

LIGHTING vs DARK SKY

Definitions



Three phenomena are related to light control of luminaires and their installation

- **Glare**
- **Obtrusive light**
- **Sky glow**

All are the result of waste of energy

SOLUTION: No light at all ?

As it has to do with safety of drivers and pedestrians – just let us say, for PEOPLE

- **Road lighting is necessary**
- **Lighting of working places is necessary**
- **Sports lighting is a social topic**

FINDING THE RIGHT APPLICATION RATE

(To comply with the Standards)

- **Road Lighting** **EN 13201 & O 1051**
- **Sports Lighting** **EN 12193**
- **Working places** **EN 12464**
- **Effect lighting** **(O 1052 & RVS & LiTG recommendations)**

FINDING THE RIGHT APPLICATION RATE BUT NOT OVERLIGHT

- **Fulfill the Standard**
- **Exact lighting design**
- **Use the informations needed for lighting design
to talk with the customer**

FINDING THE RIGHT APPLICATION RATE

- **Work together with road-designer**
- **Implement the needs for lower lighting levels**
- **Find the best luminaire and the best design for this project**

OTHER POSSIBILITIES TO BE DISCUSSED

- **Road lighting increases security**
- **The better the comfort, the safer is traffic**
- **Increasing comfort is not meaning increasing lighting levels!**

OTHER POSSIBILITIES TO BE DISCUSSED

Example:

- Road lighting with Class ME3c
needs 1cd; $U_o > 40\%$; $U_i > 50\%$; $TI < 15\%$
- Better comfort with 0,75cd; $U_i > 70\%$; $TI < 10\%$
- Better comfort
= better visibility
= better, safer traffic

WHAT HAS TO BE DONE

- **Research about the influence of uniformity, TI and Luminance to get the correlations**
- **Implementation of the results into the standards**
- **Better comfort + lower light levels + less Sky glow**

This sounds perfect and this is the target that we shall follow

WHAT IS GOING ON AT THE MOMENT

➤ **Development of the new Standard for Light Pollution in Austria – the O 1052 « Lichtimmissionen »**

➤ **Involved people:**

Lighting engineers

Traffic engineers

Astronomers

Biologists

Ecologists

Environmental protection officers from provincial governments

Physicians (med)

People from test and experimental station (Laboratory)

WHAT WE HAVE SEEN SO FAR

- **Development of the new Standard for Light Pollution shows a lot of problems to be taken into account**
- **It is more than just looking at luminaire-design**

WHAT WE HAVE DONE SO FAR

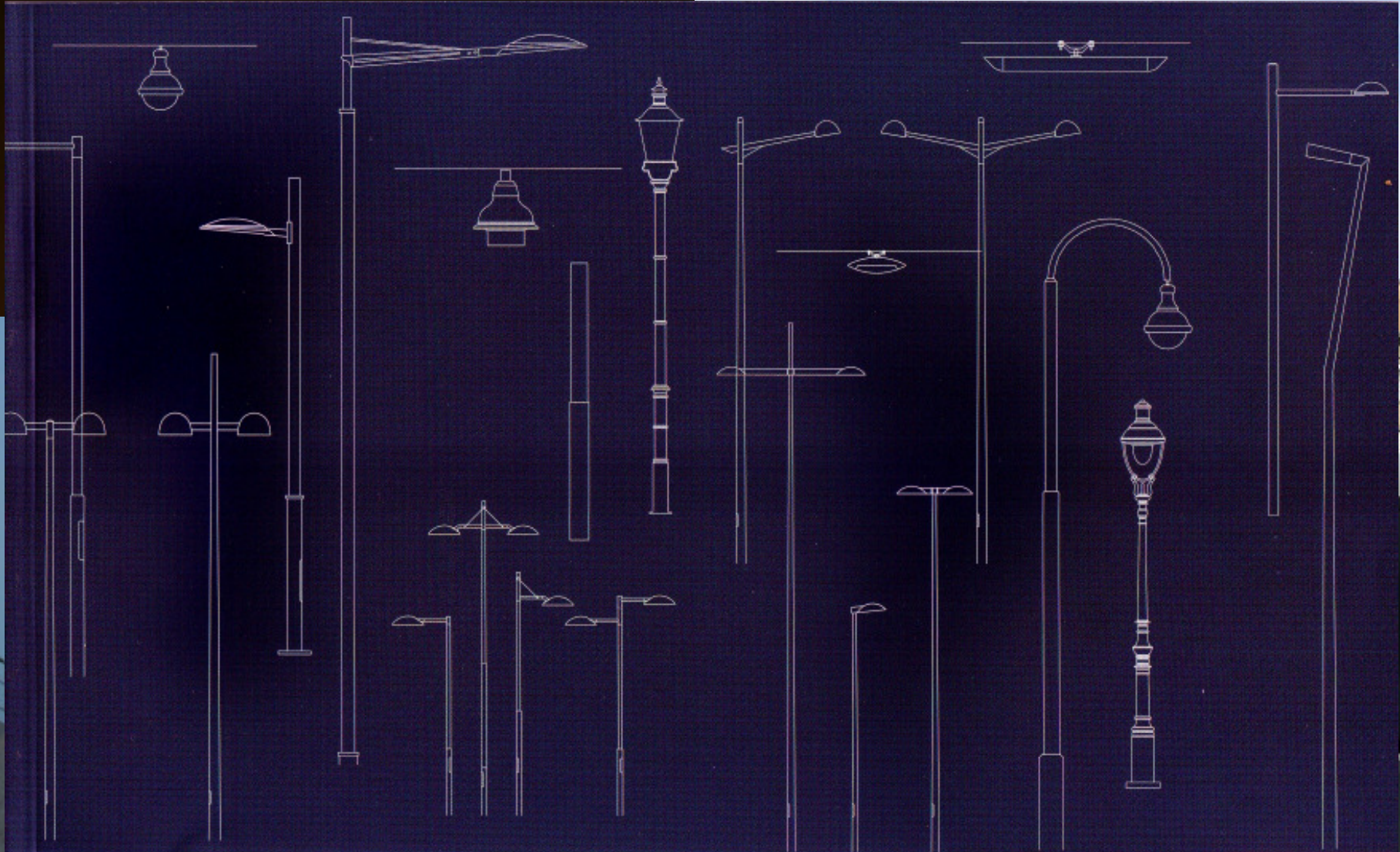
- **Development of new reflectors straight on with flat glass with higher performance**
- **We use all available technologies to keep maintenance factors as low as possible so overlighting of new installations is not necessary**

A LOOK INTO THE FUTURE

- **Lighting engineers (and industry if necessary) shall be involved into projects much earlier.**
- **The seminars for lighting designers are a step in the right direction.**
- **Good lighting design can improve all aspects about safety and light pollution.**

FACADE & EFFECT LIGHTING

- Needs exact design to prevent spill light
- « Rethinking » needed often is less more
Awareness shall be strengthened
- Problem: it is nearly impossible to do exact design
just « on the paper »



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Wien ist anders.

IN ZUKUNFT
WIEN

LIGHTING & DARK SKY IS POSSIBLE

