

Efficient LED downlighters

Downlighters with light emitting diodes

- Replace incandescent downlighters with new energy-efficient light-emitting diodes.
- A typical incandescent downlighter produces roughly 20 lumens per watt of electricity used, while (white) light-emitting diodes (LEDs) can produce in the region of 90 lumens per watt.
- LEDs radiate considerably less heat than incandescent globes. This extends the LEDs energy saving capabilities beyond lighting as far as the heating, ventilation and air conditioning (HVAC) system. Considering that a incandescent globe has a efficiency of around 3% compared to an LED with around 15% – 30% it can make quite a difference on electricity consumption and thermal gains within a building. The table below shows how much electricity is wasted generating unwanted heat.

	Per year (24 h/day)
Incandescent	524 kW
LED	20 kW

- Although they are more expensive, LEDs can last up to 130 times longer than incandescent globes.

Application: Everywhere, except where dimming is necessary. Particularly good for signboards.

Ease: 5/5

Availability: 3/5



“LEDs low energy requirement makes them ideal for use with photovoltaic (PV) solar electricity”

Factors to consider:

- LED downlighters are generally not dimmable
- The next generation of LED downlighters should be able to compete with metal halide lights. Today’s generation can only be used for certain applications, best tested through trial and error, as the light emitted by LEDs is very different than that coming from halogen bulbs.

Light source	Power	Lumens	lm/W	Cost per bulb
Incandescent	62,87 W	850	13,52	R3
CFL	13,94 W	800	57,39	R17 – R25
LED	3,74 W	60	16,04	R50 – R400

- Some companies claim that their LED downlighters are able to produce 240 lumens at 3W, which would mean that they produce 80 lm/W, this is after the beam has been focused using lenses and reflectors to produce a small spot of light. Therefore it is important to choose the LED according to its application.

Cost: costs range from R50 to well over R400 per bulb.

Payback: depends entirely on chosen LEDs and application.

Requirements to meet criteria:

- Led downlighters are not good enough yet for general lighting. But they work very well as spotlights, signal lights or to enhance a path in the dark. Therefore some sort of application has to be replaced with LEDs lights.
- All incandescent lighting must be replaced with CFL or LED lights where applicable (justification for areas that are not converted will be required).