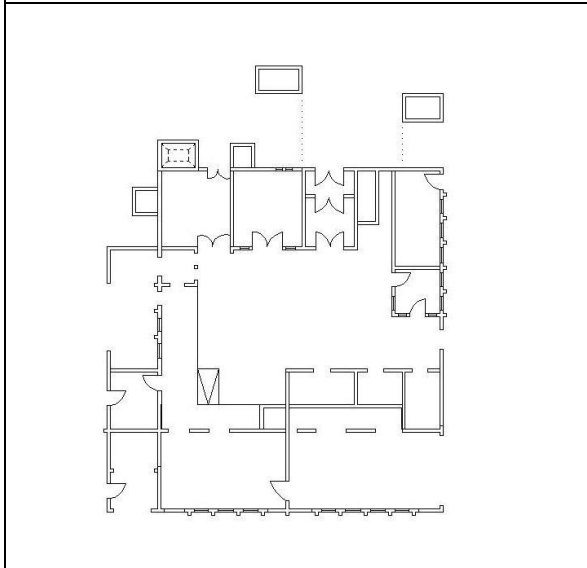
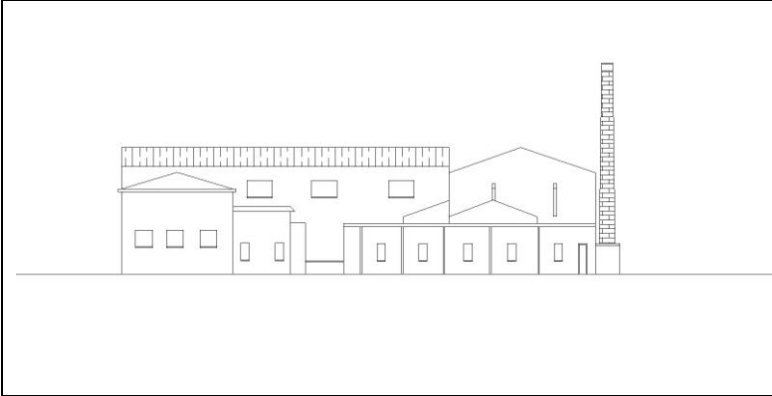
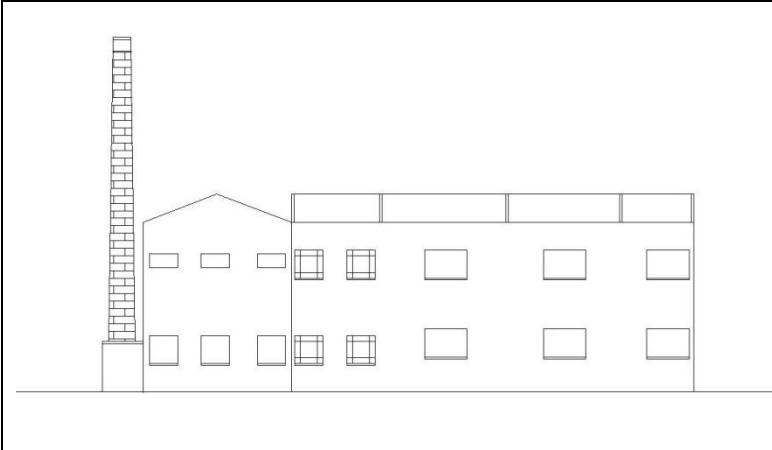
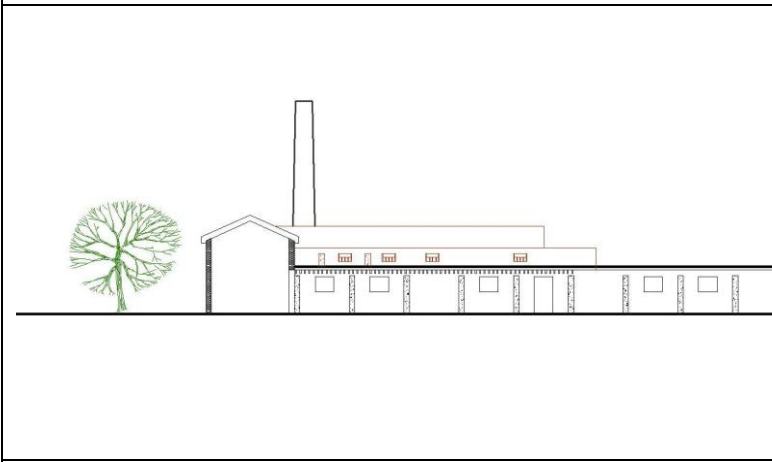
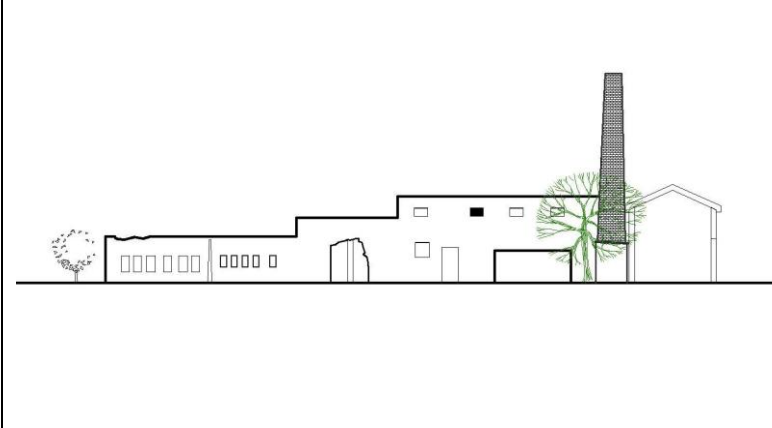
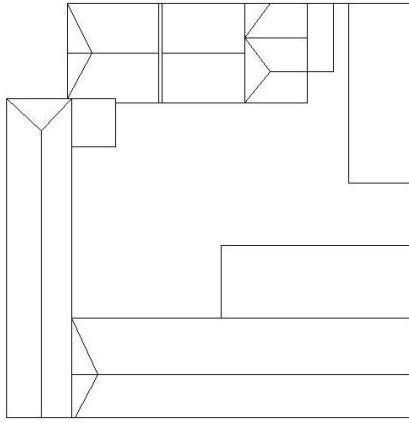
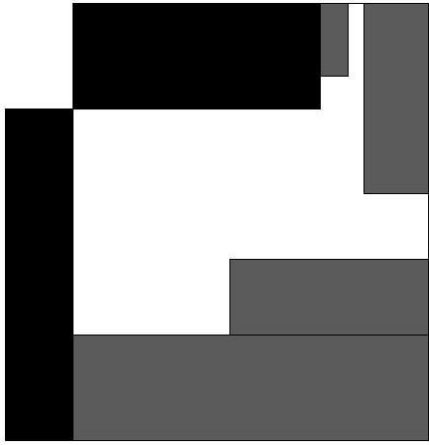


