

Architectural Lighting, a way to transform Space, a new way to satisfy the Visitor

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ABSTRACT

Architecture and Lighting are two important domains strictly connected during the design procedure of the space and especially during the use of the Built environment. In this paper it will be sited the interaction of the Architectural design with the Lighting design in order to satisfy the user, in order to please his visual and sensual needs. The appropriate combination of these values (Architecture and Lighting) provides the host an essential formula to satisfy and to present a space full of experience.

In Tourism the basic value is to satisfy the most special needs and the designed built space and outdoor environment become the shell to achieve that gold. It is important to realize that visitors' needs and cultural background might vary. As a result the notion of a qualitative visual environment might vary as well.

How much light is needed in Tourism facilities? Is the quality and the quantity of the lighting related to the visitor's background? What type of lighting sources and lighting installation to achieve a sustainable design? Is colour appropriate to attract and satisfy? Does Light and Lighting (the light as a mean and the light as an effect) become visual stimuli? Do they enrich the image projected to the eyes of the user? Which are the boundaries of exaggeration? Should the location and the quality of Natural light affect the design process?

These questions sited above are the basis of an analytical presentation of touristic spaces, of possibilities to enhance the spatial qualities through Light. Tourism is not a trend. Architectural and Lighting design are not trends too. New ways to conceive and to design tourism facilities

are mandatory. The visual environment in touristic amenities satisfies and pleases through a holistic view in order to offer great and new experiences concerning the use of the built space.

Key Words: Architectural Lighting and Hospitality, Lighting and Tourism, Light Attraction, Hotel Lighting

INTRODUCTION

Tourism is a Domain, an “Industry”, which has been totally reviewed since the past years. During the last years a number of facts affected and inspired the notion of Tourism, the philosophy of the host and the requirements of the visitor. A given place, its history and its environment are not enough anymore to please all kind of visitors. The provided touristic product has totally changed. It has been enriched by new services, new uses and especially new experiences. Visitor during the last years has changed too. His philosophy of visiting, his willing and his interests have increased. He demands rather new experiences than a usual hospitality, not only based on the tradition, the sun and the sea.

The visitor wants to live in the place and not only to visit the place. That is to say, that the meaning of how hospitality is recognised has totally changed, transformed and it is evaluated in a different way than before. The fast-forward transmittance of information in real-time, the huge number of offered options, the possibility to make comparisons, the easiness to travel, the globalised traveler constitute some reasons to develop Visitor’s criteria.

In order to accomplish, to please the most challenging visitors’ demands, there is worldwide a tremendous increase of building-refurbishing-renovating Hotels - of all scales. The Design procedure of a new or a renovating establishment is based on a numerous facts provided by the business plan and the target group. How to please the customer and how the customer is be to be pleased are setting the new reality. Architectural design is called to fill in the new map of demands. It is the provider of the final shell – interior and exterior – in which the Guest will act, feel, see and generally experience. Throughout the detailed recognition of the business plan and the given facts, Architecture provides with the adequate solutions, of all scales, to accomplish the gold. A strictly connected domain to the architectural Design is the Lighting Design. Artificial and Natural light constitute values of the built space that are lately incorporated to the design process in order to offer fresh qualities on the built environment and new experiences to the user.

ARCHITECTURAL & LIGHTING CONCEPT – DESIGN PROCESS

A given project has some given facts. The master plan and business policy, the target group, the site, the general concept of the touristic establishment, the budget, constitute key elements of the

forthcoming project. Throughout the design Procedure all the related parts take into account the given facts and each one proposes the appropriate solution referring to its domain.

On the design scope, the Architect is analysing the main topics searching the appropriate design solution to service the needs of every space. Forms, Volumes, Textures, Colours are some of the means to accomplish the design purpose and to transmit the wanted feeling to the guest. The final atmosphere of the space is based on a consistent correlation and intervention of other specialities too. Lighting design comes to reveal the initial implemented qualities and to provide with new experiencing ways the designed-built space.

