

COMPLEX APPROACH TO IMPLEMENTATION CONCEPT OF «ECOLOGICAL HOTEL»

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In article reviewed the modern approaches to the use of ecotechnologies in the hotel industry. Reveals the prerequisites for the development of ukrainian eco-hotel business. Grounded the possibility and expediency of building of eco-hotel with complex of innovative resource-saving and environmental protection technologies in the Lviv region.

Keywords: *concept, ecological hotel, environmental technology, building construction, warmth-keeping system, reverse water supply, wind power generator, electric boiler.*

I. Introduction

Every year the growing environmental consciousness of people, because the planet's resources are increasingly limited due to consumer instincts, which are increasingly forcing humanity to pay for catastrophes and disasters purely accumulative interest in nature. Today, for many «green» way of thinking and life became the basis for decision-making is useful not only when choosing food, but in more global solutions too. People prefer safer for health housing, places of work and rest, so today extremely relevant is provision environmentally priority services by enterprises hospitality directed onto fulfillment the environmental needs of both individual consumers and society as a whole.

The most outstanding representatives of the hotel business, which popularize this approach to life is eco-hotels.

Ecological hotel – it is environmentally certified housing, that able to improve the environment by minimizing its own environmental negative impact [7]. Typically, the eco-hotels built with environmentally hazardous building materials, they use a renewable energy sources for energy supply, utilize recycled wastewater for their reuse, introduce organic food and waste recycling programs and so on.

Some Ukrainian hotels are already positioning themselves as ecological, but in their activity is no comprehensive environmental approach, that is, they provide only

a few individual eco-criteria, that calling into doubting the assignment of appropriate status [3].

The development of eco-hotel business is a promising direction for Ukraine, because the country has a significant number of areas suitable for the construction of eco-hotels, a relatively low level of industrialization of certain areas, an available demand for eco-services for both domestic and foreign tourists. So, suppose, that Ukraine has all the prerequisites for the successful functioning of eco-certified hotels in an environment that meets the environmental requirements.

II. Formulation of the task

The article aims is justification the possibility and feasibility of construction of ecological accommodation facilities with innovative environmental technology in the Lviv region.

III. Results

The hotel industry is part of the service sector, which is presently developing rapidly. In the presence of a large number of proposals on the hotel services market reigns tough competition. In the fight for the consumer the hotel management is forced to develops strategy of its activities to offer a product that would has fully satisfied the needs and expectations of customers was unique and better than others. So today, accommodation facilities are beginning to use a new method of attracting customers – implementation of the concept of «ecological hotel» which is particularly important during the global environmental and economic crisis. Eco-hotels are designed to preserve the health of the guests, rational use of natural resources and positioning themselves as those being responsible for the impact of enterprise on the environment.

Known, that in the world there are a number of organizations involved in the development and implementation of environmental management systems. Among them «British Airways Holidays» (BAH), «Certification for Sustainable Tourism» (CST), «Green Globe», «Green Key», «HAC Green Leaf», «HVS Eco Services», «Touristic Union International» (TUI), «Green Hotel» («Green hotel»). These organizations confer a quality sign of hotels, that is certifying compliance services of establishment with the requirements of environmental [1].

Of course, any certification system should be adapted to the particular region, take into account the peculiarities of its climate, natural resources and social environment. This diversity of programs environmental certification of hotels says that more people are worried in environmental protection and energy saving, and eco tourism is gaining momentum worldwide [4].

Analysis of foreign experience indicates that the hotel chains abroad already had the ecological status and continued to develop environmental innovations.

For example, in Scandinavia has passed the environmental certification of the hotel chain «Choice», purpose activities which is to reduce the consumption of water and electricity as well as the volume of debris and emissions of chemicals. This work is conducted in hotels by special environmental coordinators with appropriate education [1].

During the construction of the New York hotel «Intercontinental» had used recycling materials, in rooms had built toilets with low water flow, and on the floors made green terraces [2].

Guide World hotel chain «Marriott» also seriously concerned about the pollution environmental from their hotel that's why environmental strategy of network development include reducing water consumption and fuel by 25% for 10 years, installation of equipment for using solar energy in 40 hotels by 2017, etc. [1].

These and many other foreign hotels are choosing ecological concept for business.

