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Feasibility and feasibility study on the development of zero-energy buildings with the exploitation of renewable energy Abstract

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Abstract

Despite the reduction in fossil fuel resources, all other industries in the use of energy in the earth moving, following this approach the building industry as well as its steps to make the most of nature and tradition of architecture picks up perhaps its dependence on fossil fuel and consequently human dependence, and the more the renewable energy. therefore zero energy buildings has to dependence is much more sustainable buildings and green low. zero energy Buildings term For a new generation of buildings that use fossil fuel energy are considered, there is no or very limited, So the aim of this study was to evaluate the design of the buildings and the energy needed for the building of embedded systems it is The result is due to the use of fossil fuels, does not produce carbon dioxide and provide a comprehensive system to increase energy efficiency. So for the future success of these buildings creativity, timing and collective cooperation between different groups.

Keywords: fossil fuels, zero energy, renewable energy, energy efficiency.

Introduction

In today's world, given the limited resources of fossil fuel and other industrial buildings in the use of other energy agencies in the land such as solar, wind, hydro biological and move accordingly. old buildings 40% of the world's fossil fuel energy consumption and greenhouse gas emissions are important donors. The principle of zero net energy consumption as a tool to reduce carbon emissions and dependence on fossil fuels are considered. Although zero energy buildings are uncommon even in developed countries but increasingly the importance and popularity. Most buildings zero energy from the electrical grid to save energy, but some of them are independent of the network. Usually in place through a combination of energy technologies such as solar technology and wind energy production, while total energy consumption with highly efficient HVAC and reduced lighting technologies. The goal of zero energy alternative energy by reducing costs and increasing the cost of fossil fuels becomes more functional.

Modern buildings zero energy building not only through advances in technology and new energy and construction techniques made possible by academic research, but also had significant progress. This research is detailed information on the energy performance of older buildings and collect test and performance parameters for advanced computer models to predict effective ways provide engineering design. Zero energy concept due to the many options for energy production and energy conservation, with multiple methods of measurement associated with the cost of energy or carbon emissions for several methods accepted. The idea and the principle of zero net energy consumption because the harvest of renewable energy and ways to remove pollutants and greenhouse gases has attracted the attention of many The principles of zero-energy related projects because of rising costs of fossil fuels and their harmful effects on the environment and weather conditions and disturb the ecological balance is very functional and very popular enjoy. The buildings can be separate and independent energy supply network, thus locally and through a combination of energy technologies and renewable energy such as solar, wind and bio-fuels is provided. While using its own technology for ultra-high-efficiency lighting systems and heating and cooling energy consumption less is attempted. In other words, a zero-energy building to clean energy optimization of energy consumption in different parts of the building and the intelligent use of renewable technology establishes a balance between energy production and consumption. Current office buildings and residential sector, at around 4% of the country's fossil fuel consumption is allocated Although buildings with zero energy consumption even in developed countries today are very scarce and even rare, But since independence from fossil fuels and help reduce carbon emissions in developing countries and has attracted much attention (Naghizadeh rokni et al).

Definition of Energy

When early humans began to use their energy so far, energy and new energy into old energies divided, Old energy include wood, coal, wind energy, oil, ... are. Renewable energy includes solar, wind, hydrogen, nuclear, nuclear energy and so on. These days everyone is talking about saving energy and space scientists their best to find ways to get more energy and are cheaper and from wind, solar, tidal and nuclear energy also seek help. But it is interesting to know that scientists may have a hard time, provide a precise definition of energy. In fact, if stored energy to do work or the ability to define, to a large extent been able to offer a definition of energy. Although this definition is not very comprehensive and complete truth of our existence and the world around us with no energy and even turn it into various forms impossible, Therefore, energy is neither created nor destroyed and the definition of energy say that energy is the ability to do work. This means that all beings to work should not consume food to feed energy stored in the muscles they can use it when necessary With the advancement and technological revolution all devices and machines to use different kind of energy is actually always the case for other energy conversion and this eventually leads to things.

