Light emitting diode

LIGHT EMITTING DIODES Light Emitting Diodes are electronic components that use the flow of electrons to excite materials into emitting photons of light. A diode is a basic electronic component that allows electricity to flow one way only. The discovery of " light emitting" diodes we believe was an accident sometime around 1907 when a diode in an early radio transmitter was noticed to glow when in use. Incandescent bulbs use resistance in a filament to impede the flow of electricity, heating up to a degree which emits light.

It takes high amounts of energy to do this and the filament burns out in time and high levels of wasted energy are given off in the form of heat. Quite a " green" product from a manufacturing and chemical/recyclable point of view. CFL " energy savers", fluorescent tubes and many other conventional lamps use higher frequency alternating current to excite harmful chemicals to emit light. One 5 foot 1, 5meter tube contains enough mercury to contaminate aswimmingpool. Billions have been dumped into waste disposal. Heavy metal poisons have a cumulative effect.

In the long term these cannot be a " fix" for the energy crisis we face today. They are poisoning our earth and also us directly through thefoodchain and locally with emission of harmful UV. So " Energy savers" are in the writers opinion very dangerous and should be banned. Aquifers for example may soon be or may already have been rendered unusable. Cape Town for example has water shortages in summer, but our municipal uncontrolled dumps are sitting on top of these aquifers. With poison being cumulative up the food chain, we worry about the safety of this water.

A lot of our vegetables are grown in this area, using this aquifer water. Has this water or these vegetables been tested? LED lighting uses less energy than most other lighting sources, with current commercially available product generation producing 90 or more lumens per watt and doing so with a good power factor. Initial start up current is not high so production capacity of electricity can be reduced. Led lighting can give the illusion of natural light and thus the lit area may not be so obvious as with the predominantly yellow wash from other technologies.

However, this warm effect can be created with the appropriate (warm) colour scale choice of LED. (Kelvin scale) LED lamps can be made to any specific colour from infra-red to ultra violet for specific requirement. For example, the pure white, 5000-6000K or daylight white 6000-7000k (slightly blue to look at) will greatly enhance viewing of detail, help old tired eyes with reading and greatly improvesCCTVcamera image quality. The limited white light band emitted by LED luminaries with very little long wavelength red light content, does not reflect off glass for example so that CCTV cameras will view inside of vehicles for example.

Visual quality control of food products and manufactured goods is enhanced. Finishing lines for the automotive industry will clearly show up any blemishes for example. LED useful life p is longer than most other forms of lighting. Actually LED lifep is governed more by the mains power supply conversion components that drive them. The LED component should be good for 50 000 hours with acceptable loss of output , however the lamp will be limited by the lifep of the driver which is likely to be 20 to 30 000 hours. The driver converts your input mains Alternating Current to Direct Current.

The led itself being a diode, runs on low DC voltage. I prefer constant voltage power supplies to drive LED's as opposed to constant current drivers. Constant current drivers are a little more energy efficient but we have found in practice that they cause the LED to run too hot for our liking and in some circumstances don't switch the current fast enough and pop the led. Constant voltage " switch mode" power supplies have a wide input voltage tolerance, are very efficient and have internal short circuit, temperature and overload protection circuits with automatic recovery.

Conventional low voltage down lights for example mostly use copper wound transformers. Output voltage of transformers follow the input voltage. These type of transformers are around 50% efficient so it takes approx 75watts to run a 50watt lamp. This could be replaced by a 6watt LED lamp that would use 7watts taking the power supply in to account. Power factor would be improved. LED's run extremely cool relative to " conventional" lamps so can also save on air conditioning. A fluorescent or incandescent lamp in a fridge is effectively having a fire inside a fridge.

High power LED's do run hotter, but not nearly as hot as metal halide, fluorescent, HPS or incandescent. LED lamps are recyclable and contain no harmful toxins. In addition to this the manufacturing process of this produces less carbon emissions than some other older type of lamps. No hazardous substance disposal procedure required. They will have relatively high recycle value and can achieve Restriction of Hazardous Substances certification. The light output is colour specific, which does not degrade over time. Unlike most other light sources, they emit very low levels of harmful UV and infra-red rays.

For food processing areas, our lamps, if broken, will not contaminate the area and can be made with PVC or poly carbonate covers so no broken glass issues either. (food production plants) LED is available in many guises, so most of your old fittings can be retrofitted with LED to minimize cost and waste. (tubes, bulkheads, downlights etc) LED lighting is directional, so lightpollutionin to neighbouring areas can be contained. This also allows for much lower power for example in the case of reading lamps. (task lighting).

Less confusion blinding night creatures, less attraction and little or no killing of insects. The Earth Power team appeals to you to support the growing LED lighting industry which is open to all, unlike the " conventional" lighting industry which is dominated by wealthy giant corporations who all helped in getting us in to this trouble in the first place. We have been working with LEDtechnologyspecifically for 4 years now and have identified many top quality reliable products and technologies. These products exceed our expectations and do more than just the job in hand.

This technology has leaped in the last few years and continues to move forward. Our dedicated team consists of the founder with 35years owned business experience in the electronics industry an experienced QS , our marketing relationship manageress with a legal degree and our in-training technicians and support staff. EarthPower has quickly become a strong well know brand. We may not be the first to offer LED lighting in South Africa, but we are one of the pioneers and with 4 years dedication, one of the most experienced. Remember, we are all the incumbent custodians of our planet.