



The necessity of assessment of new technologies(new building materials) emphasizing the environmental factors.

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Abstract:

People s' attempts frequently were to use the best from what they have in order to access maximum level of tranquility. With regards to the issue about saving energy, environmental manifestations(environmental problems are one of the most basic difficulties in today ' s world) saving time and energy, using new technologies and building materials is more necessary than any time because using them is an appropriate way for well utilizing of natural sources beside having a nice and modern landscape. We should also mention disadvantages beside the advantages including: absence of chance of economic capitalization in the country, lack of paying budgets and facilities to them, weakness in performance and other things that we will mention in article. Therefore, from the view of architecture, environment and economics considering the things have been done, we need to pay more and more attention to this field. The method of article is quantitative. Ways of gathering data is from library books, documents and evidences with evaluating and assessing different aspects. So in this article, first we will state the history of the survey and then technology and other things will be discussed. The endeavor of this article is saying subjects which can help the improvement of construction industry by using new technologies and building materials with preserving environment. In this article, these things are of main factors in increasing the value of consruction projects and reducing the bad effects of them on environment. It is worth mentioning that in this survey we explain some methods that can help effective use of more and more from these technologies.

Keywords: new technology, new building material, environment, economic capitalization, architecture, technology.



Introduction:

New technologies and building materials were both able to eliminate user 's expectations and had appropriate effects on people' s minds. Using new technologies and building materials cause increase in performance and utilizing and decrease in the fields of time, expenses, energy using and additional load of building. Although using new building materials that are proportional with construction with using environment can help the sites from the view of urban area, it can cause positive, social, educational, economic and so on effects on the dwellers' lives. In this article after stating the history of technology, construction and environment industry, energy, aims of new technology and building materials and so on in the world and in Iran, we mention the need of today 's world to new and appropriate technologies for environment, table of methods and conclusion. The endeavor of this article is saying matters that can improve construction industry by using new technologies and building materials with preserving environment. Researches about this issue based on what the center of consideration and planning of Tehran has been said show that people are entering a new period of their lives and are more sensitive about some issues in contrast to the past. The new look of people about preserving the environment and saving energy is the outcome of this new opinion and the shape of modern constructions that are suitable for the necessities of today ' s people is not only for their different design but also the performance and the types of materials which have been used are effective.

After knowing these technologies and materials, we can make changes in different fields for example architecture. Then we can eliminate many people's needs and expectations with architecture that is in corporation with environment. This issue is an educational publication in order to respecting the environment and preserve it for future. Based on what Mohsen Sartipipour has said, using correctly from materials in a construction need knowing basic characteristics, technical and according to standards and national rules which are based on physical, mechanical and chemical features with prevention of harming the environment. As time passed, urban sites and in conclusion urban lives have been changed and developed so it is necessary that this change done in technologies and building materials, too. Also using from wrong methods of constructing is not suggested for they can cause unsafe systems. For having correct construction and preserving environment, developed countries besides noticing to establishment and improvement of new technologies have planned about them, identified the needs and use them in different job levels in construction in the community. Constructing buildings are always a safe shelter for new technologies and building materials and always cause improvement in both this field and nature. Thus industrialization and using new technologies should not have a little portion in developed countries. Architecture must be as a guide in establishment and performance of new methods in community. The most important goals of this article are saying the importance of using new industrial technologies in architecture and



construction beside using correctly from environment, assessing advantages and disadvantages of them, improvement of using energy, effectiveness of expenses and time for using them.

History in the world:

