Hotel Lighting Systems in the Context of Global Energy Crisis - An Approach in Perspective of Sustainable Development

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ABSTRACT  
The first concerns regarding the hotelier design occurred since the early twentieth century. Under the pressure of contemporary social and economic factors and under constraints within different categories, designers with a broad vision and who are able to work in an integrated system facing the constraints of legal, environmental and safety regulations imposed by European Union are in high demand. This paper aims to highlight through scientific approach that only an integrated hotelier design system can provide a unified vision in Europe regarding the creation of unitary standards, but with high specificity to enhance competitiveness.

KEY WORDS  
Sustainable development, European development, energy management, technical standards, hotel lighting, design

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1. Introduction

In perspective of sustainable development and in order to preserve the energy resources of globe, in the hospitality industry is also putting more on more emphasis on use of unconventional energy sources and reducing environmental pollution.

To meet these goals an approach in a modern and uniform system regarding designing of architectural buildings for the hotel industry is suggested. Among the technical solutions that can reduce energy consumption, we mention solar panels on the building location and the second involving increased use of natural light in all hotel spaces.

Sustainable development and environmental protection require special measures in all activities concerning the hotel: in the reception, on level of the service floor, catering and public services in the field for additional services. In Romania since 1997 have been recorded the first concerns for environmental protection in hotels, carried out by Romanian Hotels Association under a Phare Programme with a guide for environmental protection measures in the hotel [4, p. 223].

Today, more and more arises a problem in large cities that due to increasing of pollution degree, it is necessary to implement some minimum measures that can bring great benefits for the environment, namely the arrangement of grass carpets on the terraces of the last level of buildings, by default in hotels, for natural filtration of rainwater.

Through scientific approach this paper aims to highlight the fact that only an integrated system of design hotelier can ensure through a unified vision into the European Space creation of
standards and procedures with high degree of specificity and specialization that would allow increased competitiveness in supply services, reducing the costs and protection. Systems of modern lighting that take into account the principles of design and green design can lead to long-term sustainable strategy for development sustainable.

2. A new vision on premises of the design on structures for tourist accommodation

The tourism in relation to other areas of economic activity is still on a steady pace of positive growth, in the world he was influenced by following factors: developing tourist product market, expanding of hotel chains networks, intensifying competition against the background growth of education level of consumers and not in the last line the deepening of world economic crisis and worsening of energy crisis.

In the context of developments of specific travel needs and destination is necessary that the elements of design should be carefully and intelligently used by service hotel providers. This approach constitute a real advantage in the process of differentiation and specialization of the supply of services, aiming to achieve alike economic efficiency indicators [2, p.10]. These design elements are used consciously and scientifically by hotel chains and less by independent hoteliers. This raises the issue of a specialisation of designers in layout and decoration of hotel premises.

When the standardization in the construction technology has generated modern, fast and flexible methods in carrying out of hotels and the specific facilities, has arise the issue of developing of standards also in the field of inner design and their components such as for example lighting. These components of design have aesthetic features, of comfort and functionality for both hotel staff and customers [5, p.125].

Interior design includes both the systematic planning, and proper treatment of inner spaces, like it lighting system which requires harmonizing it with the other components inside: walls, floors, ceilings, furniture, decorations, etc. It should be pointed out that often is confuse two different concepts, and i.e., interior decoration, which refer to a smaller area compared to interior design which requires a holistic approach.

Since the early twentieth century there have been recorded the first concerns in the hotelier design field. In 1904, we can say that the work carried Elsie de Wolfe was set up the interior design, a concept embraced also by the tourism industry through developing hotel chains. From this moment is manifesting presence of a new field of economic activity by recognizing importance of indoor design. There is a big difference between the approach of design in civil engineering, commercial and hotel sector. That makes the preparation of designers which specializes in interior decoration hotel to have a stock of interdisciplinary and specific knowledge. In addition to the specific and technical knowledge that he must possess, the designer had become today to be a contractor, a coupling agent and a manager handling the material financial and human resources. For a good relationship with its customers and suppliers the designer should possess the following skills: communication skills, entrepreneurial skills, artistic skills, the ability to see in the space, ergonomics knowledge, professional ethics, project management, basic concepts concerning legal contractual relations, basic of economic concepts related to resources management. It should not neglected the fact that today a specialist in the arrangement should be well informed and aware of new trends, to be able to apply the most modern technologies in environmental protection and be able to provide solutions that lead to a reduction of hotel costs operation.
Interior design work in the hospitality field is complex, which has results in a better organization and management of resources. Design and realization of interior design in the hotel involves the following steps:

- elaboration of the draft based on the most modern technical solutions appropriate to the situation;
- design and organization of team structure;
- subcontracting activities;
- preparation and sending of technical instructions;
- cost estimates, preparation of budgets and their methods for checking;
- identification and evaluation of parameters and technical limitations of construction;
- elaboration of technical standards and a documentation adapted to the hotel profile and to their guest;
- organization of operational structure of site;
- interior decorating project preparation and of facilities;
- implementation and monitoring of technical parameters in the field;
- planning in activities execution order;
- planning of settlements with providers and beneficiaries;
- identifying of hidden defects;
- reception of work [1, p.393];

Professionals specialized in the design hotelier offers management of project and execute of construction documents such as drawings and technical specs. Modern interior designers must to be able to perform multiple tasks that require a high level of creativity, but within the existing industry standards and regulations. They must be able to negotiate contracts, to ensure project management, budget management, and coordinates the work in progress. Whatever the project, they must identify problems, analyze specific requirements and to assess realistically the standards, technologies, resources and time constraints, legislative and procedural [3, p. 341].

All design and planning actions must ensure the health and safety of staff and customers and must protect them at any time. In the current European context focus is on reducing risk factors, protecting customers through the safeguarding electrical installations, plumbing, lifts, windows and other structural and the environment components.

By using modern methods of design and through an intelligent choice of lighting systems can be significantly reduced the costs specific by 30 percent to 50 percent. To reduce the operating of costs of the hotel an ideal solution is to use to a maximum conventional energy, especially solar energy. Therefore, the design must consider the following aspects:

1. reducing the use of electric lighting sources;
2. building skylights able to reflect sunlight;
3. replacement of conventional bulbs with fluorescent one surrounded by light reflection systems;
4. efficiently signalling of service spaces;
5. development of a computerized timers system able to manage photoelectric opening doors, interior and exterior lighting;
6. placement of sensors to detect motion in the indoor service spaces and those of common use;
7. using light colours in both indoor and outdoor spaces;
8. positioning of buildings in order to protect against wind and air currents through forest plantations, terraces or other technical solutions;

9. using of screens, some adjustable blinds to ensure protection of windows and interior spaces from direct sunlight

Often in the design of premises importance of lighting as a factor generating pleasant is neglected. Hotel spaces whose ambience is not appropriate, here as it is about rooms for staff and those intended for customers may induce negative effects’ on the psyche can and work capacity. Elements of well-chosen and harmonized environment provides: creating a visual comfort, staff work efficiency, improving customer product quality, improving the level of awareness, prevention of occupational accidents, etc.

To ensure an appropriate lighting the hotel sector must be taken into account the quality of light used, the amount of light planned on types of spaces along the entire days, the specific needs in order to ensure visual specific acuity.

Qualitative aspects of lighting refer to: the degree of brightness of the light beam reflected glare, the degree of uniformity of light, the ratio between light and shadow and to light colour.

Lighting quality implies a luminous flux emitted by the body and the extent to which bodies are illuminated, of great importance is the relationship between light intensity and the exposed surface. A quality indicator often measured is visual ability, which refers to qualities of visual analyzer such as: visual acuity, contrast sensitivity and speed of perception [7, p. 328-329].

There are no uniform criteria in determining the nature of systems and levels of illumination of the spaces. They differ from country to country and are influenced by economic development level. It was found, however, that low levels of illumination are more effective than excessive level. The effectiveness and efficiency of lighting systems are influenced by the following elements: size of the object, the contrast between object and background, reflectance and viewing duration [7, p. 329-330].

Lighting quality is given by two distinct types of light sources: natural and artificial, each of these types offer advantages and disadvantages.

Sunlight creates optimal visibility; human eyes are adapted to this type of lighting and ensuring a greater diffusion of light. This type of light is economical and hygienic but limited. During the use of natural light there are fluctuations in both quality and quantity [7, p.334].

The advantages of artificial lighting have led over time to expand its use to the detriment of natural, mainly because of the potential to be used during the day. However artificial lighting is very expensive and often can be harmful to the human eye [7, p.334]. Artificial lighting should be closer to natural light parameters such as: intensity, colour and calorific radiation.

Light like any other energy source must be used scientifically and rationally to avoid waste. Evidence indicates in case of that large buildings such as hotels, into the atmosphere are discharged large amounts of carbon dioxide, thus contributing negatively to creating the greenhouse effect and thus to global warming [9, p.88]. To limit such adverse effects is required designing of a system combined between natural and artificial lighting. This approach must be completed by carrying out actions to inform and educate customers and staff hotels in the spirit of saving and limiting at maximum of specific consumptions.

Each type of space Hotel, either production or intended customers requires a system of lighting properly and a certain intensity of light since the human eye needs a light different depending on their activity. To regulate and standardize these systems of lighting and intensity of
light induced; studies and publications were carried and have been developed codes of good practice [9, p.10].

The design and development of lighting hotelier system must take into account the harmonization of ergonomic components, psycho-sensorial and economics in order to respond to better efficiency criteria. In some cases the light should have an intensity strong, diffuse, to be indirect and to induce a feeling of warmth and comfort, while in the other cases is required limiting the number of light sources.