Figure 4.10: Schematic Ground Floor Demolished Plan of Zeyko Factory, Kyrenia

 <p>A schematic architectural drawing showing the north-east elevation of the Zeyko Olive Oil Factory. The building features a long, low profile with a series of gabled roof sections. A tall, slender chimney stack is positioned on the right side of the structure. The drawing is a simple line art representation.</p>	<p>Figure 4.11: Schematic North-East Elevation of Zeyko Olive Oil Factory Kyrenia</p>
 <p>A schematic architectural drawing showing the north-west elevation of the Zeyko Olive Oil Factory. The building is a long, rectangular structure with a flat roof and a regular grid of windows. A tall chimney stack is located on the left side of the building.</p>	<p>Figure4.12: Schematic North-West Elevation of Zeyko Olive Oil Factory Kyrenia</p>
 <p>A schematic architectural drawing showing the south-east elevation of the Zeyko Olive Oil Factory. The building has a long, low profile with a series of gabled roof sections. A tall chimney stack is positioned on the left side. A stylized tree is drawn in front of the building on the left.</p>	<p>Figure 4.13: Schematic South-East Evation of Zeyko Olive Oil Factory Kyrenia</p>
 <p>A schematic architectural drawing showing the south-west elevation of the Zeyko Olive Oil Factory. The building is a long, low structure with a flat roof and a series of gabled roof sections. A tall chimney stack is positioned on the right side. A stylized tree is drawn in front of the building on the right.</p>	<p>Figure 4.14: Schematic South-West Elevation of Zeyko Olive Oil Factory Kyrenia</p>

 <p>A schematic roof analysis diagram showing the layout of the roof structure. It features a central rectangular area with several smaller rectangular sections extending from the top and bottom edges, representing different roof levels and structural elements.</p>	 <p>A schematic height distribution diagram showing the vertical profile of the building. It consists of several solid black and grey rectangular blocks of varying heights and widths, indicating different levels and structural zones of the building.</p>
<p>Figure 4.15: Schematic Roof Analysis of Zeyko Olive Oil Mill Kyrenia</p>	<p>Figure 4.16: Schematic Height Distribution of Zeyko Olive Oil Mill Kyrenia</p>

4.1.2 Architectural Analysis of the Building

Architectural analysis includes structural system, space organization and openings which are the most important information to be analyzed before re-functioning the building. Extensions and the type of the structure are determined according to its new function and also new selected function will have effect on adding or removing any part of the building.

Structurally the building is constructed in different periods, thus the structure is different in one storey to two storey parts. Some parts are structured by reinforced concrete skeleton system. In the older parts of the building which are load-bearing, mud brick and stone has been used as construction materials. The roofs of the covered area are sloppy roofs and the covering material which does not exist anymore was constructed by wooden beams as a traditional material construction method. There are supported by load-bearing walls at certain points.

Space organization is done according to Cyprus vernacular architecture which generally includes a court yard and other parts around it have accessibility from this open space. In Zeyko olive oil factory building's spatial organization two different main entrances can be seen. One of the entrances is from the South-East façade through the courtyard and the other one is from the North-East façade.

Most of the windows of this building are oriented to the south and west. The main entrance which is directly connected to the open space is oriented to towards the road because of the accessibility of the road. The shapes of the openings are rectangular. In the façades of the building, due to the various needs, size of the openings are different from each other.



