

LED LIGHTING

– Bright ideas for your store and bottom line

Upgrading your store lighting systems to LEDs will not only save you money, but make your fresh produce more appetising and the overall presentation of your store more appealing. LED lighting uses less energy and requires less maintenance meaning you'll save all year round.

LED technology has been used extensively over the past decade, in traffic lights, computers and TVs, just to name a few appliances that contain LEDs. While LED technology is relatively new, they have been proven to use less energy, last longer and produce a high-quality light which can be used in many commercial and retail applications.

Before we discuss the benefits it's probably worth examining some of the common misconceptions surrounding LED technology.

Common LED misconceptions

LED lighting is too blue or white

- LED lights are available in a wide variety of colours similar to the temperature ranges found in most fluorescent tubes. Although slightly cooler, they can offer a better customer experience, particularly in retail environments where consistent lighting levels are beneficial. The right colour will bring out the best in your products.

LEDs are not bright enough for retail applications

- LED technology is rapidly evolving meaning that the output per lamp has increased dramatically compared to when they were first developed. Lighting levels can be further increased through better placement of the lamps in areas where more lighting is required (for example along grocery isles compared with back of house areas) when compared to older technologies. However, as with everything the quality is subject to the quality of the product.

LEDs don't work well in hot or cold environments

- LEDs perform equally as well in high temperature environments as with the fluorescent tubes or halogen down lights they replace.
- One particular advantage of LEDs is that they work extremely well in low temperature environments where other technologies (such as fluorescent tubes) find it difficult to operate, making them an excellent choice for refrigeration and freezer systems.

LEDs are not a cost-effective replacement for fluorescent tubes.

- While the initial purchase cost of LEDs are higher than fluorescent tubes, the fact that they less energy and last longer means that the long-term energy costs of upgrading starts to look extremely attractive.

Consider the following example over the cost to run fluorescent and halogen lighting over a five year period compared to LED replacement technology in a typical supermarket:

No. fittings	260				30			
Lighting type	Fluorescent tubes (T8 - 36W) + 8W ballast	LED replacement (T8 retrofit – 18W)	Energy reduction	Annual maintenance & replacement savings	Halogen downlights (GU10 - 50W)	LED replacement (10W)	Energy reduction	Annual maintenance & replacement savings
Annual energy costs	\$11,077	\$4,531	59%	\$1,300	\$13,846	\$2,517	82%	\$90
5 year energy costs	\$55,383	\$22,657		\$9,750	\$69,229	\$12,587		\$675

As it can be seen in the table above by replacing fluorescent tubes with LED strip lighting you can save almost 60% on energy costs associated with store lighting. Replacing halogen globes with LED down lights can save over 80%. As well as energy savings maintenance and replacement savings can also be considerable over a 5 year period.

The following table shows lifetime projection for LEDs compared with other light sources:

Lighting type	Range of Typical Rated Life (hours)	Estimated Useful Life (L70) hours*
Halogen	3,000 – 4,000	
Fluorescent	20,000 – 30,000	
White LED		50,000 – 120,000

Source: Lighting Council Australia and LEDified Lighting

*Average number of hours the LED would operate before depreciating to 70% of initial lumens.

Getting the most out of your store lighting

Before you consider a total lighting upgrade it's important to review what your current lighting levels are, power usage and how your lights are controlled across your store.

Remember that replacing all your store lamps may not be the best option. You might end up with more light that you need or the colour might not be quite correct for your store.

Also make sure that the provider you choose to undertake the upgrade understands store lighting and is not just trying to sell you any product. They should be able to work out the savings by taking into account at least 12 months worth of energy bills.

Where LEDs can be used

LEDs can be used in almost all applications. There are replacements available for most common light fittings and depending on how much light you need you could even consider new technologies that can help you to reduce the number of lights fittings you have installed in your store.

Common replacement types are listed in the following table:

Application	Existing technology	LED replacement *
General lighting, bakery and deli areas, back of house and amenities	Halogen downlight 	LED downlight 
General lighting and display counters Refrigeration and freezer cabinets	Fluorescent tubes 	LED tube 
Other store areas	High bay lamps 	LED replacement 

* images courtesy of LEDified Lighting (www.ledified.com.au)

Other advantages of LEDs

LED lighting can increase the shelf life of fresh, perishable food items.

LED light sources emit little to no heat and can be placed in close vicinity to food without danger of spoilage.

Furthermore, the ultraviolet (UV) or infrared (IR) rays emitted by incandescent, halogen, and fluorescent lighting sources cause food to break down and spoil at a faster rate. LED lighting on the other hand, does not contain UV or IR so food remains fresh longer.

Success story - IGA Mansfield

IGA Mansfield supermarket/grocery store is your typical small business with an eye on overheads.

