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Renting Light

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Overview AEP

- Component Supply
- Consultancy
- Capacity Building





Target

- User wants “light“ but not electricity
- Therefore it is important to define the amount and quality of light, not “watts“
- All products and projects should mention figures related to above

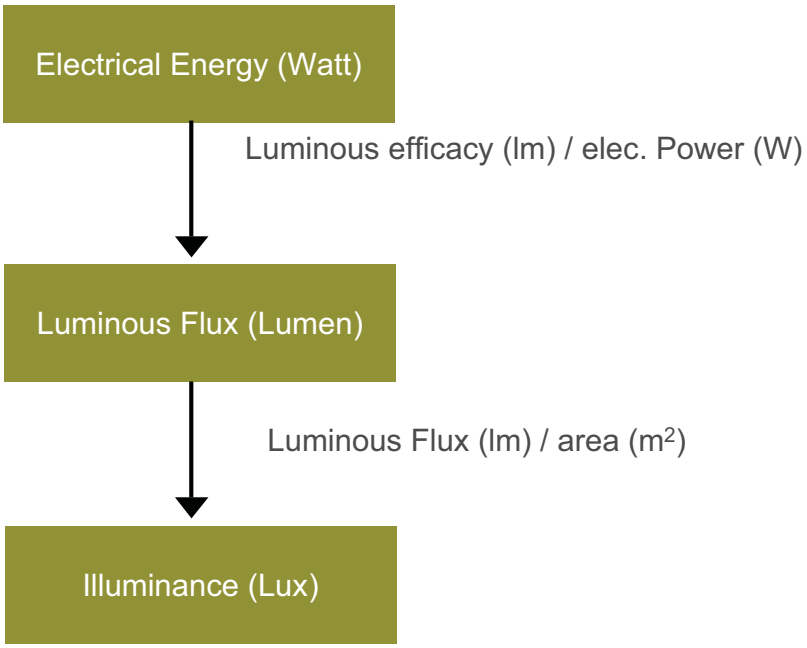
Definition

- The total light outflow from a light body is defined as luminous flux.
- The luminous flux is measured in Lumen (lm) and describes the light intensity perceived by the human eye.
- It is important to know the luminous efficacy of a light body stating the luminous flux output for one Watt electrical input (= mileage).

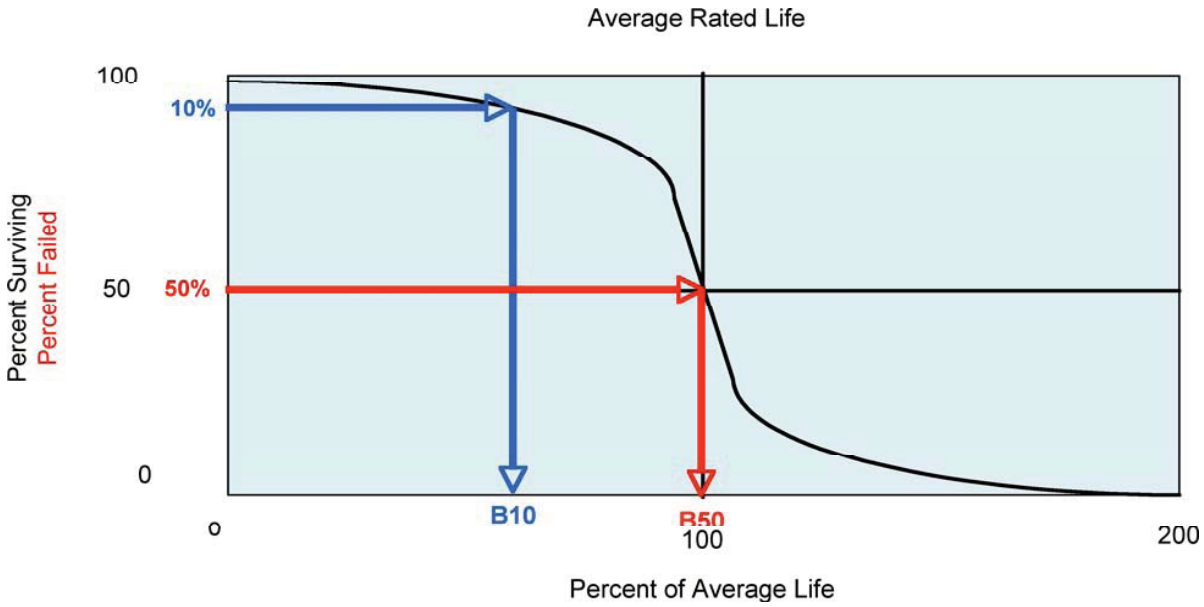
Definition

- Illuminance is the luminous flux per area and measured in Lux (= lm/m^2).
- The farther the distance from the light source the lower the illuminance („inverse square law“).
- It is important to define the illuminance requirement for a task light i.e. street light or desk light