In the first stage of industrial revolution, constructional techniques changed but nonsensible to other fields. In one side, we had ancient building materials like stone, brick and wood that had better quality and easy using but on the other side, we had new materials like cast iron, glass and after them cement. Scientific improvements make the use of materials more measured and dependent on identical resistance. With improving the quality of workshop equipments, using from machines in workshops become common. By developing geometry science, it becomes possible to introduce various parts of building by drawing. Establishment of professional institution bring lots of people to workplace and publishing industry and new methods of increasing plans soon make this changes available to all the people(Banevalou,1384). Always there was a close and historical relation between building materials and architecture until in 20th century that the role of materials and technologies in architecture become more important(Gorji Malabani, Yousef and Hajaboutalebi, 1388). According to what Mostafa Kiani says(1383), in the early 20th century concrete introduced as a new building material and using it for the first time was done in America in the name of “ Ernest Lesli Rensam” and in Europe in the name of “ Feranswa Henbik” a french capitalist. The first constructional digital techniques were used in 1920s and in industry. Ford car factory for its enterance to the numerous personality, use from industrial production tools and is one of these techniques(Niemeijer, 2011). Lokoborzooyeh, Fooler and Foster were the first who enjoy the industrial method in architecture. Every period in architecture is related to researches about construction in industry(Corbusier, 1986). Ghobadian says that mechanic house is suitable for life and by saying it expresses the relationship between architecture and industry. Researches about automatic control of machines makes it possible for new improvements in industry and architecture(Liu, 2009).

Based on what Abbas Ali Izadi, Alireza Fazel, Ramtin Khalatbari and Sara Akoochian(1393) have said, the ever-increasing development of computer and industry and also genesis of computer in 1960s, open a new shutter to architectures and they become more and more eager for using new materials in order to solve their problems in desingnig, construction and projects. In the early 1980s, in the spectrum of desingning and construction of buildings, we saw innovations in the using new and effective building materials. In the way of growing, the ability of materials became better and better every day and people see new building materials in the construction field(Golabchi, Mahmoud and Taghizadeh, Katayoun and Soroushnia 1390). Yanniss Bakos ,Spiro N. Pollalis can state a three stages model of stages in designing in the goal of create opinions that can understand the stages of desingning in 1987 and probably this leads to supporting former technologies(Mazaffar, Farhang and Khakzand 1387). According to what



Adington and Schoodk in 2005 have said, in 21 century using new materials including intelligent materials in architecture become popular which have flexible characters and their appearance and internal part of them change in response to physical, chemical influences in a revocable way(2005,Addington & Schodek).

History in Iran:

In the view of Azadeh Vaziri(1392), there was no place for using new materials in construction in Pahlavi era and they use ancient methods with materials like sun-dried brick and clay. Gradually in ancient architecture of Iran they use new materials and factors(for composing it with European new architecture). The thing we can understand from what Mohammad Mehdi Mahmoudi and Katayoun Taghizadeh have said is that in 1317, the views of early graduates of this major was a composition between the professor 's opinions and their thoughts and experiences personally and environmentally that made the new art and science. From the aspect of thought, the identity and art was not from west and also was not the Iranian genuineness but in the part of technical and technological we can say that it composite western science and Iranian experience well. Based on what Vitorio, Maniago and Lampouniani(1388) have said, the biggest building in this period for the first time is metal that is the ceiling of government leaning in the time of the king Naserodin Ghajar. Also in Shamsolemeh building, there are some pillars which made of cast iron and are just for decoration(which imitate from Europe). Many of aspects of beautifulness and decoration which were used in external walls of buildings disappeared from the buildings in the period of second Pahlavi and this cooperate with the disappearance of the buildings which exist(Vaziri, 1392). In recent years from the sayings of Alireza Endelib(1386), advanced technologies and modern engineering(new materials and style) have been used in improvement of old constructions in Tehran city which are based on speed, accuracy and quality in order to exceed the renewing and reduce its expenses.

Technology:

In electronical dictionary of Moein, this word means technology, the knowledge to industries and professions and all technical and specialized terms. In the whole life, a person is in searching science and wisdom so as to reach to perfection. Thus technology causing improvements in people 's lives in all scientific fields(Kohan, Hoda and Farrokhzad 1391). In recent decades, a lot of surveys have been done about construction industry that are sources for innovations in technology(Ghahremani, 1387). According to what Masoud Modabber and Ali Asgari said(1393),the connection of material and technology is the outcome of creativity in desinging construction and new technologies in building. This connection exist in architecture of many countries in the world and gradually after the changes in today 's period, attention to both construction and architecture caused using new constructional technologies in architecture and advanced methods of constructing in performing the buildings. As Mahmoud Golabchi says, by



using new technologies in constructing engineering and change in building methods we can achieve ease in different parts of working in this field.

