

# PROBLEMS OF ILLUMINATION OF PREMISES WITH MIXED LIGHTING IN PROCESS OF RECONSTRUCTION

Mag.Designer Yuliya Yanakieva; Mag+.Eng. Elena Nacheva

Design and realization of lighting installations for existing buildings under reconstruction is connected with a lot of problems.

Our task was to provide adequate illumination for

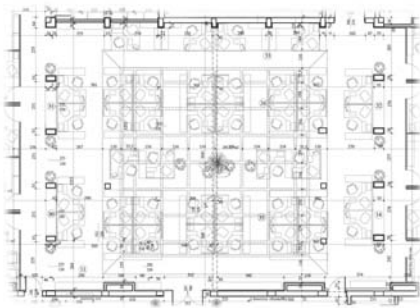


fig.2

visitors. The working places looked inwards situated along the walls. The middle section was illuminated by a skylight above the space designed for visitors.

Above the working places there was a solid ceiling,  $H=4.14$  m, where luminaires with fluorescent lamps with prismatic diffusers were mounted.

The most difficult problem to be solved after the reconstruction was the lighting system of the rectangular hall of  $420\text{ m}^2$ . The new uniform layout of the working places required better illumination for the space of the inner section of the hall.

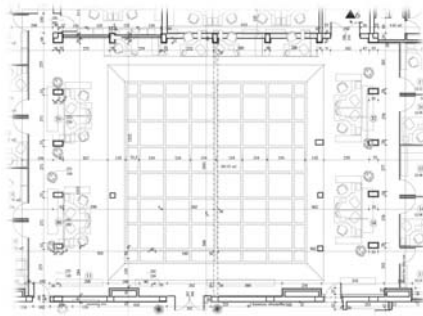


fig.1

BANKSERVICE  
(Central Management  
Office of ATMs in  
Bulgaria).

Before the reconstruction the hall was a bank hall and a great portion a bank hall and a great portion of it was intended for

The first problem to be solved was the proper type of luminaire for the space under the skylight: a luminaire that would not throw a shadow onto the working places during the daylight period.

The solution was the bell type of luminaire with transparent body and Metal Halogen Lamp HQTS 150W/840 manufactured by “LUMINA-Bulgaria” (ref. fig.3 and 4) thus avoiding shadows onto the working



fig.3

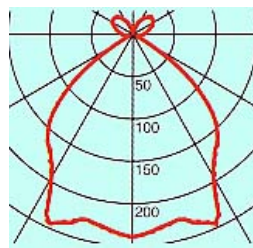


fig.4

places during daylight.

The second problem was to choose a proper light source that would make a good combination with the daylight. The solution chosen was to situate luminaires with fluorescent lamps 2x36W with semi-indirect light spread and fluorescent tubes TL-D/840, manufacture of LUMINA-Bulgaria, on the solid ceiling for the space above the working places (ref. fig.5 and 6). Both

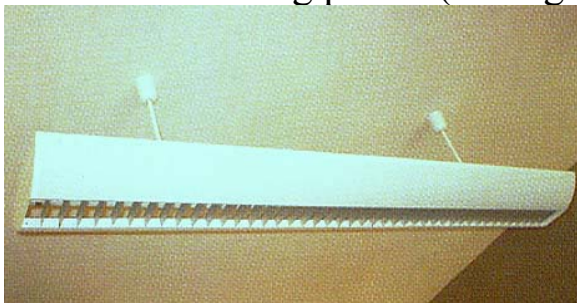


fig.5

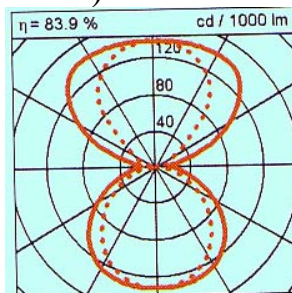


fig.6

luminaires (ref.fig.3 and 5) match well enough with the daylight to make sure that the darker zones of the hall are well lit by this mix of daylight and artificial light. The number and layout of luminaires were defined on the ground of the calculations with software program RELUX which has an option for entering the parameters of the light distribution curves of new luminaires.

The third problem was to select luminaires suitable for premises with computer working places.

The light distribution curves for both types of luminaire as well as the suspension height of the metal-halogen luminaires are chosen so that reflective glare on the computer screens is avoided while the space is brightly lit.

The fourth problem was to choose the best layout for the luminaires. That choice took into consideration the existing aluminium structure of the skylight. The luminaires are uniformly distributed over the working places at the cross joints of the shaped aluminium structure, which was also used for laying the cables of the lighting installation. The layout of the fluorescent luminaires follows the architectural plan of the interior and secures uniform lighting milieu (ref.fig.7).