Figure 4.17: Demolished Main Entrance Of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)



Figure 4.18: Courtyard of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)



Figure 4.19: Former Machines Room of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)



Figure 4.20: Demolished Double Storey Part of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)



Figure 4.21: Deteriorated South-East Façade of the Zeyko Olive Oil Factory, Kyrenia (-Golamakani archive, 2009)



Figure 4.22: Rectangular Shape of the Window, Existing Rafter of the Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)



Figure 4.23: Deteriorated Mud Brick Load-Bearing Wall of the Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)





Figure 4.24: General View of exsiting Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)



Figure 4.25: Slopy Deteriorated Roof of Zeyko Olive Oil Factory, Kyrenia (Golmakani archive, 2009)

4.2 Value Analysis of the Building

Zeyko Olive Oil building, as an industrial heritage of North Cyprus, is the largest olive oil factory in the Island which is deteriorated and abandoned, while it is holding all the values of Industrial Heritage according to (2.3.2). Since it is a symbol of architectural, historical and cultural identity in North Cyprus, this building has important potential on the tourism attraction and also has a great potential for re- functioning. Zeyko olive oil factory has emotional value, cultural value and use value at the same time and it is valuable to be conserved and re-functioned for contemporary uses.

Zeyko Olive Oil Factory as an industrial heritage is a combination of technological, historical, cultural, social and architectural symbol in North Cyprus, which has deteriorated by time and has almost demolished. According to TICCIH (2003) “the motives for protecting the industrial heritage are based on the general value of these buildings such as cultural and architectural values rather than existence of the building.” As it is mentioned in (2.3.2) industrial buildings, values are categorized into three major headings; Emotional values, Cultural values and Use values which are considerable during the value analysis of Zeyko Olive Oil Factory.

The first value is always emotional, since it is a symbol of previous cultural identity and continuity, which is inherited from our past people and it shows where the human beings are coming from. Since this industrial heritage gives us a sense to know more about both the past life style and production style, it is valuable to be conserved.

Cultural values, deal with heritage resources and their present day status to be observed. Zeyko Olive Oil Factory as an industrial heritage of North Cyprus as a symbol of improvement of the society is the largest olive oil factory in North Cyprus and should be conserved for the Island.

Günçe and Hoşkara (2009) state that most of the industrial heritage in Cyprus which is spread in Northern part of Island has been faced with obsolescence due to abandonment and neglect, as well as natural damages. The authors evaluate the industrial heritage in North Cyprus under four main titles:

- 1) Location, land and architectural value (use value)

- 2) Resource and economic value (use value)
- 3) Social and cultural value (cultural/historical value)
- 4) Technological and scientific value (emotional value)

In this thesis the first two categories are handled under “use values”, whereas the third category is handled under “cultural values”; and the fourth is discussed under the “emotional values”.

4.2.1 Use Values

According to Hoşkara and Günçe (2009)’s classification, use values of industrial buildings in North Cyprus are defined into two categories. The first category is location, land and architectural values and the second category is Resource and economic values.

4.2.1.1 Location, Land and Architectural Value

Historic industrial buildings have played a significance role in the cities which they have been located, and they are representing the architectural and construction techniques of the period of time. Zeyko’s closeness to Kyrenia city is a very important feature in terms of location. Zeyko industrial building is located by the waterfront and remains as a symbolic part of the land with its original natural context; it is valuable for the people to know more about the architectural features of the period it was built. Also the quality of the architectural design has aesthetic values to be considered. Beside the silhouette from the sea and the opposite side of Bay is strongly affected by the existence of this building positively. The surrounding vegetation is another considerable point of the site. According to the closeness of the site to the sea, the re-functioning proposals have a great opportunity for functions related with sea.

4.2.1.2 Resource and Economic Value

In general longevity of building materials is longer than the longevity of its function. But in case of industrial building’s longevity of the function will be influenced by the

long life of the material of the building. According to the specific function and space requirement of the industrial buildings, they have been constructed with advanced techniques, and most of them are solid, and internal, and the internal space is not quite consistent with function. Zeyko industrial building as an example for the food processing industrial heritage of North Cyprus contains all the resource and economic values which are discussed. With the variety of closed and open spaces, large and small spaces as well as the existence of double storey as well as single storey masses, the building is flexible in use. (Figure20, 22) Beside, the openings and level differences provide another potential for flexibility in adaptive reuse.

4.2.2 Cultural Values (Social and Cultural Value)

Since the industrial heritages are representatives of the past people's life styles and production styles, they include their simplicity combined with their science; they have impressive effect on the improvement of the cities and city identity. Zeyko Olive Oil Mill as a witness of different stages of olive oil processing and production, it has been part of the economic life for North Cyprus and has a great role for the economic development of the society. The building has a very important symbolic value since it is reflecting the importance of the olive oil production for Cypriot life-style. It is the largest olive oil factory in North Cyprus.

4.2.3 Emotional Values (Technological and Scientific Value)

“Industrial heritages carry technological and scientific values in the history of manufacturing, engineering and construction.” (Hoşkara& Günçe, 2009) Zeyko Olive Oil factory is an example of the technology and use of the local/traditional construction materials and its exclusive techniques on the Island. As a British colonial effect, concrete and steel materials are used in the wide span area of the Zeyko industrial building. The photos from the active period of the factory show the

technology and tools of the production in that period. Unfortunately the original tools and machines do not exist anymore since they are sold to other factories in Turkey. The technological value is decreased in this case. However it is believed that a modeling from researches can reflect the original machinery image.



