

Some Aspects of Artificial Lighting in Churches

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Introduction

In many interiors lighting is not only to be functional, but also, or even most of all, decorative. Such lighting is to create atmosphere and to spotlight architectural elements and details.

Undoubtedly such are the interiors of churches. In such places light performs numerous functions resulting from history, tradition, liturgy and symbolic aspects connected with faith. Its function is also shaped by the development of the modern lighting technology. Therefore, one should seek solutions which may ensure the desired lighting effect and at the same time feature the nature of houses of worship.

Symbol, liturgy, architecture versus light in a church

What we encounter in a church is the direct relation between symbols, liturgy and architecture for which reason each lighting design must take into account these elements of a church. Light in a church significantly affects the church's functioning, its appeal to the faithful and to the visitors. Artificial lighting should imitate as far as possible the natural lighting.

Symbol and symbolic representation of light

One of the main principles of building a church was its position in relation to the cardinal points. A house of worship had always been built so that its elongated axis was directed from the west to the east.

The altar was located in a chancel, in the east part of the building it was illuminated by the candle lights more intensely than the other part of the church show Jesus Christ as a Rising Sun.

In the aspects of lighting in churches according to the abundant symbolicalness, the attention must be drawn most of all on the symbol of light. The term "light" (from the

religious point of view) – lumen, means the force of nature which disperses the darkness, enlighten and revive all creatures.

The light for the early Christians symbolized Jesus Christ himself – Lux mundi, chasing away the Satan – the Prince of Darkness.

Four main reasons for introducing light into liturgy may be formulated. - no or insufficient amount of natural light,

- worshipping the altar of the Christ's Sacrifice,
- raising the minds and hearts of the faithful to heaven
- by means of the symbol of light reminding to the faithful of the eternal and unfading Light of Christ the Lord,

The light symbolized the Deity in all pagan and Jewish rituals of the ancient world. This is the best possible symbol of God, since the light is the least material of all material things. As Aristotle puts it: "Light is not a body, but a force (energy)", it not only illuminates but also gives life, and is indispensable for the growth and development of almost all organisms.

Use of light in liturgy

In the Christian world, light is used both in the liturgy and in many other rituals. It is used as a symbol, but most of all for illumination. By means of properly designed lighting, the first and the second of the above targets may be attained.

The light may help the faithful to concentrate on the liturgical celebration and it may also to some extent highlight such celebration.

The institution of Eucharist is the center of the Christian religion and is celebrated in the central point of each church – on the Main Altar. Therefore, lighting should be designed in such a way so as to focus the attention of the faithful on this particular space.

When baptizing, the priest comes out of "the darkness and death into the light and life" After the ceremony of washing with water, the priest or the godfather takes a lighted candle in to his hand. For this reason, a well illuminated church should have the baptismal font well spotlighted during the baptism liturgy.

Services during which the faithful adore the Holy Sacrament displayed in the Monstrance require the light to emphasize this momentous event. By applying properly directed light the Monstrance may be spotlighted to help the faithful feel the

atmosphere of the mass.

The situation is similar during the Way of the Cross Service. The paintings or sculptures representing the stations of the Way of the Cross the faithful to sense the atmosphere of concentration and reflection. Also for this purpose proper illumination is required. Switching off the general lighting of the church and leaving only the illumination of the chancel with the later and illuminated Ways of the Cross create atmosphere promoting deep reflection.

Many times illumination of a station of the Cross discloses to the visitors the beauty of the works of art in the form of the stations.

Similarly, the role and dramaturgy created by light during other sacred ceremonies may be analyzed.

Rules governing the lighting of churches

A good lighting design should take into consideration all aspects pertaining to the symbol, liturgy and architecture.

The lighting system should be also designed in such a way so as to incorporate all factors affecting the operability and functionality of a house of worship.

