



**Laternix**<sup>®</sup>  
*Innovation for sustainable lighting*

# Repair and recycling concept

for more sustainability at the LED-upgrade

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## General condition

- In order to achieve more sustainability and better organization of a circular economy, the EU is continuously working on expanding the existing Ecodesign Directive.
- The "EU Green Public Procurement Criteria for Road Lighting and traffic signals" is intended to describe criteria for the procurement of street lighting equipment that take into account all relevant implications of street lighting, e.g. energy efficiency, impact on people and the environment, economic aspects and also a life cycle assessment.
- In general, the aim is to make street lighting more environmentally friendly, more durable, more efficient and more economical.

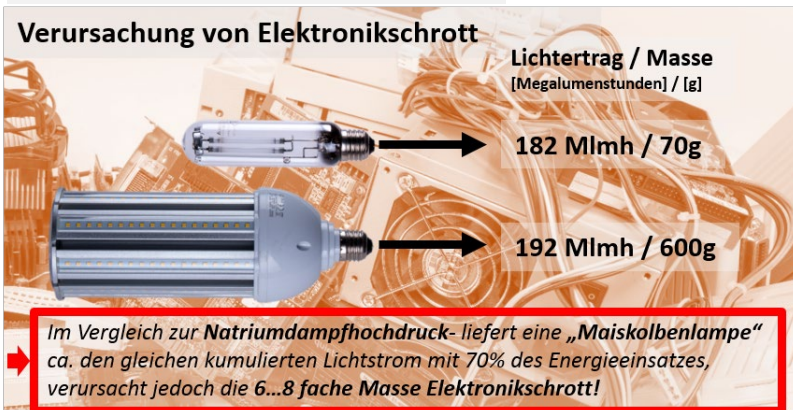


The image shows two overlapping screenshots. The top one is the cover of a report titled "JRC SCIENCE FOR POLICY REPORT" from the European Commission, specifically "Revision of the EU Green Public Procurement Criteria for Road Lighting and traffic signals". The bottom one is a news article from the European Parliament titled "Ökodesign-Richtlinie: Steigerung der Energieeffizienz und Recyclingfähigkeit" (Ecodesign Directive: Increase in energy efficiency and recycling capability), dated 24-05-2018. The article includes a video thumbnail showing a person repairing a smartphone on a wooden table, with a play button icon and the text "Ökodesign". Below the video, it states: "Die EU fordert umweltfreundlichere Produktionslösungen" (The EU demands environmentally friendly production solutions) and "Das EU-Parlament will die Ökodesign-Richtlinie um neue Anforderungen zur Recycling- und Reparaturfähigkeit von Produkten erweitern. Hier erfahren Sie mehr über die Vorschläge." (The EU Parliament wants to expand the Ecodesign Directive with new requirements for the recycling and repairability of products. Here you can learn more about the proposals.)

## Beware of fake packaging

- Many LED replacement bulbs offered on the market, especially those from well-known brands - all Chinese purchased items - [author's note] - hardly take sustainability into account in terms of material use or circular economy
- The undifferentiated use of such products leads to a deterioration in overall efficiency, more light pollution and the rapid growth of electronic waste.
- Not only the energetic, but also an ecological evaluation of the entire life cycle is decisive for the selection of the actually sustainable LED solutions.

## Generation of electronic waste:



Compared to a high-pressure sodium vapor lamp, a corn cob lamp delivers approximately the same cumulative luminous flux with 70% of the energy input, but causes 6 to 8 times the amount of electronic scrap!

## Aus dem Lastenheft des chinesischen Entwicklungsingenieurs:

.....Wie muss ein Austauschleuchtmittel gestaltet werden, damit es möglichst **viel Licht** erzeugt, dabei möglichst **wenig Energie** verbraucht, möglichst **billig** zu produzieren ist, und einen möglichst **großen Markt** bedienen kann?



From the specifications of a chinese development engineer: "how does a replacement lamp have to be designed so that it generates as much light as possible while using as little energy as possible, can be produced as cheaply as possible and can serve the largest possible market?"