Figure 4.26: Main Court Yard of Former Zeyko Factory (Bağlarbaşı, 1982)

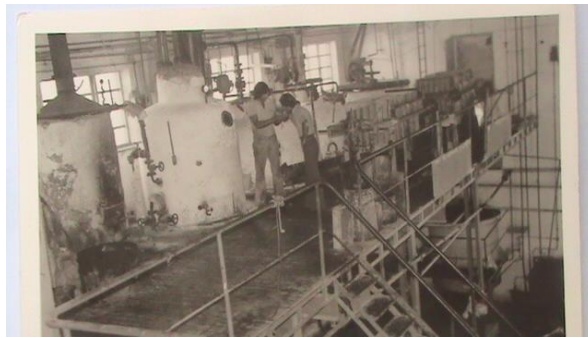


Figure 4.27: Machinery system of Zeyko Factory in Two Storey Part of the Building (Bağlarbaşı, 1982)



Figure 28: Oil Barrels of Zeyko Factory (Bağlarbaşı, 1982)

4.3 Re-Functioning Potential of Zeyko

According to the analysis of the building and the location of the site, size of the building and its accessibility, Zeyko Olive Oil Mill has a considerable flexible potential for conservation and new function. Since it is the witness of different periods of time and it is the symbolic existence of the Cypriot industrial production and carrying deep culture of Cyprus. The building represents the traditional architecture of Cyprus, industrial improvement of the Island and olive oil production/processing methods. Closeness to the Mediterranean Sea and vegetation of surrounding area is another important opportunity of the building which can be impressive due to its new function. The original function of the building should be represented after conservation.

Since there are lots of historical and industrial heritage existing in North Cyprus, it needs a strong budget to conserve all of them; thus the new function after conservation of old building has to be financially sustainable. As the building is delivering a combination of architectural aesthetic and technology of the time as well as a deep unique Cypriot culture and production from the past and it contains all the values which are considered above, Zeyko has to be converted to a public function to be easily reachable for people who are interested. The proposed functions can be mix use to provide both the continuity of the existing values by displaying/exhibiting the traces of the original function partially and at the same time introducing new functions to support the conservation financially.

- Since the original function of the building refers to the olive and olive oil as the most cultivated product and symbol of Cyprus, the ideal considerable new

function for Zeyko Olive Oil Factory can be a cultural complex, including Cyprus souvenirs shops selling local goods such as olive oil or all the products of olive, products of carob, sweets (*macun* in Turkish) and also handmade stuff. Displaying the olive oil processing in its original situation can be supported by exhibition of the way of producing the Cypriot products. Also this complex can include some guest's rooms including traditional activity parts to express the traditional environment for which they want to experience the traditional life style of Cyprus.

- The other ideal function for Zeyko olive oil factory in the light of its values can include art museum; art gallery, bookstore, library, art ateliers, bar and restaurant to take place in the functional list.

4.4 Recommendation for the Conservation of Olive Oil Mills in North Cyprus

After all observation and researches, since Olive is one of the most cultivated productions in North Cyprus, there are one or more olive oil mills in many villages. Unfortunately there is no written document to record them as an industrial heritage and as it is mentioned in 3.1 some of them are abandoned, neglect and deteriorated by different causes including natural reasons.

The first important step for conservation is documenting each one of them and analyzing them from different points of view. After documenting these heritages and value evaluation; conservation projects have to be designed by expert architects and professionals according to the contemporary conservation principles. Adaptive re-use and re-functioning them according to the society needs have to consider the recognition of the period of time. The original remaining of material and the

instruments has to be preserved whereas new additions should be readable as required in the Venice Charter (1964).

Giving a new function is another important dimension in the conservation of these kinds of heritages. According to the principles for conservation of industrial heritage in TICCIH which has been mentioned in chapter 2 (2.3.4), conservation of historical buildings should be carefully done.

According to Feilden (1994) the very important point of conservation is the values to be preserved, which has been discussed in chapter 2 (2.3.2) and categorized into three major heading such as emotional values, cultural values and use values.

According to the values the new function of the building is very important to include and keep all the important subjects. Also since the number of this kind of heritage is too much in North Cyprus, and conservation of all of them has high expenses for the government, new function should be decided accurately to include not only the meaning and the original character but also as a source to regain its own conservation expenses.

Therefore after full documentation of the existing condition, the building will return to the safe and functional conditions using the original traditional materials, tools and techniques where possible. Hence these heritages will keep their original character and will be completely protected for the future to show where they have come from.

Chapter 5

CONCLUSION

Closed factories as a part of industrial heritage are one of the most important heritages of each society. They have brought affective impression since they are holding the character of the past life style, and they should be preserved by conserving and re-functioning for the next generations. Since they have special values which are discussed in previous chapters such as cultural values, use values and emotional values; they are meaningful and worthy to be conserved.

This thesis is aimed on re-functioning potentials of industrial heritage of North Cyprus in case of Zeyko Olive Oil Factory in Kyrenia and for the conclusion of this thesis, new appropriate functions are proposed for this industrial building.