Technology

Although the technology from the Greek word logos, meaning techno and conversation skills, and it can be taken as often logy lead scientific terms, Technological translated, but in fact the technology is much deeper and more ambiguous consequences. The origin of this word in the Greek language is the language, Technion is something that belongs to techne. About the meaning of these words should consider two things, first, that techne is not only the name and artisan skills but in addition to the name for intellectual skills and fine art, techne belongs to processing, to Puoyisis, all the way from the absence of what is going on and to attend the proceeding, Techne is something poetic, that latter point is more important about the word techne must be considered, that the word techne from the beginning to the time of Plato has been associated with the word episteme. Both on cognition in the broad sense of the word implies, and such knowledge is a viable solution and development stemming understanding and insight into the nature of an object or idea (pour Ismail).The knowledge and skills in science, technology and art of word association. This concept lies a wise man interacts with nature achieves its general laws and the rehabilitation of this legislation in the environment and has created ideal conditions desired applications.

Technology transfer

Technology transfer can be technological transfer of intellectual property such as skills, knowledge, equipment and methods of manufacture of the products or extended to other sites, via conventional methods defined legal or otherwise. Strengthening production and the establishment of a strong and dynamic economy, requires a broadening and deepening of the industrialization process. In the meantime, technology plays a major role, Technology transfer occurs in two types of vertical transmission and horizontal transmission or transmission research and development, Technical information and research findings applied to engineering design and development phase is transferred and then enters the commercialization of technology in the production process. The horizontal transfer of technology from one level to the same level of ability in one country is transmitted to another location capabilities, In this case, the higher the cost of the receiver technology for effective technology transfer and absorption is reduced done.(Zahtabchiyan, Naseri Gygluo).

In other words, the technology transfer into the specific technological factors developed countries to developing countries in order to enable the latter countries in the preparation and implementation of new production tools for the development and expansion of existing tools, Technology transfer is the process of supply and demand for technology that offers a range of machines, tools, information services, skills and knowledge to be included. (pour Ismail).

developed technology

General led the technology development process, strengthen, expand and improve existing technology and new technology as well as education related to economic development, social (same).

management technology

Technology Management is an interdisciplinary field of engineering science and knowledge and art of combining and integrating the management. Its focus is on technology as a key element in wealth creation. Can boost wealth creation factors such as knowledge, intellectual capital, effective utilization of resources, protecting the environment and other factors that are effective in increasing the standard and quality of life (Hamidi) The main objective is to understand the true nature of technology management, technical developments, particularly in the advanced technology sector effort Regulatory developments so that not only different firms can confidently rely on their technology, but with opportunism, their success in the global competition provide. Unlike the fields of industrial engineering technology management and industrial management that their main objective is to improve production efficiency, trying to focus on the technology and processes, including research and developed, innovation, technology transfer and technology

cooperation, how to use new technologies and deepening of existing technologies in various manufacturing and service companies, determine and managing.

The Definition of Sustainable Development

End of fossil fuel resources and increasing environmental problems and threats that creates energy for human life on earth, As the driver of secondary energy consumption was increasing importance, especially after the signing of the Kyoto Protocol, as codified in the framework of energy consumption in industrialized countries was defined as one of the main indicators of sustainable development, respectively (Arab, Baratti Malayeri).

According to studies, between 15 and 20 percent of total energy consumption of residential space is the amount of each country Shows cost a lot and destruction of natural resources and environmental degradation have largely(Askari Nejad) According to available statistics, residential building of the nation's biggest consumer of energy (Riyazi, Hosseini).

The concept of sustainable development was first proposed in the Brundtland Assembly and was adopted at the Rio Earth internationally. The most acceptable definition of sustainable development, the definition given in the report Brat land. According to the report, sustainable development is development that meets the current needs of mankind, without the ability to meet the needs of the next generation damage (Samadi, Ouji Mehr, 1390) Sustainable development means providing solutions to the traditional pattern of physical, social and economic developed, which could cause problems such as the destruction of natural resources, destruction of ecosystems, pollution, increase of population, the prevalence of injustice and low quality of human life stop. Sustainable development is a process in which economic policy, finance, trade, energy, agriculture, industry and other policies that are designed to lead to the development which is economically, socially and ecologically sustainable And it made sense to invest enough in the areas of education, health, population and energy, so that the social debt for future generations to come. The main objective of sustainable development, the provision of basic needs, improve living standards for all, better administration maintain ecosystems and a safer and happier future listed Finally, it can be said that sustainable development is a holistic concept and related to all aspects of human life and the implementation of sustainable development model requires fundamental changes in national and international politics (Melat Parast).