The domestic environmental practice, unfortunately, submitted by small number of accommodation facilities, because of the high cost of construction, which, of course, affects the cost of living. Preferably, the «green» hotels in Ukraine are called more or less equipped private homes in rural areas.

System of Environmental Certification in Ukraine began to develop much later than in the EU, USA, Canada, Japan, but already has certain achievements. In particular, Ukraine was the first country in the former Soviet Union, which began to develop a system of environmental certification and labeling, guided by international standards ISO 14000 and joined the Global Ecolabelling Network – an international organization that brings together 27 certification systems of 60 world countries and

harmonized environmental 43 standards for products and services. Accreditation level of Ukrainian certification bodies and labeling «Living Planet» provides recognition of certificate of conformity both the national and international levels. At the moment, in Ukraine there are two hotels – hotel complex «Artemis» and Eco-hotel «Ark» that meet the environmental requirements of international standards [4].

Hotel complex «Artemis» (Crimea, Yalta, village Ponizovka) – Ukraine's first means of temporary accommodation, which was certified in accordance with requirements of international environmental standard ISO 14024. A considerable attention was given for environmental aspects during design stage and during construction.

The hotel uses energy-saving lamps and systems conditioning / heating, implemented the savings program fresh water, waste water cleared on special installation without the use of chemicals. Electrical and computer equipment are purchased exclusively of energy-saving class «A», «A +», in the complex there is minimized paper-based system, that allows to save paper, and therefore the trees that are destroyed for its production.

Also, special attention is paid to the choice of food for establishments of the catering trade of hotel entrepreneurship. Basically, they are locally produced in reliable ecological zones of southern and eastern Crimea.

Hotel «The Ark» is situated at an altitude of 1313 meters above sea level (Chernivtsi region, Vyzhnytsia district, village Dolishny Shepit) is a fully autonomous power system. Three wind power generators and six solar panels with a total capacity of 6 kW provide electricity for the enterprise, and 70 tube of solar thermal collectors provide hot water. Energy system is designed so that if production of current is sharp slumped (no wind, cloudy), it would be included in the work a backup diesel generator.

The condition of rational eco-construction is a choice of area to accommodate the accommodation facilities, that are projected. After analyzing the tourist and recreational potential of Ukraine, one could argue that Lviv Region is one of the most attractive tourist regions, as has favorable climatic conditions, significant natural resource potential, rich historical and cultural heritage [6]. Objectively evaluating the

possibilities of Lviv, one can conclude that the region has the prerequisites for prospective development of primary, natural-educational, rural, ecological, water activities, sports and recreation, recreational and entertainment, activities, excursion tourism. The above forms of tourism as close to the concept of «ecological hotel». Therefore, the territory of Lviv region is considered promising for the creation of such a hotel enterprise.

Assume that in village of Lviv region Skhidnytsia possible and appropriate eco-building of hotel with complex innovative resources saving and environmental technologies.

First, believe that the construction of the hotel enterprise should be built using the method saving of building materials.

It is known that the most robust and durable structural elements of buildings are reinforced concrete floors, which has feature of high rigidity, fire resistance, resistance to decay, but have a large own weight and are quite expensive. There are prefabricated, monolithic and precast-concrete monolithic reinforced concrete floors [6].

Monolithic reinforced concrete floor is the most difficult because it performed in its entirety on the construction site. During its fit out, at the beginning completely install every formworks into which placed the hard reinforcement cage, made according to the project construction, and then poured a concrete layer thickness of 8-14 cm.

Compared with prefabricated concrete floors, monolithic enable to free planning of internal space and of the outer contour of the building (can use a variety of curved shapes). Monolithic ceilings process easier – in prefabricated is high probability of occurrence of cracks at the junction plates, but energy consumption and the cost of such buildings is much higher.

Consider it appropriate avoid the considerable costs during construction and offer an innovative approach to creating the building construction, which is the replacement of part cement by a hollow plastic balls. Recent put into cement, reducing the cost of concrete, production of which is very energy-intensive.

These balls as if «crowding out» concrete, while maintaining the structural integrity of the construction. The inclusion of light elements into the concrete slab, which has quite neutral static characteristics, will reduce its weight without affecting its stability.