Before analyzing the way of reading the built space through the lighting design it should be important to discuss what is lighting and what is light. Except its nature under the scope of a Physician, light is the mean to communicate messages, often, Light is the message. All the lighting proposals should be based on a philosophy in which the aesthetical, technical, financial and technological aspects are deeply examined. By working and analyzing the Lighting Design in all possible scales - from masterplan design to an object creation- it is obvious that its implementation recreates and changes the lit target. The basic tool in all lighting interventions is to understand and to feel the design concept. It is the concept, the basic idea that follows all the steps during the lighting design process where all the essentials of the architecture and the users' needs have to be incorporated. Lighting concept is related to the holistic design process taking into account the sum of aesthetical, technical and functional issues.

If someone could divide lighting involvement based on the scale of the project it could be said that depending on the architectural scale and the business policy, these interventions could be analysed as:

- _ Master plan Lighting*
- _ Architectural Lighting (and Use)*
- _ Point Lighting-Visual Stimuli*
- _ Semiotic-Artistic Lighting*

MASTER PLAN OF LIGHTING

The Master plan lighting proposals relate to the general business identity and policy, to the site of every project and the policy decisions of how much light and its quality are to be decided by the design team. Geography and the surrounding environment of the project have to be examined with a great respect. The incorporation of the natural light and sunlight has to be examined. The approach of the lighting designer might alter a lot if the project is to be established in an urban or a rural environment. The illuminance and luminance levels may vary. The background, the history and the cultural elements of the site should be somehow implemented. The potential background

of the visitors must be incorporated to the overall lighting policy especially concerning the style, the quality and the quantity of light. In this step, areas of different use and points of interest within a certain touristic complex, may be confronted in a special way and may be highlighted inside this built complex. Masterplan lighting deals with topics like the general style, the general feeling (low/high light levels, security lighting, amenity lighting etc.) and generally the spatial atmosphere. The minor detail may have an extreme role of understanding the space, in affecting user's psychology.

ARCHITECTURAL LIGHTING AND USE

The Architectural lighting relates mostly to space and its use (reception, room, corridor, restaurant, etc.) concerning the human perception, the human scale and dimensions. It is related to the activities and the use of the space (to reveal and service a given use, to fulfil the visual tasks, to make comprehensive and readable the scale, the materials, the textures etc). It reveals the forms and volumes; it highlights the architectural qualities of the space by offering new way of seeing to the visitor. It is very important to be dealt both on the technical and aesthetical aspect of the space in order to achieve the best result for the viewer and to attract his visual interest.

POINT LIGHTING – VISUAL STIMULI

In this category light is focused on a minor scale; a small niche, an architectural element, a water feature, an object. Points of interest, pieces of art, objects, might become the main lit target. These elements by illumination could constitute supplementary visual stimuli within the built environment. These objects' qualities like shape, form, textures and their shadow projections have to be conceived with great respect on the detail. The lit target has a story to tell, a feeling to reveal. Often this category of light intervention is related to the master plan of the general lighting and the key visual themes created on and around the overall complex.

SEMIOTIC-ARTISTIC LIGHTING

The specific type of lighting project refers to the transmission of a visual message through a projected image. In this case the scale varies and this category is not strictly connected to the dimension and the size of the project. It is related to the meaning, to the message, to the event, to the surprise. Light in this case is used as a tool to please, to relax, to project a feeling, to demonstrate an idea or an atmosphere. Colour and exaggeration might be the way to communicate and to transmit these notions. Usually the character and the business identity of the touristic establishment are presented by semiotic lighting interventions.

It is of a great importance during the lighting approach the use of the lit space (or the lit target) and its nature. Every project has its different needs related to lighting; the specifications of each project vary. Different use of space and the different users determine the illuminance and

luminance levels. Meeting these needs is of a great importance to achieve a quality lighting proposal able to fulfil the visual requirements. A lobby or a restaurant, a pond or garden have not the same requirements. It is clear that the analysis of the uses and the holistic comprehension of the visual tasks provide with information about the lighting needs. Lighting designer must study the type of lighting installation, the nature of lighting scenarios and the possible lighting alterations based on possible space alterations. For example a lobby area represents the hotel's character and should be confronted with a different lighting philosophy comparing to a wellness space. The lobby lighting except of welcoming the customer and presenting the image of the business might vary by altering the light levels (low-high luminance levels). On contrary, a wellness space represents a relaxing place where intense lighting and contrasts might discomfort. The importance of understanding the lighting needs of a space is to understand the lighting needs of the user. In order to achieve that, international norms and measurements referring to the illuminance and luminance levels are some basic tools.