Sustainable Architecture

The application of sustainability concepts in architecture, new post in the name of sustainable architecture, ecological building, green architecture and environmental architecture is open, all of them the same meaning And on environmentally friendly architecture defines the principle of sustainable architecture is based on the fact that a small part of the surrounding buildings, and should act as part of the ecosystem and the life cycle adhered to (Soflaee).

Taken together different ideas, we can say that the subset of sustainable architecture sustainable design One of the most important contemporary logical reaction against contemporary problems, is industry, sustainable architecture, like other categories of architecture, with its own rules and generally involve three stages: 1. Energy saving 2. To return to the cycle of life 3. The design of each of them have their own special strategy. Identification and study of these measures, not only to greater understanding of the environmental architecture should be designed to do it sells, It led him to the style of design that is optimal for modern man in every way, his needs and also to respect its future resources (Sayadi, Madahi).

Step Energy saving The principle of one hand the proper operation of renewable energy sources, such as fossil fuels, to reduce consumption pays And on the other hand to better control the use of renewable natural resources as reserves and persistent serious attention For example, one of the rich and famous, the energy from the sun today by photovoltaic

technology to provide electricity and water consumption in the building, it used to be. To control the sources, three types of strategy can be considered, including energy conservation, water conservation and preservation of the material. As you can see, focusing on these three sources, because of its importance in the construction and operation of buildings.

To return to the life cycle stage The principle of sustainable architecture is based on the idea or theory that matter is a form usable in a different way, It is useful without being harmed. On the other hand, due to the principle of the design function, prevention of pollution of the environment. The idea for this purpose on three occasions, examined the building. The steps are as follows pre-construction, construction and post-construction stage is important to note that these steps are related to each other and there is no clear boundary between them. For example, you can use recycled materials in the construction phase, after the construction of a building as the primary materials used in construction.

Step design for man Originally designed for man, the last and perhaps most important principle of sustainable architecture. This principle is rooted in the requirements for the maintenance of chain ecosystem is necessary that they, in turn, ensure human survival. This strategy essentially has three maintenance of natural resources, urban planning, design and comfort of man which is focused on enhancing the integration between the building and the outside of it and between buildings and people using them. In fact, we can say that to achieve sustainability, the designer must take these steps and principles that define a framework for sustainable design in its design and in terms of the composition of the balance (Mellat Parast).

Design and construction of zero energy buildings

The most advantageous in terms of cost steps to reduce energy consumption in a building usually happens during the design process. To achieve energy efficient, zero energy design is substantially different from the performance of the contract. Successful zero-energy building designers typically time-tested principles of passive solar energy or artificial conditions with facilities to combine work place.

Sunlight and solar heat, prevailing winds and cold ground under a building can be fixed inside the daylight and temperatures with minimum mechanical tools provide. Zero energy buildings are usually optimized to use passive solar heat energy and thermal mass to stabilize the daily temperature variations are combined and in most weather conditions are well insulated. All the technologies needed to create zero energy buildings today without order are available.

Complex 3D computer simulation tools for planning how the building works with a number of design variables are available. Including design variables, building orientation to daily and seasonal position of the sun and in the window type and placement, depth protrusions, type and amount of insulation building elements, bleeding, productivity and efficiency of the heating equipment, cooling, lighting and other equipment as well as water Climatic region. The simulation designers to predict how a building will perform before it is built and enabling them to contribute to the economic and financial implications of cost-benefit analysis or life cycle assessment model are suitable.

Zero energy buildings with remarkable energy-saving features are built. Using highly efficient heating and cooling loads for double insulation, high performance windows, natural ventilation and other techniques have lessened. These characteristics depending on the climatic zones where construction is taking place are different. Water heating loads can be fixed with the use of water conservation, waste heat recovery units, using highly efficient solar thermal water heating equipment, water cut. The daylight with roof windows or solar tubes can be 100% daily lighting in their homes. Fluorescent lamps and LED lights that illuminate the night usually 3.1 or less than filament bulbs, they do not

produce electricity consumption and unwanted heat sources. And miscellaneous electrical loads can choose efficient appliances and minimizing phantom loads or power will be reduced. Other techniques to reach net zero depending on the weather shelter of land, well-insulated walls using straw building blocks, building panels made before Vitruvienbuilt and roof elements are in addition to the external perspective for seasonal shade.