**Laternix designs its LED upgradeKITS from the start according to the principle of sustainability, especially in the life cycle**

## **Use phase in general / repairability**

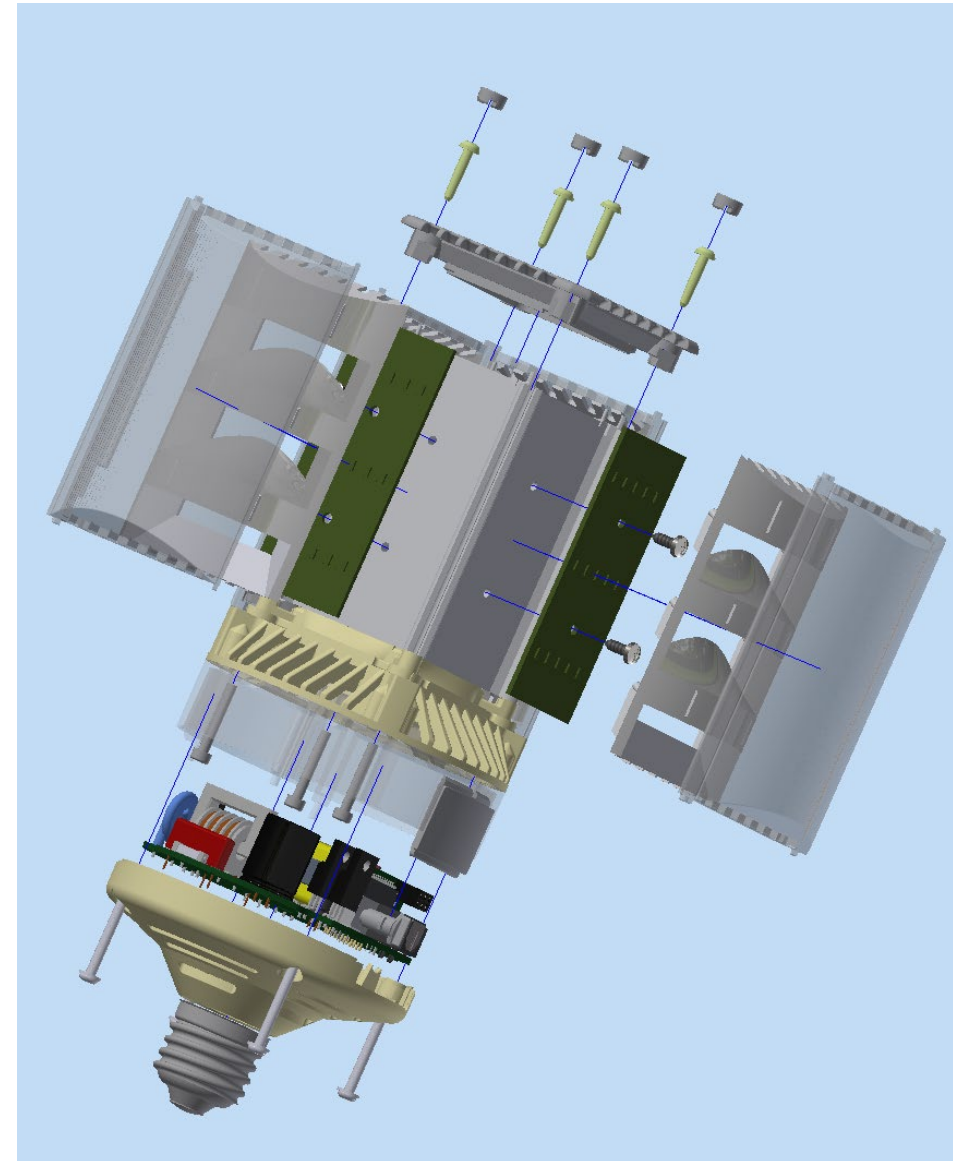
- ✓ Pursuit of a platform or modular principle in the construction
- ✓ Design of the electronic assemblies with long-term available standard components (drivers)
- ✓ Development of LED modules that enable flexible processing of different LED components (MultiCircuit / MultiFootprint layouts)
- ✓ Use of high-quality, long-term stable materials (aluminium, glass, PC, PMMA)
- ✓ Component design for a very long service life
- ✓ Assembly of the components using reversible joining techniques, e.g. screw or plug connections
- ✓ Implementation of flexible interfaces Ledikit<-> light (e.g. replacement device carrier, base/socket system E27,...) for uncomplicated exchangeability in the event of maintenance/repairs or during initial installation.
- ✓ Production and repair of Ledikits close to the customer (Germany)

## **At the end of the usage phase / material recycling**

- ✓ Design of the components in such a way that easy material separation and recyclability is possible at the end of use (avoidance of composite materials)

## Example of "in-factory" repairability Ledikit® Streetlight VS

- ✓ Screw and plug connections enable non-destructive, complete disassembly of the assembly into its individual components LED-Module einzeln austausch- und erneuerbar
- ✓ Drivers can be replaced and renewed individually
- ✓ E27 base/socket system allows for quick installation and interchangeability for repair







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# Thank you for you attention!

For further information we are at your disposal

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