A qualitative space though, it is not only related to measurable facts. The quality is always an aggregation of a complex search. Psychological parameters influence the user's appreciation of a space's qualities. The quality of a lighting installation is related also to different values like hue, color, brightness and personal impression. Creating a qualitative space depends on 1) brightness levels of surfaces and objects, 2) the presence of visual stimuli and visual themes, 3) the quality of rendering colours, textures and details of the lit environment, 4) the colour temperature of the light, 5) the overall feeling of safety which the user has, 6) the ease and secure movement in the lit environment, 7) the lack of discomfort and disability glare, 8) the lack of visual and light pollution in visual field. The total impression is a combination of the above mentioned values which affect personal impression of space. Light Consultant is responsible to study and discuss their incorporation on the final proposal through his design and the final choices.

Another important issue is the aesthetical part of the lighting intervention and its materials. The objective of a light installation has to deal with a double parameter:

The first parameter has to deal with the final lighting effect of the installation on the viewer's eyes. It is related to the "projection" of light on the lit target, though the second one is related to the "projector" of light. It is of a great importance to study simultaneously the aesthetics of the lighting installation referring to the used material. The light fittings should not compete the message of the lighting concept, especially they should not struggle the spatial qualities.

The choices of lighting material though, are not only based on aesthetical and psychological analysis. The type of lighting (direct/indirect, diffusive/spot, amenity/safety etc.) and the choice of luminaires may consist the material to meet the above mentioned values but there are some criteria referring to technical, financial, energy saving and sustainability choices. In this technical part of conceiving light, lighting designer aims to propose a lighting scheme which will be finely specified concerning the way of installation and the way/rhythm of conservation. An easy installation and certainly a convenient change of damaged light sources/fittings determine the correct conservation of the lighting installation. A successful lighting installation is often based on detailed planning

and precise specification for the lighting material. So, at this point it is lighting designer's obligation to specify the type of lamps proposed, their nominal lifetime as well as their characteristics-properties concerning quality of light and energy loads. As much as the lighting choices are low energy consumption and of a great lifetime the higher sustainability and preservation of the project is achieved and ensured.