Zero energy buildings are usually bilateral use of energy, including durable goods are designed. For example, the use of the refrigerator for heating domestic water, waste water heat exchangers, administration and computer services, media and body heat to warm the building. The buildings of the old buildings thermal energy may be used to pass out. They may heat recovery ventilation, hot water heating cycle, combined heat and power units attract their capital.

The use of energy

Zero energy buildings, energy available to meet the needs for electricity, heating or cooling is used. In the case of micro-generation technologies may be different for each house to provide heat and electricity to the building by solar cells or wind turbines for electricity and fossil fuels or solar heat collector with tank thermal energy for heating outdoor seasonal STES used. A thermal energy reservoir in the summer season can be cold in the winter by storing the cold basement used. To deal with the volatility of the required zero energy buildings are frequently connected to the electricity network and electricity transfer network However, when excess electricity is produced and when enough electricity to your home. Other buildings may be fully automated. Energy consumption is often more effective in one area but combined scale, for example, a home node, analgesics group, region, country and so on. Instead of home-made. A regional energy efficiency of such use of energy, transmission and distribution of electricity loss is virtually eliminated. The amount of the loss is about 2.7 to 4.7 percent of the energy is transferred. Energy consumption in commercial and industrial applications should benefit from mapping the area. Production of zero fossil energy consumption to the position of geothermal, micro-hydro power, solar and wind to keep this concept is needed.

Zero-energy neighborhoods, such as the creation of Bed ZED in the UK and those that are expanding rapidly in California and China, may use distributed generation schemes. This may in some cases include district heating, cold water for people, wind turbines, etc. are common. The current plans to use ZEB technologies to build entire cities or zero energy independent of the network they use there. (John Willey p. 286)

Energy Versus Energy Conservation

One of the main topics of debate in zero energy building design in the balance between energy supply and consumption of renewable energy, solar energy and wind energy is distributed. Most zero energy homes use a combination of the two strategies. As a result of substantial government subsidies for photovoltaic solar electric systems, wind turbines and photovoltaic etc are. Which is called zero-energy building is a typical house with distributed renewable energy technologies. Such houses have emerged in places where aid is significant pv power transmission job But many so-called zero-energy homes, as well as public services are billed. This type of energy without saving surplus energy may be the cost of the current price of electricity generated with photovoltaic equipment depending on the local price of electricity does not work And may also require energy and resources, so this method is less ecology.

Passive solar building and passive house designs of the 1980s, reduction of heat energy consumption by 70 to 90 percent of energy consumption active in many areas have shown. For new construction and sophisticated design it can be less costly to do a typical building materials. Very few industry experts have the skill or experience to take advantage of passive design. Such projects than solar photovoltaic panels on the roof of a building is expensive, inefficient, we are typically very affordable. A few kilowatt-hour of photovoltaic panels that 2 or 3 dollars per annual kWh production cost equivalent to America's dollar may be the only external energy requirements by 15 to 30 per

cent. . Seasonal energy efficiency ratio over conventional air regulator BTU 000/100 (110 MJ) over 7KW photovoltaic electricity needs while working outside the network is not enough for the night. Engineering techniques of passive cooling system could better regulation needs 70 to 90 percent by air. Electricity produced by photovoltaic when overall demand for electricity is lower cost spent.(Human Kinetics. p. 12)

Operation Occupants

Energy used in a building can vary greatly depending on the status of its occupants. Accept what is considered comfortable is widely varied. Studies of similar homes in the United States of America, stark differences in energy consumption have shown, some houses are more than twice as much energy than other homes. Occupants can adjust the differences in thermostats, varying levels of illumination and hot water and electrical devices variable amount or variable loads use the connection.

Certified Energy

Many green building certification programs to building zero energy consumption to reduce energy consumption only a few percent below the minimum required by law are not required. Leadership in Energy and Environmental Design LEED certified by the Green Building Council Green America and the world was created, which includes check lists designed measurement tools, not the tools. Tips inexperienced designer or architect may choose to reach the required level even if it points the best options designed specifically not to a building or climate. In November 2011, the International Institute for the next life, a certificate will create zero energy buildings, designed as part of the challenge of residence, certificate of zero energy building simple, affordable and perfect for transparency is important.