Relation of the units

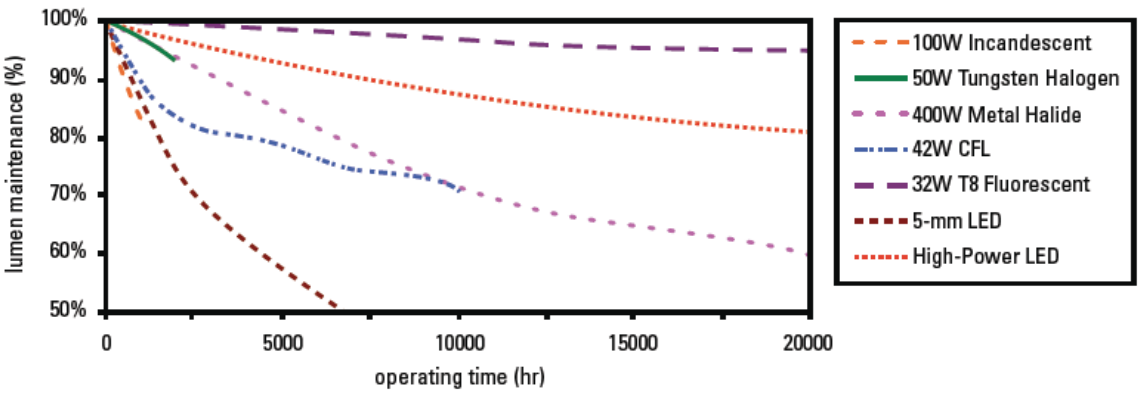


Life Time Definition



The standard industry expression for failure rates of lighting devices

Quality - Lumen Maintenance



Source: Adapted from Bullough, JD. 2003. *Lighting Answers: LED Lighting Systems.* Troy, NY. National Lighting Product Information Program, Lighting Research Center, Rensselaer Polytechnic Institute.

Luminous flux for various light sources

Candle	8 lm
Kerosene lantern (35ltr. / year)	40 lm
15W incandescent bulb	100 lm
3W CFL light	100 lm
1W LED light	100 lm

The cost of kerosene lighting

Kerosene lantern	150.- Rs
Annual consumption	35 ltr.
Unsubsidized Kerosene / ltr.	20.- Rs
Total expenses after 3 years	2250.- Rs

for lighting service of 4 hours of 40 lm per day

Can we replace kerosene lanterns and wick lamps with safer, healthier and environmental friendlier products?

Yes, We Can!

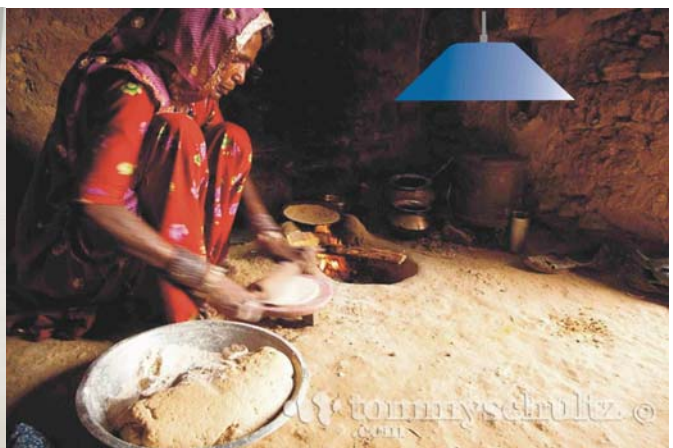
Lithium battery based Portable Solar Home System

- Creating rural entrepreneurship
- Battery and cell phone charging station
- Financing through daily rental schemes
- Easy installation through plug & play
- Expandable with modular components
- Smallest system starts with 1.5W module

Shuttling the battery box

Evening pick up at the charging station and fee submission

Returning the box the next morning



Conclusion

- Solar powered white LED (WLED) light systems are competitive with unsubsidized candles, kerosene lanterns and dry cell batteries.
- High initial investment cost have to be overcome with inovative rental and financing schemes.
- Soft skills such as business development and basic maintenance has to be trained in the rural areas.

Relevance for urban markets

- Current electricity cost for residential grid connected solar systems are rated at Rs. 15 per generated kWh.
- Battery backed up systems are at Rs. 30 due to high storage cost.
- Intelligent hybrid systems with priority for solar power and grid or generator backup could reduce storage cost and add reliability to the power supply

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