Historically Cyprus is an agricultural Island. The agricultural products in Cyprus are based on two categories, first is the precipitation based agriculture and irrigation based agriculture. Finest olive around the Mediterranean sea includes Cyprus because of emergence of olive oil mills in the Island as a part of the economy issue since Bronze Age. According to the researches about these olive oil mills around the Island in the Northern part, there is one or more than one mills existing in many villages which are generally deteriorated and abandoned. Olive oil processing in North cyprus can be classified into four categories according to their processing methods;

- 1) olive oil processing using traditional methods with no machines

- 2) olive oil processing using donkey/man power with the machines
- 3) olive oil processing using machines power
- 4) olive oil processing using contemporary machines.

Once the Island was part of the colony of British Empire she has been influenced by the industrial revolution which has started in Britain. After industrial revolution in late eighteenth century and early nineteenth century, many of industrial buildings emerged on the Island and with the changes in the industry, they were abandoned and deteriorated. Since the number of these mills is undocumented and there are many of them which are abandoned in many villages, the first important movement is to list them as industrial heritage and second step will be to create an organization for conserving them. Zeyko Olive Oil factory as a case study of this thesis is one of the most important food processing industrial heritage of North Cyprus, since it is the largest olive oil factory and has brought messages from the past for new generations due to the exclusive values. Zeyko Olive Oil Factory as an industrial heritage of North Cyprus is the witness of different periods of time and it is the symbolic existence of the Cypriot industrial production and it carries deep culture of Cyprus. The building represents the traditional architecture of Cyprus, industrial improvement of the Island and olive oil production/processing methods. According to the analysis of the building and the location of the site, size of the building and its accessibility, Zeyko Olive Oil Factory has a considerable flexible potential for conservation and re-functioning. Closeness to the Mediterranean Sea and flora and fauna of surrounding area are other important opportunities of the building which can be impressive for its new function. According to the International Charters focusing on this issue, it is advised that the original function of the building should be represented after conservation.

This unique example of Cyprus Industrial Heritage has been abandoned and deteriorated. The deterioration was due to many causes such as abandonment, neglect and natural causes as well as the processes to take our the machines which were sold to a Turkish company and have been sent to Turkey in 1995.

Since the industrial heritage is the complex of technological, historical, cultural, social and architectural activities, they have exclusive values which are mentioned in chapter 2 and should be conserved according to the main principles of conservation which are defined by TICCIH (2003). New function of historical / industrial heritage is an important issue which should be done after accurate investigation and should be supported by an expert team to provide the new function as well as keeping the original character of the building to express the context, technology and life-style of the past.

New functions for Zeyko Olive oil Factory are determined according to the values which include location and existing condition of the building which is unique and worth full.

Since the original function of the building refers to the olive and olive oil as the most cultivated product and symbol of Cyprus, the ideal considerable re-functioning process of Zeyko Olive Oil Factory has to include the below listed principles:

- The machinery system of the former function should be shown
- Original style of the period and age of the building should be preserved
- New additions should be readable and reflecting today's style
- The potential of the building and site should be used (all the potentials)
- Relation of indoor spaces and outdoor spaces should be kept

- Since it is the largest one, all different type of olive oil processing methods can be proposed as an exhibition by panels, slide show and photos
- New functions that should support the maintenance of the building have to be proposed.

Conservation projects have to be prepared for the industrial heritage on North Cyprus in the light of the above mentioned principles. The appropriate function for Zeyko Olive Oil Factory as a representative of food industrial heritage of North Cyprus is expected to reflect all tangible and intangible values of this industrial heritage.

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APPENDIX

Appendix A:

AVRUPA KONSEYİ	DOĞAL VE KÜLTÜREL VARLIKLARI KORUMA ENVANTERİ (D.K.V.K.E)			ANIT	ENVANTER NO:
TÜRKİYE	KÜLTÜR VE TABİAT VARLIKLARINI KORUMA GENEL MÜDÜRLÜĞÜ				
İLİ: Lefkoşa	İLÇESİ: DEĞİRMENLİK	MAHALLE / MEVKİİ: TEPE BAŞI	BLOK: B	HARİTA NO: XIII.59.43.00.1	
SOKAK VE KAPI NO:	PAFTA:	ADA:	PARSEL: 368	KORUMA DERECESİ: 1	
ADI: W.M. Jalisos	YAPTIRAN: W.M. Jalisos?	YAPIM TARİHİ: 19.yy	ÜSLUP: SİVİL MİMARİ		
Zeytinli Depirne	YAPAN:	KİTABE:	VAKFIYE:		
GENEL TANIM:	Yapın taşınmaz, tek katlı, kagir, bir zamlıdır. Süpürme suyu ile iletim yapısı yer değiştirilmiştir. Çatı cephesinde farklı duvarlar, 2 katlı kısımlar mevcuttur. Ön cephesinde kısıtlı kesimli bir parçesi ve alt katları yapılmış bir kısım duvarlar ile kilitli bir yapıdır. Çatı ve duvarların tamamı taşla kaplıdır. İçerideki duvarlar da taşla kaplıdır. Çatı ve duvarların tamamı taşla kaplıdır. Çatı ve duvarların tamamı taşla kaplıdır.				
KORUNMUŞLUK DURUMU: KÖTÜ	TASIVICI YAPI DURUMU: KÖTÜ	CEPHE DURUMU: KÖTÜ	ÖRTÜ DURUMU: KÖTÜ	İÇ YAPI DURUMU: KÖTÜ	BEZEME DURUMU: KÖTÜ
GÖZLEMLER:		Bakım ve onarım gerektiren yapıdır. Çatı ve duvarların tamamı taşla kaplıdır. Çatı ve duvarların tamamı taşla kaplıdır. Çatı ve duvarların tamamı taşla kaplıdır.			