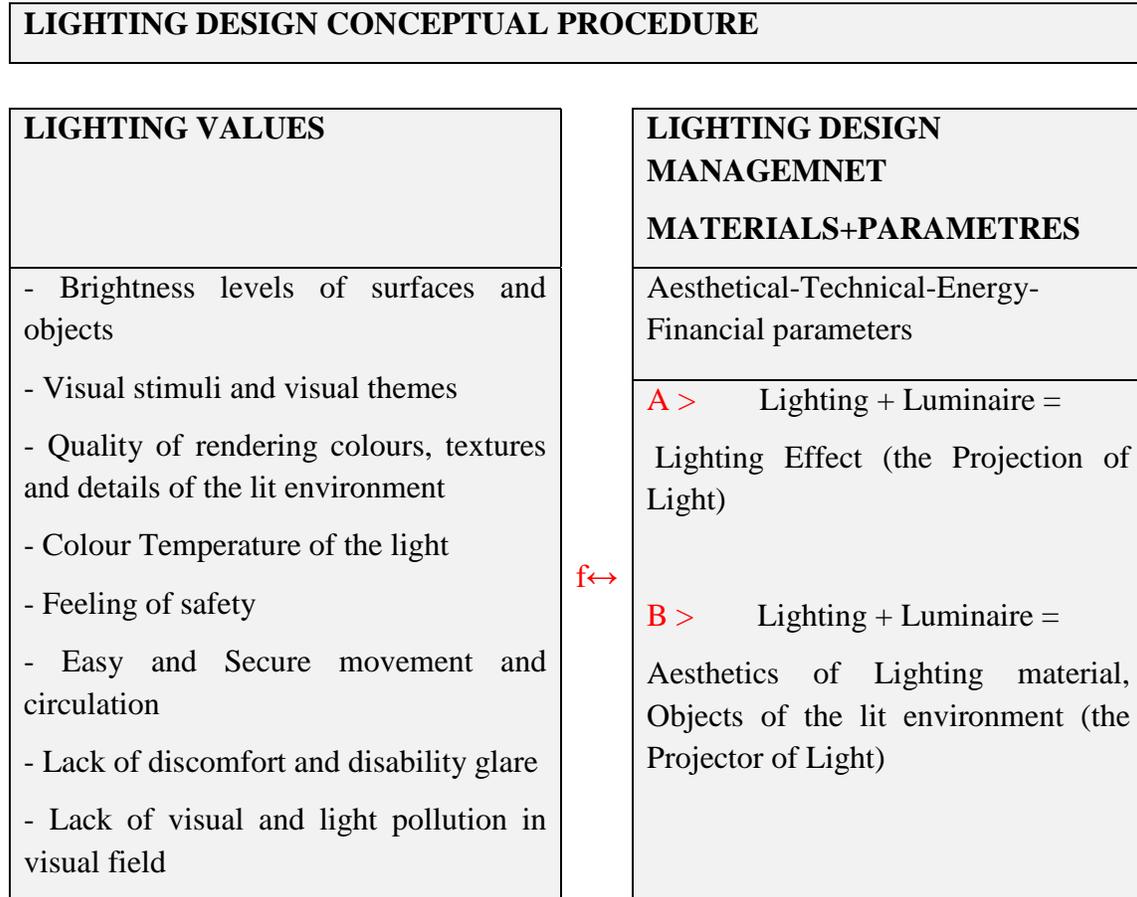


Figure 1: Lighting Design conceptual procedure.

Generally it could be supported that the above mentioned strategies consist the steps of approaching a lighting project though different values and facts might occur. Each project has its own specifications, its classified context. The scale of the project might alter the intervention's priorities. It is a fact that a public area and a private one are dealt with a different point of view. The aesthetical and technical strategies in public space are slightly objective. Measurable levels of light like luminance and illuminance are more objective too. Similarly, it is asked to avoid extreme light levels, intense differences and contrasts, light pollution and glare. The fact is that, especially for the public space, the proposed material should be of a great resistance against weather

conditions, vandalism and characterized by quality construction (IP and IK rate of luminaire). In private spaces it is important for the user-visitor to have the choice. So, automated control systems should be implemented to the private areas (rooms, terraces, spas, etc.) for the user to change, choose and affect his lit environment. As it is quoted above, the lighting level standards vary depending on the user. The facility for the guest to alter the lighting conditions, dimming artificial light – controlling natural light, and to choose lighting scenarios might highly please him.

At this point it should be stated the study and the potential use of natural light and sunlight on Lighting conception. It is often observed that lighting interventions are not dealing properly with the natural light and sunlight.

Natural light and especially sunlight have to be confronted as a tool during the initial design. The first step for the lighting consultant is to decide whether or not to allow natural light and sunlight to penetrate the space. It is not always wanted. It might damage, it might cause glare and discomfort, depending on the use and the objects found on each space. The continuous transformation of the natural light's projection on a space depends on the time or season and may create masterpieces of illuminated space. The positive effects of natural lighting and sunlight on humans are well known by scientific researches throughout past decades. Its aesthetical impact on the architectural space is strongly recognized. The detailed observation of natural/sunlight's projections (often accidentally created) on our visual environment should be confronted as a great library of visual experiences. To understand and to analyse the nature of natural and sunlight provide us with the appropriate tools to conceive space with light and shadow.

