Professional scientific sessions for art, architecture and urban planning Thursday evenings
Held in: Conference hall of Herampey Consulting Engineers
Date: 08.06.2017
Title: Sustainable architecture, heat and water recycling.
Speakers and panel members: Mr. M. R. Soltandoust, Mrs. M. Khatami and Mr. A. Soroush.

Mr. R. Soltandoust who was the first speaker, talking about architecture as a person that is not an expert on the field, said that regarding the sustainable architecture the arguments that attract his interest and attention are the functionality that stresses on the sustainability and durability, that must be the result of a balance between the construction and maintenance processes, producing a successful sustainability.

Mr. Soltandoust said that when we talk about architecture we consequently talk about the construction process and mankind, that are the two sides of a balance, following the destruction of the nature in order to permit men to have a shelter, a process that we assist to during the centuries. The point is how to find the way to create a balance between the construction and the protection of the nature, a point that should be the base of a sustainable architecture. Mr. Soltandoust presented 20 points that should let us to achieve the mentioned goal.

1.Energy saving and making highly efficient building.

2.Buildings recycling focusing on the infrastructures instead of open spaces development.

3.Building leaving the minimum debris.

4.Recycling the waste materials created during the demolition and construction processes.

5.Reduction of use of different materials. Building smaller and more efficient buildings.

6.Using efficient materials and equipment, considering the energy quantity for their construction and their exploitation.

7.Use of recycled materials.

8.Use of entirely or partially recyclable materials.

9.Selection of materials with less negative impacts on the nature.

10.Use of local materials for more climatic compatibility, excluding the energy use for their transportation.

11.Use of green and renewable technologies.

12.Adopting a social approach through the construction of residential complexes and public facilities, to reduce the dependence on the use of cars, developing the sense of social interaction.

13.Protection of natural conditions and revitalization of the environment.

14.Long life and durability of goods in a prolonged period.

15.Protection of water sources and water saving.

16.Management of wastewater and urban garbage.

17.Construction of buildings considering clean and healthy air supply.

18.Efficient management on repair and maintenance.

19.Constant and efficient supervision on energy consumption and equipment functioning.

20.Acceleration and development of green construction culture and fidelity to the principles of environmental protection on the own professional field.

Mr. Soltandoust explained that reporting the above principles he doesn't pretend the application of all of them simultaneously, but the introduction of some of them in the process can eliminate the necessity of the application of other mentioned principles.

Talking about what happened in the traditional architecture through simple solutions that common people applied in their daily life, in order to limit the use of natural resources obtaining the maximized results, Mr. Soltandoust expressed the idea that this philosophy wasn't dominant in the higher social level of the society, where the reach people ignored smart and responsible use of natural resources, like water, aiming to show their material and economic wellness through the construction of monumental buildings, like the palace of Shazde in Kerman, where the idea of energy and resources saving are almost ignored or pushed on second plan. Mr. Soltandoust believes that even though today the technological achievements permit to satisfy the everyday needs, but the earth is not anymore able to tolerate the continuing increase of the use of natural resources and today the revision of our behavior regarding the energy consumption is a must, based on the development of the sustainable architecture.

Mr. Soltandoust stressed on the fact that using green technologies and equipment is not enough to consider them environmentally friendly, because in many cases to produce a green product, many natural resources are damaged or over consumed. The final goal in order to have a sustainable architecture and use of the resources is to create a balance between the different factors that condition the fate of the nature and natural resources. Mr. Soltandoust concluded his speech saying that the balance that he mentioned, must comprehend economic, cultural and political behavior and factors in order to have a global approach and view on different renewable energies.

The second speaker was Mrs. M. Khatami who talked about heat recycling in buildings and why it is so important. She explained that according to the World Environment Organization sustainable development means the provision of the actual needs without endangering the potentials of the future generations. Mrs. Khatami said that some people pretend to limit the consumption generally, but of course it's not impossible. She continued her speech talking about the resources that can be materials for construction, that must be cleverly used and possibly recycled, the second is the water and the last are the energy sources. The wrong use of each of them can harm the environment creating problems for us and the future generations.