The necessity of using new technologies:

As Azadeh Vaziri(1392) has said, the new shape of today 's buildings that is suitable for the needs of people, is not only because of different desingning but also for the shape of performance and types of materials which have been used in buildings. The new developments show increasing eagers to various new materials and techniques that by using them, all the ideas that were some day impossible, become possible. According to manifestation of Arash Ghahremani(1387), endeavours have been done for developing the industry of construction in Iran like industrial production and/or the technologies that import from developed countries which failed and in the other hand, common methods in Iran construction industry specially house will not respond the needs of growing population so we should use new technology in construction industry.

Construction industry and environment:

As time passes and by growing in different fields in science, environment and natural sources have taken a lot of attentions in all the industries and human who used the nautre and natural sources just for biological welfare and promotion of quantitive goals in industry, comes to this conclusion to preserve the environment more and more. The construction industry import lots of damages to the environment and nature(the research and development part of Rasis company,1392). Based on what Mahdiyari Gharavolbashi, Bahram Karami and Atiyeh Saharkhiz have said, inflexibility of modern buildings in 21 century, using technology and inrenewable energies in providing heat and cold and light, make lives of people on the earth into trouble. So in the international plans for improving use of new materials, a key role is dedicated to renewable energies. Unfortunately, great supply of fossil fuels, the unexpensiveness and the high cost of new technologies for primary capitalization, make a barrier in front of developing use of these new technologies. From this opinion, a change about improvement and production of constructional materials for controlling and compensating detriments must be emphasized by planners. In conclusion, it is necessary to find actual and enforseable methods for accessing this elements.

Mohammad Ali Abdoli(1380) says that the wrong methods of constructing in society make our surrounding environment sick and make an unsafe biologic system. For true construction and preserving environment, the materials which have been used in building play a very important role and can preserve the environment more and more. The increasing needs in construction part and constructing system need to change in style. In such situation, we need to use new



technology in construction industry for speeding to constructing(Kalantar, Amir Ehsan and Kalantar 1393).

The industrial constructing of building:

Today the industrial constructing of building means using modern methods of designing, planning for production and control and also the process of mechanical and automatic production and is using technologies to replace worker with machine. Such phenomenon happens naturally in workshop, company or a mentioned site. Meantime machines replace the workers(Sarja ,1998). From what(Mokhtari Taleghani, 2011) has been said, the state of architecture done by technology. A brief explanation from Ehsan Eskooian and Mohammad Bazrkar about technology(1385) state that technology include the process of produce, think about how to build and materials and constructional techniques and systems. One of basic elements of performance of an architectural construction is technology and is divided into two groups: 1- classic technology(based on native culture) 2- modern technology(the new scientific insight of society). According to what Naser Sobati Sani has said(1392), technology was a tool that can made buildings like Plasko in Tehran in 1330s with using steel skeleton and no extra decoration and showing the construction of building in appearance that was the characters of this 14 floor building. The other examples were the bank of working on Hafez street, Hilton hotel and other high buildings. Sardar Afkhami one of the greatest Iranian architects believed we should use new technology and without it, we can not make a suitable place.

Green technology:

The word technology in electronical dictionary of Dekhoda means studying of arts, technology, machines, primary materials, equipments and scientific methods which used in a special field. What have been stated about green technology by Seyedeh Hadis Sedigh Ziyaberi(1388), is an action for solving problems which natural resources before, after and during the process of production and construction, damage very little. In addition, materials were useful and disposable. Using from native elements of architecture, using green space for preserving the environment and so on are the outcomes of green technology.



Differances between industrial and modern construction(Warszawski ,1999):

Modern construction	Industrial construction
Constructing is done in different temporary places.	All of the constructing is done in one permanent place.
Long duration of a special project.	Less to medium duration of a product.
Less standardized, every project has different aspects.	High level of repetition and standardization.
A lot of responsibilities need lots of manual skills for completing the especial construction project.	Some limited and simple responsibilities need for producing a fixed product.
Each activity is done in a expanding workplace by workers who are going from one place to another.	All of the responsibilities are done in a fixed working station.
Severe and unpleasant workplace.	The workplace is chosen carefully according to people 's needs.
A lot of changes in workers.	In contrast, having unchangeable workers.
Power of making decision is devided between supporter, desingners, native government, total contractor and part contractor.	Power of making decision for the unit of design product and marketing.