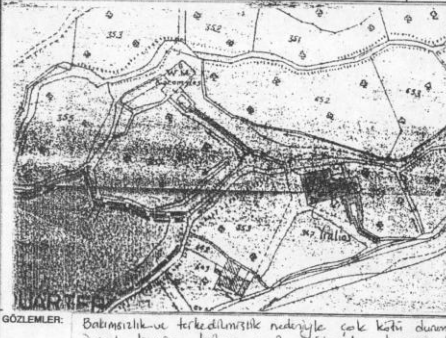
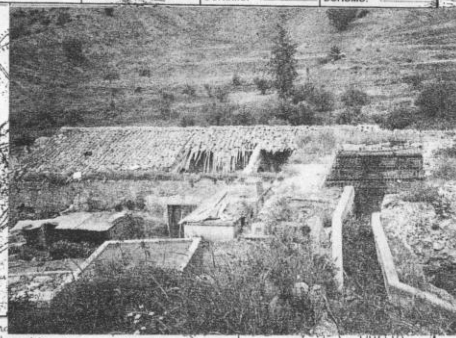



Figure A.1: Sample of the Land Registry Department document in Lefkoşa (Land Registry Department Archive, 2010)

AVRUPA KONSEYİ	DOĞAL VE KÜLTÜREL VARLIKLARI KORUMA ENVANTERİ (D.K.V.K.E)			ANIT	ENVANTER NO:
TÜRKİYE	KÜLTÜR VE TABİAT VARLIKLARINI KORUMA GENEL MÜDÜRLÜĞÜ				
İLİ: GİRNE	İLÇESİ: LAPTA	MAHALLE / MEVKİİ: BAŞPINAR		HARİTA NO: XI.23.02.E1	
SOKAK VE KAPI NO:	PAFTA:	ADA:	PARSEL: 67715	KORUMA DERECESİ: 1	
ADI: Zeytinli Depirne	YAPTIRAN:	YAPIM TARİHİ:	ÜSLUP: SİVİL MİMARİ		
	YAPAN:	KİTABE:	VAKFIYE:		
GENEL TANIM:	Yapın taşınmaz, tek katlı, kagir, bir zamlıdır. Süpürme suyu ile iletim yapısı yer değiştirilmiştir. Çatı cephesinde farklı duvarlar, 2 katlı kısımlar mevcuttur. Ön cephesinde kısıtlı kesimli bir parçesi ve alt katları yapılmış bir kısım duvarlar ile kilitli bir yapıdır. Çatı ve duvarların tamamı taşla kaplıdır. İçerideki duvarlar da taşla kaplıdır. Çatı ve duvarların tamamı taşla kaplıdır.				
KORUNMUŞLUK DURUMU: KÖTÜ	TASIVICI YAPI DURUMU: KÖTÜ	CEPHE DURUMU: 140	ÖRTÜ DURUMU: KÖTÜ	İÇ YAPI DURUMU: KÖTÜ	BEZEME DURUMU: KÖTÜ
GÖZLEMLER:		Çatı ve duvarların tamamı taşla kaplıdır. Çatı ve duvarların tamamı taşla kaplıdır. Çatı ve duvarların tamamı taşla kaplıdır.			

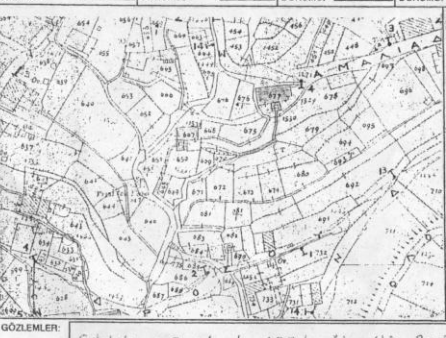
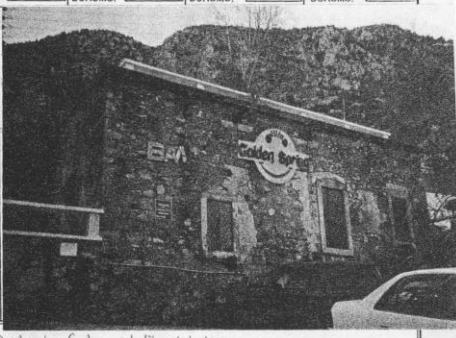



Figure A.2: Sample of the Land Registry Department document in Lapta (Land Registry Department Archive, 2010)

Appendix B:

The classification is based on the Ministerial Regulation 1992 (B.E. 2535) issued pursuant to the Factory Act 1992 (B.E. 2535)

