



# Light Planning

## Q u e s t i o n n a i r e



# Facts About Conceptual Room Lighting

Excellent designs require professional planning. MSC Vertriebs GmbH has developed a form to list up the inevitable data as basis of your light planning solution. Based on this data an perfect planning of your lighting solution can easily be realized.

## Light Creates a Pleasant Atmosphere

Light permanently influence and change the mood of the entire room. It can create or prevent a comfortable, pleasant atmosphere. Artificial light sets accents, immersing walls in mild colours and bringing out highlights – it floods the room with a special magic!

## Excellent Lighting Planning

Lighting planning always starts with three important questions:

- How much light is needed?
- For what purpose is the light needed?
- Where, and in which places, is the light needed?

## Light and Lighting Selection

Light is treated as an additional material and as a design element. Depending on the illumination task, one or more lamp variants can be immediately selected. Initial estimates and calculation programs support determining the number, power consumption and other technical details of selected light sources. This is carried out in close coordination with the selection of lighting itself.

## Lighting Quality and Quality Characteristics

Light quality is defined by the light provided appropriate to people's needs and desires. The resulting visual comfort supports a sense of well-being, as well as contributing to performance. Visual performance enables to perform visual tasks even under difficult circumstances over longer periods of time.

## Lighting Technology Specifies Five Classical Quality Characteristics:

- Illumination intensity
- Luminance distribution
- Glare reduction
- Directed light and the effects of shadow
- Light colour and colour reproduction of lighting

### Illumination Intensity

Illumination intensity depends directly on the purpose of the lighting, and has significant influence on how quickly, how reliably and how easily a visual task can be performed by the viewer. The illumination intensity, measured in lux (lx), specifies the light flow (measured in lumens: lm) given off by a light source and striking a surface.

### Luminance Distribution

For optimum perception, the German DIN 5035 standard recommends a luminance ratio of 3:1 between the defined close field and the ambient field.

### Reducing Glare

Direct or reflective glare can have significant negative effects on visual performance and should absolutely be avoided. To minimise reflective glare, surfaces such as working surfaces should be as matte as possible. Moreover, the average luminance at the edges of the room should not be over 200 cd/m<sup>2</sup>.



### Directed Light and Shadow Effects

For right-handed people light should fall onto the working area from the left for all activities. Otherwise, unfavourable shadows form and perceptive difficulties may result.



## Light Colour and Colour Reproduction

Lighting with good or even very good colour reproduction guarantees a lifelike image of the furnishings and other target objects.

## Comfort Zone

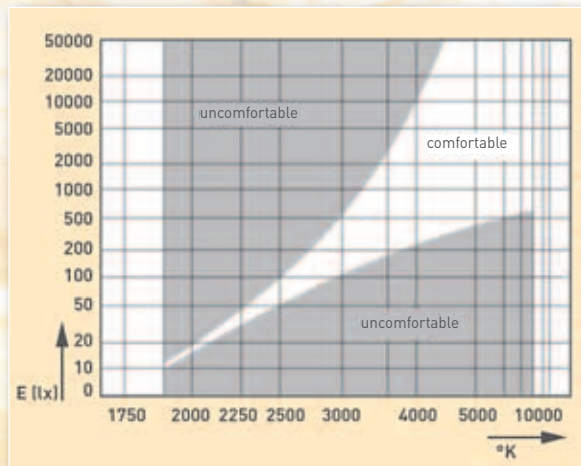
The Kruithof comfort curve specifies the range of illumination levels perceived as comfortable for each colour temperature of light.

For example, lighting systems with low colour temperatures of 2700 ° to 3000 ° Kelvin are

perceived as comfortable in the range from 50 to 100 lux, while higher illumination levels will be unfavourable. At a colour temperature of 6000 ° Kelvin, for example, illumination levels of at least 500 lux are required for the room to be perceived as comfortable.

## Illumination Level

The illumination level has a significant influence on work performance, productivity and workplace safety. As a general rule, lighting costs increase with the percentage of illumination level. Standard values for illumination levels are therefore generally a compromise between visual performance, comfort, costs and energy consumption.



E [lux]	Application
$\geq 20$	Halls and side rooms
$\geq 50$	Production facilities without manual intervention
$\geq 100$	Production facilities with occasional manual interventions
200	Minimum for work rooms with continually occupied workplaces
300	Work rooms with medium-fine work (e.g. metalworking)
300 - 500	Spatial zones with screen equipped workstations
500	Work rooms for normal to fine work (e.g. office work)
$\geq 1000$	Task lighting with additional general lighting for very fine visual tasks (e.g. microassembly)

# Light Planning Questionnaire

Project number:	
Project name	
Representative:	
Customer:	
Contact person:	
Telephone number for questions:	

Address:	
City:	
Postal code:	
E-Mail address:	

Length of room (A):	
Width of room (W):	
Height of room (H):	
Other room shapes (CAD data (DXF) or sketch):	
Colour/description of walls:	
Colour/description of floor:	
Colour/description of ceiling: (or type of reflectivity)	

E (min.) on evaluation level:	
Evaluation level (nominal 85 cm):	
Suspended lights:	
Suspended length (height of light spot):	
Ceiling installation:	
Light colour (Kelvin):	
Guidelines for minimum light intensity: (e.g. professional association)	
Maintenance factor (nominal 08)	

On site meeting/consulting:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
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Particular information:	
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