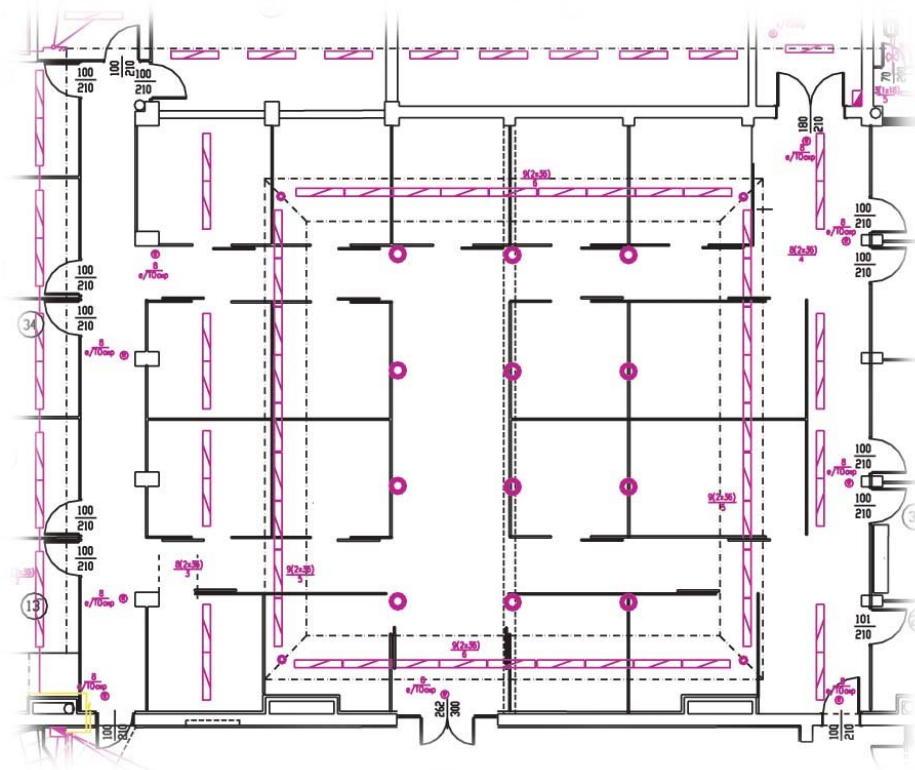


fig.7

The fifth problem was to pick out the luminaires most convenient from exploitation point of view.

Both light sources – the fluorescent lamp with ca.8000 hrs life and the metal-halogen lamp with ca.12000 hrs life – have been chosen in order to reduce to minimum the maintenance.

And last but not the least was the problem to choose a design of the luminaires that would match the interior. We took into consideration the existing interior plus the new features due to the new A/C system and interior functions.

Above the skylight, at the places shown in fig.2, we have put 4 floodlights with metal-halogen lamps 150W that flood-light the clouded glass skylight and, in the darker periods of the working hours, create the illusion of light coming from the sky(ref.fig.8).

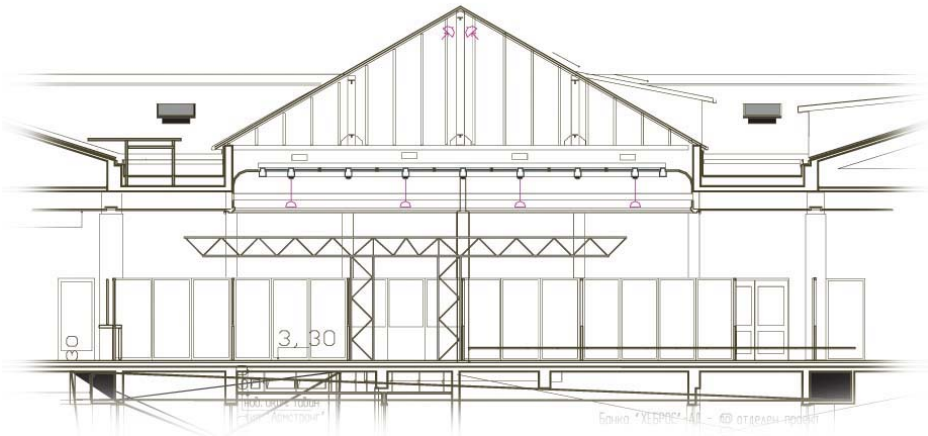


fig.8

Finally we want to show you a few pictures of the completed project – the people working in this hall seem to enjoy the light microclimate. We hope you, too, have enjoyed our presentation.



