OFFICE LIGHTING IN A NUTSHELL

Offices consist of many different types of rooms and areas: work areas, public areas, hallways, meeting rooms, showrooms, kitchens, places for relaxation – each requiring a different kind of lighting. Some spaces must follow specific criteria while other areas can be illuminated with much more freedom. Besides visual comfort, people’s wellbeing and safety are important considerations and lighting can also be directly linked to productivity. Today’s advanced electronic controls can follow different phases of the day and balance artificial lighting levels with natural light. Using warmer tones and low intensity at the beginning and end of the day can lower stress, and using cooler tones during the day can be energizing. This is all part of Human Centric Lighting philosophy and is very important, even vital, especially indoors where we spend many hours a day in artificially lit environments.

TAKE VISUAL PERFORMANCE, VISUAL COMFORT AND VISUAL AMBIENCE INTO ACCOUNT TO ACHIEVE THE RIGHT LIGHT FOR SPECIFIC SPACE
GLARE

Glare is the sensation of visual discomfort caused by areas that are too bright within the field of vision, such as lit surfaces, parts of luminaires, windows and/or ceiling. Glare should be limited to avoid fatigue, discomfort and accidents.

**DIRECT (A):** Bright lamps – measurable and has a clear affect to performance

**REFLECTED (B & C):** Reflection of light on specular high gloss surfaces

**UGR**

<table>
<thead>
<tr>
<th>UGR</th>
<th>Discomfort Glare Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 and under</td>
<td>Imperceptible</td>
</tr>
<tr>
<td>13</td>
<td>Barely perceptible</td>
</tr>
<tr>
<td>16</td>
<td>Perceptible (suitable for accurate eye tasks)</td>
</tr>
<tr>
<td>19</td>
<td>Barely acceptable (suitable for average eye tasks)</td>
</tr>
<tr>
<td>22</td>
<td>Unacceptable (suitable for moderate eye tasks)</td>
</tr>
<tr>
<td>25</td>
<td>Barely uncomfortable (suitable for simple eye tasks)</td>
</tr>
<tr>
<td>28 and over</td>
<td>Uncomfortable</td>
</tr>
</tbody>
</table>

**TYPES OF GLARE**

**DISABILITY:** Affects visual performance – can be measured

**DISCOMFORT:** Subjective evaluation; feels uncomfortable but does not necessarily affect visual performance

**HOW TO REDUCE GLARE**

**BEAM**

Limit light intensity above potential glare angles

**SURFACE**

More uniform surface luminance with same lumen output

**VISIBILITY**

Shading and shielding

**OUTPUT**

Decrease light output (might require adding more luminaires)

**PLACEMENT**

Avoid glare on task area and increase ambient light

**AMBIENT LIGHT**

Less contrast → Eyes adapt to brightness more easily
TIPS FOR MODERN AND PLEASANT OFFICE LIGHTING

AIM HIGH
Studies show that good office lighting increases productivity and wellbeing as well as boosting creativity. They also show that people place great value on good workplace lighting and many are unhappy with their current office lighting. Controlling lighting to replicate natural daylight patterns helps people's natural circadian rhythm improving overall wellbeing, motivation and productivity.

DESIGN FOR THE ENVIRONMENT
Applying the traditional room-related lighting concept of a 500 lux blanket no longer meets the needs of the modern office or the modern worker, both of which require variety and contrast. Thanks to LED technology, office lighting can be designed to enhance atmosphere and décor as well as create contrasts and different moods. This in turn allows much greater flexibility when designing the overall office layout than would be possible with a traditional 500 lux blanket.

DARK LIGHT, BRIGHT SURFACE, OR INDIRECT?
Many offices are lit with bright surface luminaires. This is often perfectly adequate in spaces that have a lot of natural daylight and light-coloured décor. However, in many cases this type of lighting is not ideal as it also creates unpleasant glare.

Well-shielded dark light luminaires on the other hand are discreet, and the distracting light source cannot be seen, even when they are on. Dark light creates a much more pleasant and natural working environment by eliminating distracting bright luminaires that often dominate the workspace.

Indirect light can be used to create different moods and effects depending on requirement and task. However in many environments it is ideal to combine indirect light such as wall washers and up-light with direct lighting. This will create a bright and airy atmosphere while reducing glare from bright luminaires.

LUMINAIRE PLACEMENT
Luminaires in a typical open office are often placed next to walls to achieve sufficient lighting levels on the walls. However, when desks are placed in the office lighting is not always a consideration, and some employees might find they are subjected to direct and indirect glare. A good office and lighting design plan is essential to ensure light can be adjusted according to the task and the individual.

MINIATURIZATION
LEDs enable smaller, modern and fresh designs for a lower cost. However such designs can be too bright and cause glare if suitable optics designed for office environments are not used. Miniaturized designs with a full range of beams gives you the tools to be more creative than ever.
3 LINEAR OFFICE LIGHTING SETUPS

Check more details at www.ledil.com/application-areas/office-lighting/

ROOM RELATED LIGHTING CONCEPT WITH RECESSED DIRECT LIGHT

TASK RELATED LIGHTING CONCEPT WITH SUSPENDED LUMINAIRES

RECEPTION LIGHTING - FIRST IMPRESSION MATTERS
Premium class office lighting with highly efficient lenses and a seamless shade that eliminates glare.

**FEATURES**

Four sizes:
- 4X1: 180 x 40 mm
- 7X1: 280 x 40 mm
- 28X1: 1140 x 40 mm
- 2X2: 79.4 x 79.4 mm

Two beams:
- WW and W

High efficiency >85% (even with the shade)

Available in black and white

**COMPATIBILITY**

Optimized for 2835 and compatible with up to 5630 size mid-power LED packages

Compatible with up to 4 ft long PCBs
FLORENTINA

Discreet direct light for meeting rooms, receptions, task lights and down lights.
Part of LEDiL’s Dark Light (UGR <16) product family.
A hybrid design of black reflector and lens for high visual comfort in various shapes.

BEAMS FOR OFFICE LIGHTING

FLORENCE-3R

FLORENCE – For general office lighting with shade or high level of ambient light
FLORENCE2 – For direct lighting in common areas, corridors and warehouses
3-row (Zhaga book 7) linear lenses with market leading colour uniformity.
Wide selection of beams and accessories compliant with a range of mid- and high-power LEDs and LED clusters.

BEAMS FOR OFFICE LIGHTING

LINNEA

For direct lighting in corridors and warehouse areas.
For ambient up-light and wall-wash effects.
285 x 40 mm linear lenses with integrated clip fixing optimized for the most common Zhaga mid-power 20 and 24 mm wide PCBs.

BEAMS FOR OFFICE LIGHTING

SINGLE LENSES & REFLECTORS

In addition there are lots of different single lenses and reflectors available for downlighting.

*RONDON-REC-60 and -90
**TYPICAL OFFICE LUMINAIRES**

**DIRECT LIGHTING**
- Recessed or surface mounted

**INDIRECT LIGHTING**
- Suspended luminaire

**TASK LIGHTING**
- Track light, downlight or free standing

**DIRECT / INDIRECT LIGHTING**
- Suspended luminaire

**WALL-WASHING**
- Recessed, surface mounted or cove light

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**TECHNICAL SUPPORT**

Simulations to show optic performance in real applications

Installation guides and tips

Thermal analysis for luminaire designs

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