Working closely with the IGA, LEDified Lighting upgraded the Mansfield Store to a range of LED T8s.

The upgrade to the LED T8's attracted a saving of \$33,000. This was half of the upfront cost, allowing the project cost to be affordable.

With light quality dramatically improved the store not only looks more inviting the changeover to LEDs means that produce will have a longer shelf life and better sell through.

Current Lights Operating Cost - \$39,256

Cost of Upgrade - \$66,012

Government Incentive - \$33,820

Customer Cost - \$32,192

Annual Savings - \$27,359

Return on Investment - 93%

Payback Period - 13 Months

Finding the right supplier

There are an increasingly large number of companies offering to replace your lighting at little to no cost to you but how do you know if it's all above board.

MGA has teamed up with LEDified to offer our members a trusted supplier of LED products. If you are looking to install LEDs at your store the MGA encourages you to contact them to provide you with a cost to upgrade your store.

Asking the right questions

Ask for a least three quotations before selecting a company to undertake the work. It's also important that you are comfortable with the person or company that is performing the work rather than going for the cheapest price.

You should also consider asking a few simple questions from each supplier such as:

- Do your products meet Australian Standards?
- Will the work be undertaken by Certified Class A Electrician?
- Will you provide a certificate of electrical safety or a similar certificate?
- Can you calculate the initial costs (purchase and installation)?
- What the expected savings/payback will be?
- Can you guarantee that the identified savings will be achieved?
- Do you offer a replacement warranty on not only the lamps but also the fittings and the labour?
- Am I able to finance the installation costs through my energy bills?
- Do you offer rebates through Government schemes to reduce the cost of the upgrade?

The Electrical Regulatory Authorities Council (ERAC) is the peak body of electrical safety regulators in Australia and New Zealand. According to ERAC, LED fuses should not be removable without the assistance of a tool. Essentially nobody should be installing lights without this smart fuse technology.

Remember if you are going to replace some or all of your store lights, ask to trial the technology within the different departments to test if the products are right for you and your store layout.

Foodworks store finds new ways to save money through an LED Replacement program and their electricity provider

After initially undertaking an energy audit of their store a regional Foodworks retailer went the next step to engage a reputable LED supplier and installer to identify what financial options might be available to pay-off the investment through alternative funding approach.

Through a unique arrangement with the stores current electricity provider organised by the LED company, the entire upgrade was able to be undertaken with an initial outlay of only 20% of the total capital cost and 12 equal instalments over the year, payable through the retailers electricity bills.

Taking into account maintenance costs over the year, the store would actually save \$162 over the year, with the majority of the costs (80%) paid through the electricity bills against actual energy savings.

Even without the unique billing arrangement the total lighting upgrade would be paid off in less than 14 months, making it a worthwhile investment no matter how you look at it.

Total capital investment – \$6,196

Initial outlay – \$1,239

Monthly charge on electricity bill – \$413

Monthly reduction in electricity costs – \$349.

If you wish to find out more about LED lighting please visit the following websites

1. Light-emitting Diodes (LEDs), Lighting Council Australia
http://www.lightingcouncil.com.au/pdf/news/LCA5441%20_%20Lighting%20Council%20Flyer%20Jan%2009%20-%202%20-%20HIRES.pdf
2. Buying good quality LEDs, Guide for consumers, Australian Government Department of Industry
<http://ee.ret.gov.au/energy-efficiency/lighting/energy-efficient-alternatives/buying-good-quality-leds>
3. Future Developments, Energy Efficiency Exchange (EEX) website, Australian Government Department of Industry
http://eex.gov.au/technologies/lighting/opportunities/#Future_developments
4. Energy Efficient Lighting Technology Report, NSW Office of Environment and Heritage
<http://www.environment.nsw.gov.au/resources/sustainbus/120434EnEffLight.pdf>
5. Electrical Regulatory Authorities Council (ERAC)
http://www.erac.gov.au/index.php?option=com_content&view=article&id=102&Itemid=551

More information

For further information about improving your lighting energy efficiency, an action planning checklist and advice about the types of lighting solutions that could work for your premises, refer to the Lighting Factsheet and Section 4.3 of the Handbook.

Cost	\$ = lowest cost (payback < 2 years), \$\$ = payback is between approximately 2 and 3 years, \$\$\$ = highest cost (payback > 3 years).
Benefit	☺ = lesser energy efficiency (< 10% overall savings), ☺☺ = between 10 and 15% energy savings, ☺☺☺ = greater energy efficiency (> 20% energy savings).
Simplicity	✓ = requires external/technical expertise, ✓✓ = can be undertaken in-house but may require some external expertise, ✓✓✓ = can be undertaken in-house.