The innovative warmth-keeping system is the second rational technology of eco-construction, which we offer to apply.

Until recently, energy resources prices were much lower than the world that did not encourage nor community facilities, nor the consumers to their savings. Today, this circumstance has extremely negative impact on heating buildings. Therefore, to improve the thermal efficiency of buildings and reduce heat loss, consider appropriate to use innovative warmth-keeping system «Ecotemp» (Fig. 1). This is new type of insulating materials with high specific indicators and unique structural properties.

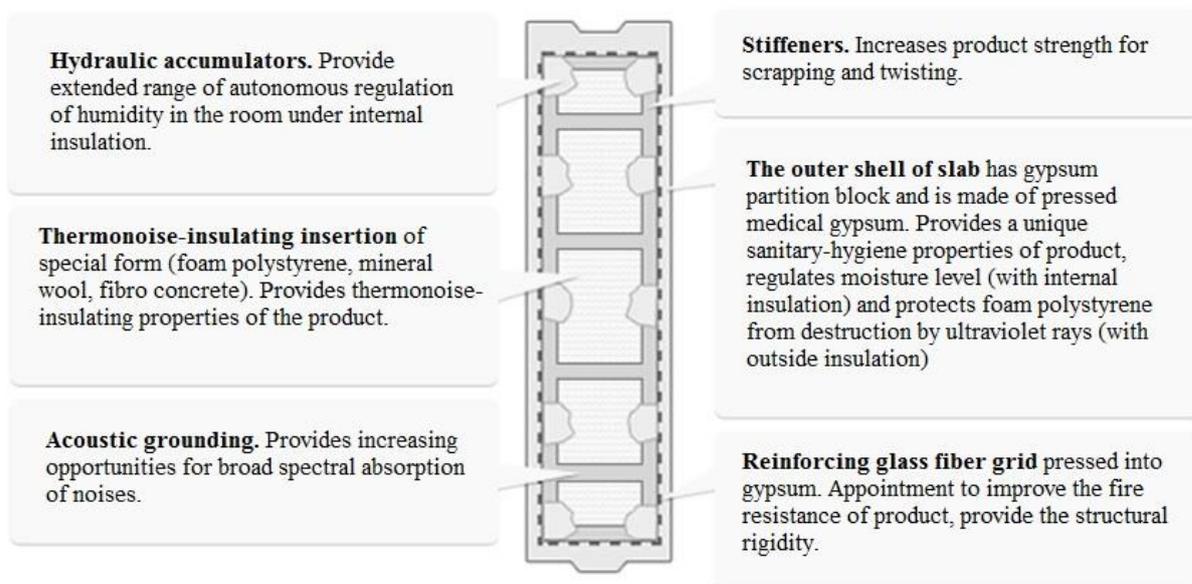


Fig. 1 – Structure of plates «Ecotemp»

The basis of the proposal is heat-proofing and noise prevention plate that allows you to arrange internal wall insulation without negative consequences, interior partitions, soundproofing of walls.

These panel systems have a distinct advantage – they are made of medical gypsum, and it is a natural product with a pH level of 5.5, which is equal to the level of acidity human skin. The durability of the system is guaranteed the protection of polystyrene from ultraviolet radiation and harmful electromagnetic radiation. A panel

of medical plaster 1 cm thick, the standards DIN 6812 – is «healthy» equivalent of lead $j = 0,01$ mm, which reduces the overall radiation level 5-10 times. By its structure gypsum is a natural «air conditioning», which able to absorb excess moisture in the room and allocates it when the level of humidity in the room drops. Gypsum – nonflammable and fire-resistant material. Under the influence of high temperatures, thanks to thermal dissociation of crystal hydrates, allocates water. Gypsum – a material non-polluting, non-toxic, odorless, has high permeability of steam and gas. The proposed panels have excellent heat insulators properties, provides good sound insulation of walls and able to regulate the microclimate in the premise, that largely contributes to the creation of a harmonious atmosphere.

Another key point of implementation the concept of «ecological hotel» is the careful use of water resources.

Ukraine among the European countries has the highest integral indicator of negative anthropogenic pressure on the environment practically on the all territory, and efficient of using water resources in the country is very low [5].

Solving the problem of preserving of the last also touches on the hotel enterprises, that is why offer a series of organizational measures aimed at the protection and rational use of water resources.