In the past natural light was used to a maximum, so that throughout the day lighting in hotel rooms was favoured by large windows, buildings being designed with facilities for housing, common areas and offices.

For economic reasons and in order to commercial recovery to maximum of spaces, the height of ceilings and windows size was very much reduced in all buildings and also in hotels by default. This resulted in insufficient lighting uneven and limited of spaces. In the decade 6h of the twentieth century Raph Hokinson and James Longmore have advanced concept PSAL (permanently Supplementary Artificial Lighting), where sunlight was used as an alternative to artificial light [8 p.197]. This was because approximately 80 percent of indoor spaces were artificial lighted and only 20 percent was natural lit. This approach doesn't have economic considerations but only aesthetic and psycho-sensorial.

Currently there is an opposite approach to the concept stated; all companies are concerned how to reduce energy consumption from traditional sources. Although currently the cost of placing photovoltaic panels on building facades and roof are too big, probably in the future these technologies improved and accessible will allow including the widely use of them in hotelier sector, providing total energy autonomy.

In Romania, by the legislation concerning the classification of tourist reception establishments, lighting component it is mentioned by the enumeration of classification criteria [4 p. 135]. The reference of these criteria is done without to present more technical details, which leads us to believe that the realization of the lighting system is at the discretion of the hotel owners and hotel managers, based on the analysis of solutions offered by the designers.

In applying principles of design it must be taken into account of certain elements specific of construction and endowment of the hotel premises: ergonomics and safety of construction; plumbing; electrical installations and how the light builds space atmosphere [1, p. 387], colour and how it affects the visual environment through the qualities psycho-physiological; materials and textures to simplify maintenance and to provide visual comfort; ornaments and decorative items for building an intimate atmosphere, comfortable and which confer prestige and elegance for these spaces [7, p.98].

The hotel facilities design and layout must take in account a series of principles on the system of lighting, such as: lighting must provide a clear view of space and to ensure a state of comfort and safety through protecting of plugs with caps, by protecting using boxed lighting lamp to avoid injury by breaking them, where is possible to use LEDs that enable low power consumption, reliability and a prolonged period of life [7, p.333].

Light is an important factor in the interior design through the way in which it builds the atmosphere, so designers use different modes of illumination intensity and colour light sources [7, p.335].
In terms of colour it was found that certain colours cause a certain emotional state and mood. Bright colours, with pastel shades, centred on yellow creates a good mood, alertness, activates and dynamizes. The old concept after which the dark colours better resists to dirt has been ruled by practice and these were being used purely for psychological reasons [8, p.176]. Red colour makes it grow muscle tension, stimulates blood pressure and respiration rate. This colour requires a controlled dosage in hotel premises being used primarily in the locations that involves dynamic activities: bars, night clubs, and discos. The blue colour makes to decrease muscle tension and blood pressure, calming breath and pulse frequency therefore is used in the areas that involve relaxation and leisure: swimming pools, bases of treatment. Yellow colour has favourable effects on metabolism, memory and attention, so it is mainly used in the hotel rooms. Orange colour favours digestion, accelerating heartbeats and maintain blood pressure, this colour is commonly used in the food premises. Green colour, lowers blood pressure, calming breath and has effects antidepressants being assimilated with the, therefore in common areas of hotels are used very many plants [6, p.31].

3. Conclusions

Consequently, "the essence of interior design philosophy implies that all those involved (designers, architects, builders) to understand the impact of global design components on human health and the environment in line with sustainable development and protection of specific elements [1, p. 69]. The technological development and their impact in the practice results in increases the number of alternatives, quality solutions that can be successfully used in the construction and decoration of the hotel premises. The essence of planning processes is represented by the understanding of the central objectives of sustainable design, construction and operation of tourist accommodation structures, identifying obstacles and financial constraints in the relation with the life cycle of technologies, the reliability of certain materials and energy amid global crisis. The essence of arrangement processes is represented by the understanding the central objectives of sustainable design, construction and operation of tourist accommodation structures, identifying of obstacles and financial constraints in the relation with the life cycle of technologies, the reliability of certain materials and items created amid global energy crisis.

The real challenge for everyone involved in carrying out of a hotel operation is to find the answer to the following issues: effective use of material resources, energy and water [3, p.293]; using materials that do not pollute the environment, recyclable and using biodegradable materials whenever possible; creating a healthy indoor environment; waste reduction and recovery for energy; production and use of unconventional energy; signalling to induce a saving behaviour to customer and employees.

Under the pressure of contemporary social and economic factors and under constraints of different categories: beneficiaries, hotel owners, seek solutions for reducing energy consumption through approaching the management processes in an integrated system. Optimizing the hotelier environment based on scientific criteria, will increase economic efficiency experienced through rational management of economic, financial and human resources.
References