Construction industry not only needs suitable materials but also needs suitable technology in order to be able to preserve energy resources and reduce expenses. The industrial constructing systems respond more and more to constructing techniques for usual rules in using green areas(Outhred and Graham ,1995).

Energy:

From what Hasan Sajadzadeh, Fatemeh Gholami and Javad Ghotbzadeh(1394) have been said, life is becoming machinery by developing technology, industrialization, improving science and so on and environment and energy sources are today ' s concern of us. According to what Ali Pezeshki(1393) has been said, buildings as most crowded elements of rural and urban sites, are one of causes of biological pollution. Thus, it is necessary to increase the number of buildings which are more in harmony with the nature and cause less damages to the environment. True direction and settlement of building, appropriate designing, deserving performance with desirable materials, using appropriate constructing equipments with improving science and getting necessary information about new constructing and installing materials and ways of reducing energy use in buildings are important responsibilities of constructing engineers as the most important factors in constructing building. Also budget must be dedicated for buildings in



order to use new equipments and technologies. Preserving energy: Buildings should be built so as to use of fossil fuels in them became limited. Because of the variety of new materials and technologies nowadays, this thing is forgetting in constructing. Also this thing is necessary for appreciating our natural gifts.

Table of advantages and disadvantages of new technologies in constructing buildings(Writer, 1396):

Advantage	Disadvantage
1-increasing the speed of constructing buildings.	1-lack of economic capitalization in country.
2-increase the firmness duration use of new construction materials.	2-lack of budget and facilities which dedicated to this.
3-increase the number of buildings that use this new systems and technologies.	3-lack of recognition of new technologies totally.
4-increase lightness of building.	4-less reinforcements for using these technologies.
5-increase job position for educated people in the field of construction	5-lack of attention to different regions in using materials.
6-increase the quality and resistance of building.	6-lack of specialization(weakness in performance).
7-increase causing new forms.	
8-increase the variety and visual beauties.	
9-reduction in polluting the environment.	
10-reduction in waste of energy.	
11-reduction in expenses.	
12-reduction in wasting materials.	

In this table we mention to things like speed of constructing buildings, lightness, reduction in pollution, reduction in expenses and so on for stating the advantages of using new technologies beside stating disadvantages of them which include lack of economic capitalization about this in country, lack of specialization, lack of attention to different regions in using materials, lack of recognition of new technologies and so on. Drawing this table can help to more recognition and increase knowledge of users and performers of this field. Stability of human and environment depends on keeping balance and continuance with the world which this needs taking responsibility for human in recognizing resources and have a cautious operation in regulating his connection with the environment(Seddigh Ziabary, 1390).

Using new technologies in architecture:



As modern architecture has been formed without attention to architecture which is in harmony with the region and even cause using more from fossil fuels and is not adopted with people ' s behaviors and habits, using new technologies in buildings which were in harmony by their surrounding was necessary(Abbasi, Mohammad Reza and Tahbaz, Mansoureh and Vafai, Rahil 1394). By architecture, we can inform people of economic environmental and so on desirability and value(Askari, Ali and GhasempourAbadi 1391). Creative architectures can improve new materials and products for special applications in architecture and can cause a new industry in architecture based on new materials and in conclusion architectures are designers, performer, producer and constructor of buildings(Addington & Schodek, 2005).

Green buildings or those which are adopted with the environment:

In recent years green buildings were associated by new designs and technologies that this cause reduction in pollution inside and outside of buildings. Green buildings present a sample of living by saving energy and natural resources which are common under the name of buildings adopted with the environment. In this constructions, there is this possibility for optimal use of natural valuable resources beside effective and disposable constructing materials. By spreading constructions which use green technology in different parts and happiness of construction specialists, the need to a plan and using new materials in constructing is necessary(Tabeshpour, Mohammad Reza and Movvahed nia 1393). Based on what Fatemeh Ghasemi and Ehsan Pahlevan(1392) have said, future buildings should increase output and safety and prevent wasting energy by using new materials and creating a more safe place. Despite the problems in the field of architecture(increasing the constructing expenses, city pollution and so on) and the direct effect of them on buildings, it is necessary to take more attention to new technologies and their role in saving energy in buildings.