- ▶▶1. Factories engaged in tea or tobacco preservation
- ▶▶2. Factories engaged in other agricultural produce
- ▶▶3. Factories related to rock, gravel, sand, or soil for construction
- ▶▶4. Factories related to animals other than aquatic animals
- ▶▶5. Factories related to milk and dairy products
- ▶▶6. Factories related to aquatic animals
- ▶▶7. Factories related to oil from plants or animals or animal fats
- ▶▶8. Factories related to vegetables, plant and fruits
- ▶▶9. Factories related to plant seeds or plant bulbs
- ▶▶10. Factories related to food from flour
- ▶▶11. Factories related to sugar made from sugar cane, beech, stevia or other sweetening plants
- ▶▶12. Factories related to tea, coffee, cocoa, chocolate or sweets
- ▶▶13. Factories related to food seasoning or food ingredients
- ▶▶14. Factory engaged in ice making, ice cutting, ice sawing, ice crushing or ice grinding
- ▶▶15. Factories engaged in animal feeds
- ▶▶16. Distilleries or liquor blending houses
- ▶▶17. Factories producing ethyl alcohol (excluded production from extracted sulfide for pulp mill)
- ▶▶18. Factories making liquor from fruits or other types of wine (excluded those related to malt and beer as per Factory Type 19)
- ▶▶19. Factories engaged in production of malts or beers
- ▶▶20. Factories making non-alcoholic drinks or soft drinks

- ▶▶21. Factories related to tobacco, compressed tobacco, pipe tobacco, chewing tobacco or snuff
- ▶▶22. Factories related to textiles, yarn, or fiber (excluded asbestos)
- ▶▶23. Factories related to textile products (excluded apparel)
- ▶▶24. Factories weaving fabric, lace or apparel with yarn or fiber, or bleaching and dyeing or finishing of fabric, lace or apparel woven with yarn or fiber
- ▶▶25. Factories making garments or carpets by means of weaving, intertwining, embroidering, or interlacing (excluded those made of rubber or plastic which are not linoleums)
- ▶▶26. Factories related to ropes, meshes, fishnets, seines
- ▶▶27. Factories related to non-woven or non-knitted products

- ▶28. Factories related to apparel (excluded shoes)
- ▶29. Factories fermenting, eviscerating, roasting, pulverizing or grinding, tanning, polishing and finishing, embossing or paint-coating of animal hides
- ▶30. Factories combing, cleaning, bleaching, dyeing, polishing or dressing of fur
- ▶31. Factories making carpets or utensils from leather or fur
- ▶32. Factories manufacturing products or parts of products (excluded apparel or shoes)
- ▶33. Factories producing shoes or parts of shoes (which are not made of wood, skimmed block rubber, extruded rubber or extruded plastic)
- ▶34. Factories related to wood
- ▶35. Factories producing containers or utensils from bamboos, rattans, straws, reeds, or water hyacinths
- ▶36. Factories related to wood or cork products
- ▶37. Factories producing household furnishings or furniture for buildings from wood, glass, rubber, or metals (which are not extruded plastic), including their parts
- ▶38. Factories producing pulps or paper
- ▶39. Factories producing packages from all kinds of paper or from fiberboard
- ▶40. Factories related to pulps or cardboards
- ▶41. Factories engaged in printing, document file making, binding, making a cover or decorating printed matters, making metal mold

- ▶42. Factories related to chemical products, chemical substances, or chemical materials (which are not fertilizers)

- ▶43. Factories related to fertilizers or pesticides

- ▶44. Factories producing synthetic resin, elastomer, plastic, or synthetic fiber (which are not fiber glass)

- ▶45. Factories related to paints, varnishes, shellacs, lacquers, or patching or caulking products

- ▶46. Factories related to medicines

- ▶47. Factories related to soap, cosmetics, or body beautifications

- ▶48. Factories related to specified chemical products

- ▶49. Petroleum refinery

- ▶50. Factories related to petroleum, coal, or lignite products

- 51. Factories producing, repairing, retreading, or remolding inner or outer tyres for vehicles driven by machines, manpower, or animals
- 52. Factories related to rubber
- 53. Factories related to plastic products
- 54. Factories producing glass, fiberglass, or glassware
- 55. Factories producing porcelains, earthenware, ceramics, including their materials preparations
- 56. Factories manufacturing bricks, tiles or tubes for constructing metal crucibles, architectural terracotta, grooves in the furnace or chimney stacks or fireproof materials from clay
- 57. Factories related to cement, lime, or plaster
- 58. Factories related to non-metallic products
- 59. Iron and steel basic industries (smelting, melting, casting, rolling, drawing or producing of iron and steel)
- 60. Non-ferrous metal basic industries (smelting, melting, casting, rolling, drawing or producing of non-ferrous metals)
- 61. Factories manufacturing, embellishing, modifying, or repairing tools or devices made of iron or steel, including their components or equipment
- 62. Factories manufacturing, embellishing, modifying, repairing household furnishings or furniture for buildings that are made or mainly made of metal, including components or equipment
- 63. Factories related to metal products for construction or installations
- 64. Factories related to specified metal products
- 65. Factories manufacturing, assembling, modifying, or repairing engines, turbines, including their parts and equipment
- 66. Factories manufacturing, assembling, modifying, or repairing agricultural or animal husbandry machines, including their components or equipment
- 67. Factories related to machineries, machinery components or accessories for woodwork or metalwork