Talking about how energy is produced in Iran, she reported official statistics. According this data only 1% of the produced energy can be considered clean and green. In Iran 36% of energy consumption is reserved to the housing and building sector, that causes many environmental problems. A sustainable building consume an average of 50 kw/h per sq./m in a year, meanwhile in Iran most of the buildings consume much more than the reported quantity(about 460 kw/h). Compared to the EU countries the energy consumption in Iran is triple, that of course must be reduced considerably. The problem that causes the exaggerated consumption of energy in Iran is the low price of the energy supply, ignoring the problems that this consumption causes to the global environment.

Mrs. Khatami presented simple ways and solutions that can limit the consumption of energy, some of them are solutions used by the past generations and some are new solutions based on technological achievements. She talked about passive solutions, use of solar, wind and other natural resources. Another solution is the heat recycling that can reduce considerably the consumption of energy in buildings and of course in bigger buildings it's more justified.

Mrs. Khatami presented simple solutions that make possible to capture the heat produced in the buildings, reusing it and saving energy and the environment. She presented some cases successfully realized in some European countries like Germany. The base of all these solutions is the fact that they have been considered before the realization of the project, creating the easy conditions for their realization.

The last speaker was Mr. A. Soroush. He began his speech saying that the reason wanted to talk about installations argument as an architect, was because he started to study architecture as a pupil of Mr. Soltandoust, that is an expert in installations affairs. Mr. Soroush said, that for him Mr. Soltandoust was the person who created the conditions for a reconciliation between architecture and installations. A successful reconciliation can direct architecture through a sustainable development.

Mr. Soroush said that he wanted to talk about water and its right consumption. He said that for many a sustainable development means to renounce to the present needs in order to secure the needs of the future generations. Talking about water sources he explained that they are in dire conditions in the world generally and in Iran particularly. Through a map he shown the areas that

suffer from water resources lack and in this map Iran was signed with orange color that means that in the future it will be classified as an area having serious water crisis.

Talking about the buildings, Mr. Soroush explained that 10% of the score that a building can gain as a sustainable building regard the smart use and recycling of the consumed water. He presented the book translated by Mr. Soltandoust, where there were presented the different manners to define and calculate the water consumption in a building, aiming to save water sources. He explained that water is classified as clean, grey (of waste water that is not still considered black) that is not drinkable but can be used for other purposes. The grey water can be presented in two categories, been more or less proper for domestic use. Giving an example he said that in the USA about 30% of water consumption in the houses regards the flash tanks, so if clean water is replaced with grey water, a lot of clean water can be saved. Another way to save water is the use of rain water in the houses, but in some areas like Tehran, where the air pollution contaminates the rain water, it's not simple but not impossible. Of course if the designers and engineers of the buildings provide to make water reserve wells in the buildings, rain water could easily be captured and used for some of the buildings necessities. Another way to save water, in his opinion, is to find the ways to recycle the water produced by the air conditioning systems, especially in areas in Iran, like the Persian Gulf area, where the lack of clean water sources it's already a serious problem.

In order to use the grey water the designers should make the necessary considerations during the design phase, that can permit to realize the use of grey water very easily.

Mr. Soroush talked also about waste water systems and how it can be recycled to be reused in the buildings. In many cases the reuse of the water it's not necessarily to use recycled water, it will be enough also to think if it's possible to reuse the water(like the water used to wash the vegetables) for a second purpose(like watering the garden). A very simple way to save water is to use standard water equipment, that can give the same quantity of water, saving at the same time part of it.

Concluding his speech Mr. Soroush presented the study case of building in the University of Harvard, where they succeeded to save water up to 42%, using very simple solutions. He concluded his speech saying that our goal should be the satisfaction of the actual needs through a sustainable development, without endangering the needs of the future generation.