SPATIAL LIGHTING APPROACH

The lighting scheme of a hotel complex is to be confronted as a multiple task concerning the different uses and needs, not only for the visitor, but for the staff too. Initially, lighting is one of the fundamental elements to create aesthetics, a visual environment full of experiences. Some initial principles though, would help to comprehend the qualities and the features found on every lighting installation and the way the visual perception is affected.

Firstly, the quality of light is to be determined. Good colour rendering of the lighting sources and generally warm white light (colour temperature around 3000-3200°Kelvin) is the usual tendency. Other type of colour temperatures (colder light) may be incorporated depending the design objectives but in general the warm tone of lighting enhances the mood of the visitor. At this point it is important to mention the visual adaptation referring to light levels. It is essential to set the luminance levels in order to offer a smooth transition from space to space, based on the ability of the eye to adapt to the visual environment.

The use of lighting features that cause visual discomfort is mandatory to be prevented. Visitors' ease is not only based on the offered services but also on the psychological and physical qualitative comfort. The elimination of disability and discomfort glare as well diminishing light pollution consist great values during the design procedure, offering spatial quality.

Orientation throughout the building complex is also of a great respect. Since the arriving process to the hotel till entering the room, visitor needs to feel orientated. Moving from place to place is a common habit of the hosted people. It is a usual procedure for him to get to know better the place and “discover”, to have the visual control of the space. In this case it is essential to mention the importance of the emergency lighting scheme. It has to be set up under strict International Standards and laws in order to function correctly, to guide visitors safely in case of emergency situation.

An important domain of Hotel lighting is also the energy consumption and the sustainability of the lighting installation. A fully automatic control system of lighting throughout the whole building has to be assigned. Low energy consumption light sources like LEDs and OLEDs have to replace older lighting technologies. Presence detection, zone lighting, daylight sensors related to artificial lighting, dimming possibilities of the interior and outdoor lighting, lighting scenarios, special software, could guide to a great attenuation of running costs and great savings could be achieved. The use of hotel spaces modifies during the day and night. Occupancy of spaces, visual tasks and the number of the users is decreasing during the night. Lighting scenarios provided by intelligent control systems may follow this change to adapt to the actual needs and simplify the maintenance of the installation.

ARRIVING THE HOTEL

The first impression of the hotel complex is the arrival procedure, the entrance. The combination of architectural elements and a carefully lit welcoming environment arise the feeling of the visitor. It is the first projection of the hotel and a good lighting demonstrates the character, the philosophy of the space and the secure environment to enter.

LOBBY AREA AND LOUNGE

The first visual experience of the Lobby gives rise to expectations of the service quality. Lighting, as everything else, has to be welcoming and friendly.

While entering the place the user has to be orientated. Lighting could help this procedure by emphasizing the different uses guiding the visual attention.

Lobbies and Lounges have a multiple role in the complex's operation. These place usually become meeting points, working areas or relaxing spots. So a multiple character may be introduced by using different types of light and a variety of illuminance levels; always under a holistic design. Diffused and indirect lighting additional to point/object lights may provide the appropriate visual environment to meet the multi-visual tasks.

RECEPTION

Reception areas have a double role on the overall space, a decorating and an operating nature. It is practically the first area where the customer is staying for some time, to communicate, to fill in guest forms, to ask for some information. The lighting reveals the architectural concept and aesthetics.

Often it is observed that reception desks are dark or low lit. It is mandatory for the visitor to envisage a well lit reception environment which assists the communicative process. Besides that, a well lit desk surface improves the visual performance of the reception personal. Reception areas and desks have to be illuminated by a good quality of lighting (colour rendering-colour temperature) and an adequate quantity (illuminance levels) in order to fulfill various visual tasks and to please the visual sense.

CORRIDOR-CIRCULATION AREAS

The corridors and circulation areas such as elevator areas and stairs are the transitional spaces which lead the guest to the room. A sufficient quantity of light, with no glare effects, is necessary to circulate with safety and ease. Signaling the rooms' numbers and doors may provide the space with an additional quality.