- ▶▶68. Factories manufacturing, assembling, modifying, or repairing machineries for paper industry, chemical industry, food industry, pipe production, printing, cement or clay productions, construction, mining, petroleum drilling or oil refinement, including their components or accessories
- ▶▶69. Factories producing, assembling, modifying, or repairing calculators, accounting machines, punching machines, digital or analog computers or associated electronic data processing equipment or accessories, typewriters, weighing machines (that are not used in the scientific laboratory), copiers (which are not the photocopiers), including their components or accessories
- ▶▶70. conditioners or air ventilators, sprinklers, refrigerators or their components, vending machines, cleaning machines, washing machines, dry cleaning machines, ironing machines, sewers, mechanical transmitters, elevators, cranes, lifts, escalators, trucks, tractors, industrial trailers, stackers, furnaces, kilns, oven or stove that are not electrical-activated, including their components and equipment
- ▶▶71. Factories manufacturing, assembling, modifying, or repairing electric machineries or products listed in Factory Type 70, electric motors, electrical generators, transformers, electric switches or controls, electric panel instruments, electric diverters, electric transmitters, electric control machines, or electric welders
- ▶▶72. Factories manufacturing assembling, modifying, or repairing radio receivers, television receivers, transmitters or sound recorders, phonographs, dictation recorders, tape recorders, video players, video recorders, discs, recorded magnetic tapes, cord or cordless telephones and telegraphs, radio transmitters, television transmitters, transceivers or sensory devices, radars, semi-conductor or related sensitive semi-conductor devices, fixed or variable electronic capacitors or condensers, radiographic machines or radiographic tubes, fluoroscopic machines or fluoroscopic tubes, or X-ray machines or X-ray tubes, as well as manufacturing equipment for such electronic devices
- ▶▶73. Factories manufacturing, assembling, or modifying electric tools or utensils not listed in any sequence including their components or equipment
- ▶▶74. Factories related to specified electrical appliance or equipment
- ▶▶75. Factories related to ship or shipwork
- ▶▶76. Factories related to trains, streetcars, or cable cars
- ▶▶77. Factories related to automobiles or trailers
- ▶▶78. Factories related to motorcycles, tricycles or bicycles

- 79. Factories related to aircrafts or hovercrafts
- 80. Factories manufacturing, assembling, modifying, or repairing wheeled vehicles propelled by human or animal powers (that are not bicycles), including their components or equipment.
- 81. Factories related to scientific or physical equipment or instruments
- 82. Factories manufacturing tools or instruments for eyes or visual acuity test, lenses, light-activated tools or instruments, or photocopiers
- 83. Factories producing or assembling timepieces or parts of watches or timepieces
- 84. Factories related to diamonds, precious stones, gold, silver, alloy of gold, silver, and copper, or gems
- 85. Factories producing or assembling musical instruments including their parts or components
- 86. Factories producing or assembling equipment or apparatus for sports, body exercise, billiard, bowling, fishing, as well as their parts or components
- 87. Factories related to playthings, tools or devices that are not listed in other Factory Types
- 88. Factories producing, transmitting, or distributing electrical power
- 89. Factories producing gas (which is not natural gas), transmitting, or distributing gas.
- 90. Factories supplying water, purifying water or distributing water to buildings or industrial facilities
- 91. Factories related to a packaging process (which does not involve any production process)
- 92. Cold or refrigerated storage
- 93. Shoes or leather repairing factory
- 94. Electrical appliances, domestic or personal appliances repairing factory
- 95. Factories engaged in servicing motor vehicles, trailers, tricycles, bicycles, or their components

- 96. Factories repairing clocks, timepieces, or accessories made of diamond, precious stone, gold, white gold, silver, alloy of gold, silver, and copper, or gems
- 97. Repairing factories (which are not mentioned in any Factory Type)
- 98. Factories for laundering, dry-cleaning, cleaning, ironing, pressing, or dyeing of apparel, carpet, or fur
- 99. Factories producing, repairing, modifying, or changing the form of firearms, ammunitions, explosives, weapons or other articles capable of killing, destroying or disabling in the same manner as firearms, ammunitions or explosives, including their components
- 100. Factories engaged in dressing or changing appearance of any product or its components (without any production involved)
- 101. Central waste treatment plant
- 102. Factories producing and/or distributing steam
- 103. Factories related to salt
- 104. Factories manufacturing, assembling, modifying, or repairing boilers or boiling container using liquid or gas to conduct heat, pressure vessels, including their components or equipment
- 105. Factories related to sorting or landfilling of industrial wastes
- 106. Factories engaged in recycling of industrial wastes or used industrial products
- 107. Factories making CDs, products for electronic data, sound, and image recording readable by a device requiring high-powered light sources such as laser, a disc, a magnetic picture recording tape, a magnetic sound recording tape, and a magnetic picture and sound recording tape, be it in the form of recorded products, re-recordable products, or non-recorded products. (URL I)