The goal of new materials and technology in construction:

New materials according to what Elaheh Sadat Hashemi and Sara Dadras(1387) have said, are multiple and high functional materials(have new and different features for various uses). For example, we can mention to light materials in this area like: light concrete or new constructing stones by the name of Sement plus and so on. According to what Mohammad Mehdi Mahmoudi and Sahar Nabavi(1390) have said, using new technologies beside region designs help to stable improvement and needs of next generation. Pre-design plans are important in reducing negative effects of construction on the environment. In this stage, attention to regional changes is essential in choosing the place. In this situation, the building connect with its environment in the best way and make less damage to the environment. In designing stage, it is essential to notice to regional characters for saving energy. By using developed technologies in construction and architecture with new materials from one side it is a situation for proving architecture' s special ideas and designs and on the other side, different societies are encountered with the challenge of






environmental pollution and high using energy for the use of these new materials and technologies(Molanayi, Slaheddin and Soleimani 1393).

As Mojtaba Naderi said, using materials which are adopted with nature and multiple designing for using energy and optimal design of internal and external part of buildings are part of performing process that the final goal of it is using from environment and expense in building which have these environmental effects: correct repelling of sewage, omission of materials and products which cause damages to human and environment in the site of building and make construction materials disposable.

Present world and the need to suitable materials for environment:

Present world needs to the kind of materials which are suitable for environment. In designing and constructing buildings, one of the basic elements of reconstruction engineering is the element of economic explaining. During the last 50 years, world economy has a lot of changes. Factors like improving messaging technologies, reduction on commercial obstacles and reduction on obstacles about foreign capitalizations are the important reasons of this changes. Developing world economy causes some disorders about the environment. Lack of legal suitable forms in support of environment by multiple commercial systems are also important factors in lack of attention of countries to environmental problems(Shekarchi, Mohammad and Mirzai).

Stages of reaching from need to adopted construction with the environment(Writer, 1396):

- 1- The need to construction with is adopted to the environment  2- choosing new suitable technology and materials 
- 3- using new suitable technology and materials with suitable method  4- making a construction adopted with the environment

Materials are the central nucleus of construction and a lot of humans are involved with them. With studying process of making products and materials and their function, we came to this conclusion that these materials and products, gradually erose and invader environmental factors(like light of sun and moisture) damage them that only by using suitable methods, we can preserve them(Ashby & etl, 2009).



Table of stating methods(Writer, 1396):

Case	Method
1-education	By education and increasing knowledge of people in community about profitable effects of using new technologies and materials in reducing use of different kinds of energy and saving capital and penetrating this to people' s culture.
2-investigation	Improving functional investigations about new technologies by using specialized ability of related organizations like the center of science and technology and also universities.
3-architecture	Using new technologies and materials in making more tools and equipments and with better quality for reducing environmental pollutions like making new nano filters in the exit of air pollutants. Using developed technologies and providing them with less expenses in constructing public places like mosques, center of training of thought, squares(for making city more beautiful) and so on.

In contrast, what we understand is that in the field of education our method is getting information and increasing knowledge of people. In the field of investigation, we mention to functional investigations by using the centers of science and technology. One of the related things in the architecture part in this table is constructing public places like mosques and so on by using new technologies.



Conclusion:

By passing time and developments in science and different technologies in all fields and industries like construction industries (regarding different and a lot of damages of them on the environment) beside attention to the environment and its sources, looking to this thing is important. Natural sources are valuable elements of living that irregular use of them has inalienable effects for all the people. Qualified and quantified needs in this field show using these new methods and technologies (like materials) and we can not achieve these things by using previous methods. So we can understand the necessity of using new technologies in this field. Previous experiences show that by using these methods in developed countries can have suitable and successful solutions. Of course this thing needs to studying and regarding technical, performing, economic, educational and social conditions of that society and we should provide essential fields in places and considering new technologies. Based on subjects that mentioned we can say that using new technologies and materials is an effective step for saving energy, reducing environmental effects and preserving sources of it, causing new forms, increasing visual beauty and so on and attention to things is essential for engineers and users for achieving their goals by using methods like reinforcement, giving information and other methods for using these kinds of technologies.



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