(Berkeley Planning Journal 27: 31–55. Retrieved 2015-04-15.)

character zero energy buildings

To mismatch will be able to identify four different types of zero energy buildings:

Construction of electricity demand associated with the installation of photovoltaic systems for the construction of photovoltaic power and a wind turbine at the site, Solar thermal, heat pumps, small buildings, heat and electricity demand as well as the installation of photovoltaic systems in combination with a solar thermal collectors, heat pumps and heat storage is responsible.

Wind, Solar thermal, heat pumps, small buildings, heat and electricity demand, as well as a wind turbine in combination with a solar thermal collectors, heat pumps and heat storage are responsible.

Existing buildings to establish a relationship between the quantity of heat and electricity demand has been defined with the aim to reach zero. (Case in a city in Denmark is available).

lunda,H,Marszalb,, A. , Heiselberg, P. , 2011.pp. 1446-1654

features and benefits of zero energy buildings

A unique feature of this building is that the annual net energy consumption is zero. On the basis of this structure using factors such as wind and greenhouse architecture and building energy demand is reduced as much as possible And part of the building's energy is provided by solar energy. Due to the adoption of new standards in the design of the building makes the building energy consumption compared with a conventional building reduced to 90%. Taking advantage of representing the ideas of traditional architecture combined with modern aspects of this building style is concerned. The other advantages of these buildings can be traced to the following points:

The security of the owners of the buildings from rising energy prices more easily because of the design and setting a uniform ambient temperature isotherm Requires less energy costs less maintenance due to high energy efficiency reduces the cost of monthly net life high reliability For example, photovoltaic systems with a warranty of 25 years and rarely have problems caused by climate change. Reduce costs of buildings in the decision to turn it into a zero-energy building zero energy buildings of the future increase in the value of traditional buildings with the rising cost of fossil fuels.

zero energy buildings flaws

High initial costs and the need for user training capabilities they lack the technical knowledge and the necessary experience in the design and construction of zero energy buildings photovoltaic cell technology to reduce prices about 17% of the. This will cause the cost of investment in energy production systems based on solar energy is also reduced.

Reduced ability to sell these buildings because of the initial costs and the need for competition in the sale of solar energy absorbed through the skin in the southern part of the building only has the highest efficiency and in other respects because of the shadow of its efficiency will be reduced.

difference and goals of the zero-energy building and green building

Green Building Green Building category of buildings is said to environmental conservation in the lifetime of a building, from design and construction to operation and re-committed. The eco-friendly buildings, in addition to the use of renewable energy and energy efficiency a priority in that it is small, it shows the environmental perspective is evaluated. The ultimate goal of green buildings, efficient use of resources and reduce the negative impact of buildings on the environment. Zero energy buildings is one of the key goals of green buildings to be fully realized and reduces greenhouse gas emissions and the duration of use of the building will be. However, they can not be in all areas such as waste reduction and waste or use of materials Back to Nature, considered green. Green building strategy in the energy used by engineers to design the building with views of the sun's energy is often implemented energy-efficient buildings. In this position the windows of buildings, walls, porch, canopy and trees that provide shade in the summer should be so oriented and most of the sun in the winter. In addition, the convenient location of the window can increase the amount of light in daylight (Daylighting) and reduction of electrical energy consumption is lighting during the day. The use of active solar energy technologies (Active solar) and passive (Passive solar), energy solar electric (Photovoltaic), use of green space on the roof (Roof garden) is one of the effective strategies in this sector. But in front of the green, zero energy buildings (Zero-Energy Building or Zero net energy), which are applied to buildings annual energy consumption and zero carbon emissions are not producing. In today's world, given the limited resources of fossil fuel, buildings, industry and other organizations to use in the field of energy such as solar, wind, hydro biological and their motion.

The idea and the principle of zero net energy consumption because the harvest of renewable energy and ways to remove pollutants and greenhouse gases, has attracted much attention. Today, projects with zero energy due to increased costs of fossil fuels and their harmful effects on the environment and weather conditions and disrupting the ecological balance, are very practical and very popular.