Moreover, corridors are the intermediate space between the general impression of the building complex and the more personalized area of the room. It is a transitional space in which the visual task is just to walk and to be orientated; so, the designer may introduce different philosophies through lighting effects in order to avoid a "tunnel effect" and to transform this space to a "visual trip", where images and feelings are imprinted on the visitors mind.

Functional spaces, found in corridor areas need a careful treatment. Not only for the working person (relatively higher light levels) but also for the guest, it is important for these areas to be incorporated to the general design point of view.

ROOMS-PRIVATE AREAS

The design and style of the hotel room reflects totally the business's value of what is hospitality and comfort. The room has to be confronted as a multifunctional personalized space. The type of the guest, his background, his needs, vary; his visual preferences and performance vary too.

The basic idea for the room setting is to feel like home. To create a designed harmonious and balanced visual environment is one of the primary goals. To provide the guest the appropriate means in order to create a self adapting environment is essential. It has to be taken into account the variability of different uses taking place into a hotel room depending the nature of guest's stay. Sleeping, relaxing, working and reading are several of these needs which demand various light levels and diverse type of designing architectural and lighting elements.

To meet up these requirements individual control systems could be implemented. By these intelligent controls the user may choose the lighting scenario to suit his visual preferences. By this digital control unit the guest may manage the blinds to adjust the natural light, may dim the light level to personalized level, may alter the lighting scenario in the restroom. A number of preset lighting scenarios could be programmed as well. A welcoming light scenario, a sleeping light scheme or a waking up light scene provide visual experiences. Safety and orientation at night should be considered too.

During the initial lighting design the design team and operator have to set the participation degree of the guest to the lighting scenery in order to assign the appropriate installation. The more the guest interacts and participates to the adjustment of his environment the more exciting the stay becomes.



Figure 2: Examples of different Lighting Scenarios for a Hotel's typical room (from left to right various adaptations: Daylighting, Welcoming, Reading (Dialux Software)).

FACILITIES-AMENITIES

New uses, such as spas, wellness centers and swimming pools are introduced in hotels' facilities in order to make the stay more comfortable and the service more competitive. These spaces should be dealt with great respect to the notion of relaxation and convenience.

Controlling the light levels and especially the lighting scenarios to make diverse sceneries is an important design tool. The ability of the lighting scheme to differentiate the colour temperature (from warm light to cold light and vice versa) is a mean to recreate the space. Careful introduction of colour in lighting scenery might offer more value to the space. Introducing natural light to the space adds a quality on well-being and gives an important visual and sensual connection with the natural environment.

MULTIFUNCTIONAL ROOMS-DINING

The majority of the hotel businesses provide the customer with a variety of services except of the rooms. Dining, Conferences, Seminars, and Halls for parties and social events are usually spaces found in hotel complex. The fresh and cool design not only in lighting but in the interior decoration and architecture becomes more and more necessary to meet up the most extreme demands. Concerning the lighting it is necessary to point out several key elements that make an installation successful and adaptable to any different event.

Firstly, the most important issue is to install a good quality and totally controllable lighting scheme. Spotlights on tracks and other light fittings must be dimmable by a central control unit. The ability of dimming up and down the sum of the lighting sources may adapt to any kind of concept during a social event.

The potential of changing the colour temperature (ability of altering the degrees of Kelvin from warm to cold light) is also to be discussed.

Specifically when examining a Seminar room, there might be different space situations which demand a different type of visual environment. In such a room an oral presentation, a screen presentation or a discussion could take place. The fact of establishing a blind control system to control natural light is also important.

Another example is a dining room or the breakfast room. Both of these rooms while used during the day should have direct sight to the outdoor environment and perspective views to the outside. The good colour rendering of lighting sources and the pleasant atmosphere are mandatory for the guest to savor, communicate, discuss. While the nighttime usually it is necessary to dim down the lighting to create a more cozy and relaxing environment.

In all cases orientation, emergency lighting installation and the overall feeling of safety are very important for the well being of the use

OUTDOOR SPACES AND FACADES

The outdoor areas and the façade of a building are the identity projected to the eyes of the viewer. These are the advertising board of the hotel in the surrounding area to transform it into a landmark. Exaggerations of lighting intensities and colour may be abstained, though a holistic and conceptual installation might attract the visual interest.