The essence of this proposal consists in introduction into the hotel the system of return water supply, which allows to rework wastewater from sanitary equipment baths, showers, washbasins to be used to drain in toilets, reducing in this way in accommodation facility the total water consumption.

Another innovative environmental technology we consider the using of wind generators, because alternative sources of energy is an important environmental criteria.

Actually wind power generation depends of natural factors – speed and constancy of wind. Most of wind generators are made so that they begin to untwist at an initial wind speed 2.5-3 m / s. Developing capacity specified in the passport of the generator is possible with wind speeds over 8 m / s. In Ukraine are not many areas where are such wind conditions, so we recommend using a new wind generator design, created by Ukrainian inventor Alexey Onipko, which is able to work in

«uncomfortable» for wind power generation conditions [5]. This model responds to the slightest breath of wind, even 1 m / s. And this is defining characteristic. This development marked reward «Green Oscar».

Such construction allows have standard sizes for the generation between 500 to 10,000 watts. Another advantage of innovation is that the new model of rotor not gives noise, so it can be placed directly near the houses. The construction does not require high mast, works at any height and is able to serve as an additional source of electricity.

The working surface of a new type of turbine is more effective than the area of a classic turbine corresponding diameter. In addition to lifting force of wing here uses the energy of wind pressure too. Turbine itself can be made of metal, fiberglass or plastic.

Considering the territorial location of the future eco-hotel (Carpathian area of Lviv region), using of wind energy is very promising.

One more indispensable ecological criteria for the projected enterprise is a rational choice of heating system. Currently, during the design and construction of accommodation facilities there is a tendency of transition from large central boilers to the autonomous heating systems.

The most popular alternatives for central and gas heating there is electric boilers. They are intended for heating any buildings and can be used both as a primary and as backup heat source.

The most important element of given heating system is a boiler. From it heated coolant using circulation pump moves through the pipes and gives off the heat to the room through heating appliances (convectors). Environmental requirements allow to use such type of heating [7].

The advantages of boilers is low cost, low installation costs, safety, ease of use, noiselessness, environmental friendliness (no harmful emissions and extraneous smells). Also unnecessary is a separate room (boiler house) and installation of the chimney.

Simplicity of design electric boilers is achieved by combining the following components: heat exchanger, consisting of a tank with reinforced in it electric heaters

(tubular electric heaters), and block of control and regulation. Boilers of some firms are supplied with already staffed circulation pump, expansion tank, safety valve and filter. In this case, not have to buy these items separately and will provide easier installation.

Therefore, in our opinion, the proposed set of innovative resource-saving and environmental technologies fully consistent with the concept of «Ecological Hotel», which can be implemented in the construction of accommodation facilities in the urban village Skhidnytsia, Lviv region.

However, any innovation require evaluating the effectiveness of their implementation. We consider that exploitation of ecological building accommodation facility with complex of specified innovations compared to traditional hotel facilities is more cost-effective even in spite of the fact that the cost of eco buildings is more expensive than the usual, generally up to 4%. Because preliminary calculations allow expect reduction of power consumption in the projected establishment of 25% and water by 30%, which naturally lead to a significant reduction in costs of energy and water supply.

Moreover, reducing the cost of servicing building will be reached by a higher quality of modern management tools, effective control and optimization work of all systems.

Introduction of principles environmental concepts is perfect for attracting public attention and promotes speedy payback of company.

IV. Conclusion

Demand for eco-hotels is formed by the growth of industry, the desire of customer to get better service.

The necessity of the construction such accommodation facilities are determined by the desire of consumers to be informed about the composition, properties and other aspects of safety (condition of environment and recreational facilities) and also fashion trends for a healthy lifestyle.

Conducted researches show that exactly the Lviv region has all the favorable conditions for a comprehensive approach of the implementation the concept of «ecological hotel» in the construction of accommodation facilities, which is able to

meet all the ecological requirements of the standard OEM JMA 08.002.30.059 «Services of temporary accommodation. Ecological criteria».

Such ecological hotel venture will be a priority, not only in terms of impact on human health and the environment, but also due to the natural ingredients that are used in the equipping and functioning of the hotel, provide comfort, safety and consumer unity with nature.

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