The building can be independent of the power grid. Thus, energy locally and through a combination of technologies to produce renewable energy such as solar, wind and bio-fuels will be provided. While the use of specific technologies for highly efficient lighting systems and heating and cooling, less energy consumption has been attempted. In other words, in a zero-energy building to clean energy optimization of energy consumption in different parts of the building and the intelligent use of renewable technologies, the balance between energy production and consumption is established. One of the main goals of green buildings and zero energy buildings reduce energy consumption for

heating, cooling, electrical and building energy efficiency is also increased. To reduce energy consumption and create a green building should be building design, reduce energy waste in buildings. As a result, existing solutions using high-performance windows and insulation of walls, roof and floor of the building.Marszal,A.J,Heiselberg,P. , bourrelle,J.S. ,Musall, E. voss,K. ,sartori, I. and napolitano,A. , 2011.

architecture design solutions to enhance the energy efficiency of buildings zero

Buildings have a significant impact on energy consumption. The implementation of standards for energy savings and determine the precise control of the amount of energy used in buildings is critical. One of the most important issues raised in recent years energy crisis. Faced with an energy crisis caused minimize energy waste in buildings considered. On the basis of this zero energy buildings using factors such as wind, greenhouse, atrium, storage hot water deep in the ground, awnings, solar pan, heat the flue can be greatly reduced energy needs of buildings and part of building energy by using solar energy and air flow is provided.

stretching and building orientation and layout of interior spaces

Strain and orientation of the impact on business building solar thermal energy and the use of natural lighting buildings. Zero energy buildings is tried until one or two storey buildings and in front of the building on the ground are extensive. This is in addition to more space on the roof for the implementation of the facilities available, makes up more space on the south side of the building, and the possibility of using solar energy during the day increases. Zero Energy Building Research Institute at Karaj, the building has two floors and a stretch of East, West to building more spaces to the maximum solar heating and natural lighting use. Zero energy building in locating spaces, spaces that have a higher profile on the ground floor and on the south side of the building are located. Located on the south side of the space makes it possible to make the maximum use of space, light and heat of the sun. In addition, due to more traffic that takes place in these spaces, their location on the ground floor leads to easier access to these spaces and prevent energy waste in low traffic areas others.

User-less spaces on the north side of the building and on the first floor also been considered. Note that these spaces need less energy, Located on the north side causes them to only use the system when building facilities, access to their energy needs as well as their placement on the first floor and stay away from places of movement, to waste causes have less energy.

way layout spaces in the building

Storage spaces with high thermal requirements on the south side of the building
Storage spaces with low thermal demands on the north side of the building

The areas of high traffic levels, on the ground floor near the entrance of the building
Storage spaces with low traffic away from the entrance and first floor of the building

Due to the angle of the sun in different parts of the planet, depending on the geographical coordinates of the point are different, the orientation of the building at any point of the planet to absorb maximum solar energy is also different. To determine the orientation of the building on the ground of simulation software IES VE is used. The application of three-dimensional model of the building, is rotated at various angles and in every orientation of the building, the building energy consumption and energy absorbed from the sun is calculated.

Then, according to the requirements and priorities of buildings intended for the best orientation for the building is elected. Zero Energy Building Research maximum absorption of solar energy in the heating of buildings is a priority

and The best orientation to the building by turning it clockwise 5 degrees is calculated Which reduces heating energy consumption of buildings by 3.1% compared to the horizontal building.

insulation in the building

Increasing the amount of insulation causes buildings to reduce energy consumption of buildings, but the initial cost of the project increases. On the other hand, if it is necessary to increase energy efficiency in buildings using solar systems larger, it will also increase energy consumption compensated as a result of the initial cost of the project to bring. Therefore, finding an optimal point for the insulation of the building where the greatest energy savings can be achieved with the minimum cost necessary to determine the amount of insulation. It is also necessary to consider the extent of insulation in the building process is applicable. Research zero energy building materials, building insulation chosen so that the coefficient of thermal power to the requirements of article 19, 40% improved.

Technological Solutions To Enhance The Efficiency Of Zero-Energy Buildings

1-glass smart: smart glass type of glass that uses the light absorption of new technologies can be changed in the case of glass. Glass films of its kind. (Gharavolbashi, Saharkhiz)

2. Solar panels: In this method using solar cells produce electricity directly from sunlight is possible. Solar cells are a type of semiconductor that is made from silicon, the second most abundant element of the earth crust. When sunlight shines on a photovoltaic cell, the potential difference between the positive and negative electrodes and the resulting current flow is between them. Photovoltaic can be placed in the category of renewable energy technologies.(Http://www.elmefarda.com)

3. Water heaters Solar water heaters are composed of three main sections, including: the collector circuit piping, heat storage tank requirements. In most modern water heaters operating fluid and antifreeze solution in a closed cycle between the tank and the collector circuit piping is underway.