The basic rules in outdoor spaces and facades are to take into account the architectural concept and forms additionally to the business plan and philosophy. These notions are the basis of establishing a contemporary lighting design which highlights the character of the company, no matter if it is a family enterprise or an international firm. It is also necessary for the outdoor lighting to avoid any visual impact on the guest's private areas like the room and its terrace.

Signalizing the entrances, the exits and fire exits, the process of arrival and the pathways are in general some key elements while conceiving lighting. The result must always be based on the above mentioned properties, the business' identity and the revelation of Architecture.

FACILITIES-WORKER'S ENVIRONMENT

In general there is a variety of different types of personnel working in a hotel complex. Their aim is always to service the customer and to offer the higher quality of hospitality for the guest.

No matter if these people are working in reception, restaurant, kitchen, technical department or cleaning personnel, their working environment should provide the appropriate standards in order to fulfill their job (qualitative lighting on the appropriate levels). For example a receptionist deals with a variety of guests' demands and has to cope with not only communicating but also writing, typing. The amount of light on the desk area should be alike to an office space (400-500lux) in order to achieve the variety of visual tasks. Likewise on a kitchen there are mandatory properties of the luminaires installed. A very good colour rendering is necessary for the cooking while high protection of fittings against moisture and heat ensure the safety above kitchen and food preparation.

CONCLUSION

Throughout the above analysis it is obvious satisfying the Guest is a complex procedure and a correlation between different professional specialties. The basic aim of Architectural and Lighting Design is to project the best image and to cooperate in order to please the eye and the brain. Sensing the space through Light and Lighting is possible; under a careful study of every spatial quality, in every project, the result enriches the environment by visual stimuli.

REFERENCES

- Tregeza P., Loe D., (2014). (2nd ed.) *The Design of Lighting*, second edition, New York: Routledge, Taylor and Francis.
- Illuminating Engineering Society (IES), (2012). *Design Guide for Hotel Lighting*. New York: Illuminating Engineering Society.
- Winchip, S. M., (2011). (2nd ed.) *Fundamentals of Lighting*. New York: Fairchild Books.
- Steffy, G., (2008). (3rd ed.) *Architectural Lighting Design*. London: John Wiley and Sons.
- Baker N., Steemers K., (2002). *Daylight Design of Buildings*. London: James & James Ltd.
- Bean, R., (2004). *Lighting: Interior and Exterior*. Boston, MA: Elsevier/Architectural Press.
- Boyce, P.R., (2003). (2nd ed.) *Human Factors in Lighting*. Boca Raton, FL: CRC Press.
- Τόσκα, Θ., (2008). *Αρχιτεκτονικό χρώμα. Θεωρία και σχεδιασμός + Παράρτημα..* Θεσσαλονίκη: Εκδοτικός Οίκος Αδελφών Κυριακίδη Α.Ε.
- Κοντορήγας, Θ., (2006). *Φωτισμός και αρχιτεκτονική*. Θεσσαλονίκη: Κτίριο.
- Ανδρεαδάκη, Ε., (2006). *Βιοκλιματικός Σχεδιασμός – Περιβάλλον και Βιωσιμότητα*. Θεσσαλονίκη: University Studio Press.
- Michel, L., (1996). *Light: the shape of space: designing with space and light*. New York, NY [u.a.]: Wiley.
- Aizlegood M.E., (1993). *Innovative Daylighting Systems: An Experimental Evaluation*. Lighting Research and Technology.
- Chartered Institution of Building Services Engineers (CIBSE), www.cibse.org, LG06 Lighting Guide , The exterior Environment 2016 / LG09 Lighting Guide 09: Lighting for Communal Residential Buildings 1997 / LG12/15 Lighting Guide 12: Emergency Lighting 2015.
- PLD-Magazine for Professional Lighting Design issues, Gütersloh-Germany, Verlag für Innovationen in der Architektur.
- L+D International Lighting Magazine, Issues, Sao Paulo-Brazil, Editora Lumière.