Chancel

The basic role of the chancel lighting is the following:

- 1) Ensuring proper illuminance in order to perform the liturgical ceremonies. Minimum illuminance level should be 300 lx on the horizontal surface of altar and stand.
- 2) Ensuring proper value of the vertical illuminance so that the faithful can following with due attention the rituals within the chancel.

The illuminance on the vertical surface should range from 300 lx to 500 lx.

Space occupied by the congregation

Lighting of the space must above all satisfy the requirements as regards uniform distribution of luminous intensity. The faithful need to have proper vision conditions. Adequate illuminance during the mass should range from approximately 80 to 100 lx. While during awaiting the mass should range from 10 to 20 lx.

Architectural decor

The lighting should ensure good mood of the congregation and enable them to freely admire the architecture and the decor of the church interior. Such conditions are provided by the proper illuminance from 20 to 100 lx.

In order to present the church as a historical monument, the recommended illuminance is 100-150 lx, particularly where any valuable works of arts are located such as sculptures and paintings. This level is sufficient to illuminate objects of this type.

Sources of light in the lighting in churches

By now, the interiors of churches have been fitted mostly with chandeliers and wall lamps with standard incandescent sources. Such lighting was many times insufficient and provided only limited possibility to adjust the light to the requirements. Nowadays, insufficient light in churches is compensated with halogen projectors of high intensity (500 to 1000 W). Such solution brings only qualified success. The spotlighted places are "flushed with light" without proper gradation of the illuminance distribution. However, more and more often modern lighting systems are being applied in church interiors. Such systems make use of latest, energy-saving and long-lasting sources of light and proper luminaires. Antique chandeliers and wall lamps may be then used for decoration only so as to accentuate the nature of the interior.

In order to illuminate the chancel and the altar for liturgical purposes, projectors with metal halide sources with the intensity of 70 to 150W giving warm light might be very useful.

To illuminate the architectural details, sculptures, polychromy etc. low-voltage halogen sources with the power of 35 to 100 W are often used, with properly distributed luminous intensity.

Ceilings, cornices, niches, etc. Architectural details may be displayed using line sources of light, i.e. by various types of fluorescent lamps. Big advantage of such sources of light is their diversity, durability and high luminous efficiency as well as the possibility to adjust the luminous flux.

Modern light sources, when properly selected and distributed, may create a completely new image of both historical and modern church interior.

Summary

Good lighting in churches should respond to the liturgical needs as well as to the vision physiology requirements and the necessity to properly accentuate symbolic, historical and esthetic values of church interiors.

Bibliography

[1] Church lighting, iGUZZINI.



Fig.1. Church in Września town near Poznań - interior with traditional lighting.
Decorative chandeliers and wall lamps providing uniform illumination
of the church interior.



Fig.2. Church in Września town near Poznań - halogen projectors with the power of 1000 W providing additional illumination for the altar



Fig.3. Church in Miłosław town near Poznań - interior with modern lighting
Vaulting and ancient organ illuminated from below by means
of fluorescent lamps hidden behind the cornice.



Fig.4. Church in Miłosław town near Poznań - interior with modern lighting
Vaulting and ancient organ illuminated from below by means
of fluorescent lamps hidden behind the cornice.



Fig.5. Church in Miłosław town near Poznań – interior with modern lighting
Vaulting and ancient organ illuminated from below by means of fluorescent lamps
hidden behind the cornice. Low-voltage halogen lamps with the power of 35 W
providing additional illumination for the stations of the Way of the Cross



Fig.6. Church in Miłosław town near Poznań – interior with modern lighting
Vaulting and ancient polychromy illuminated from below by means
of fluorescent lamps hidden behind the cornice.

Low-voltage halogen lamps with the power of 35 W providing additional illumination
for the polychromy and the altar



Fig.7. Church in Miłosław town near Poznań – interior with modern lighting
Vaulting and ancient polychromy illuminated from below by means of fluorescent
lamps hidden behind the cornice.
Low-voltage halogen lamps with the power of 35 W and 50W providing additional
illumination for the polychromy and the altar.