4. Solar desalination: the basics are simple solar water purifier and plastic or glass containers in the upper level plays a key role in the operation of the system. The sun's rays passing through the brine pond floor that is usually black to absorb more heat, Sea water or brackish water inside to warm up and the temperature rises, the water vapor is created and then hitting the inner surface of the cover glass where the temperature is lower than the temperature of the desalination plants, start the distillation by collecting this water, fresh water is obtained.(Understanding solar desalination Messenger lamp Electrical Engineering)

5. The solar dryer performance solar dryer is thus possible that the dry ingredients directly or indirectly from use of solar thermal energy and natural or forced air flow and causes drying of the product.

6. cooker: It is a parabolic dish to cook food with it must be at the center of the plate and keep the parabolic can be found by setting and cooking food. Because this type of concentrator can be achieved at temperatures more than 100 degrees Celsius, so frying vegetables and meat, ... are quite possible.

Conclusion

Knowing the weather conditions of the area and due to changes in patterns of modern urbanization and new technologies make the most important factor in creating thermal comfort and energy users in buildings. Today, Knowledge Ecology building the capacity and quality of space with climatic and environmental parameters in the design due to the huge interest of local models. Iran has different climatic zones with valuable architecture is tailored

to each region. Characteristics of vernacular architecture and diagram analysis of climatic elements in traditional contexts of different regions to achieve results such as saving energy, Creating thermal comfort and climate, efforts to reduce the environmental pollution caused by the use of electrical and mechanical equipment and to minimize energy costs, using the architectural design solutions As well as new materials and technological elements in buildings that have energy dependence on fossil fuels much more sustainable and green buildings than they are. With design and construction of buildings because it can not be used where the carbon dioxide produced from fossil fuels will not be And with this system to the preservation and conservation of the environment, as well as having comprehensive systems for energy efficiency and renewable energy reductions in current consumption while reducing the cost of fossil fuels become.

References

Benno Maurus Nigg, Brian R. MacIntosh, Joachim Mester (2000). Biomechanics and Biology of Movement. Human Kinetics. p. 12. ISBN 9780736003315.

Naghizadeh rokni, M. Hassanlo, M. Ramzani, M. A developed procedure for predicting the risk of liquefaction; Case Study: Rasht City. International Journal of Geomate. (2016) Vol. 12, Issue 29, pp. 2878-2884

Boeing et al. (2014). "LEED-ND and Livability Revisited". Berkeley Planning Journal 27: 31–55. Retrieved 2015-04-15.

Book from sunrise to sunset, knowledge of solar energy, translated by Pour Esmail.

Book from sunrise to sunset, knowledge of solar energy, translated by Mohammad Hosein Zahtabchiyan, Ali naseri Giglou.

Book from sunrise to sunset, knowledge of solar energy, translated by Sirous Hamidi Far.

Book from sunrise to sunset, knowledge of solar energy, translated by Ghasem Arab, Aghil Baratti Malayeri.

Book from sunrise to sunset, knowledge of solar energy, translated by Amin Askari Nejad.

Book from sunrise to sunset, knowledge of solar energy, translated by Mansooreh Riyazi, Seyed Mahdi Hoseyni.

Book from sunrise to sunset, knowledge of solar energy, translated by Ali Hosein Samadi, Sekineh Ouji Mehr.

Book from sunrise to sunset, knowledge of solar energy, translated by Mohammad Mellat Parast year.

lunda,H,Marszalb,, A. , Heiselberg, P. , 2011.pp. 1446-1654 .

Marszal,A.J,Heiselberg,P. , bourrelle,J.S. ,Musall, E. voss,K. ,sartori, I. and napolitano,A. , 2011.

Milton, Queensland, Australia: John Willey & Sons Australia Ltd. p. 286. ISBN 0-7016-3777-3.

Original glass intelligent as modern materials and insulation in the construction industry, the writer Madiyar Gharavolbashi, Atiyeh Saharkhiz and Bahram Karami, year 1391.