

## Evaluating competing T5 adaptor products against the *Save-It-Easy*® T5 adaptor system

### **DESCRIPTION OF BULLETIN UPDATE**

There are currently 2 generic types of T5 adaptors available on the Australian and New Zealand markets that enable retrofitting T5 lamps into T8 luminaires.

These are:

1. The IN LINE series (*Save It Easy*® type)
2. Generic batten style fitting in a fitting or "piggy back" adapter

### **Patented Product**

Save it Easy is a patented product in more than 50 countries worldwide. From time to time copies appear on the market and they are prosecuted resulting in their eventual disappearance. For a short period of time however, these products do get sold.

The generic fitting in a fitting products are copies of an original Westinghouse product and these copies originate mainly from China. The Westinghouse patent has never been defended, resulting in a large number of companies in China producing products ranging from good to quite poor quality.

As a quick guide, price will often be a good indicator of the quality of the product.

### **Prescribed Items**

T5 adapters **are electronic ballasts** and as such under Australian and New Zealand regulations are classified as "prescribed items" with strict and quite stringent requirements for safety, electromagnetic compatibility and product labelling.

Compliance therefore, comes at a cost and **a very low cost item is unlikely to be compliant.**

### **LCA Technical Guide**

The Lighting Council of Australia (LCA) has issued a Technical Note (No. 15) to assist companies seeking to retrofit fluorescent luminaires to improve energy performance.

The LCA Technical Note No. 15 is attached to this Technical Bulletin and this document is strongly endorsed by ecoBright®.

Specific attention is drawn to the final paragraph of the LCA document in that:

*"If you are contemplating energy saving upgrades to fluorescent lighting, you should insist on independent test and certification documentation from the supplier."*

ecoBright® has all the necessary independently tested and certified documentation for *Save It Easy*® that clearly details performance, electrical safety certification and electromagnetic capability; this information is available upon request.

### **Comparison Table**

Attached is a table that summarises five key features of any T5 adaptor choice:

1. *Technology*
2. *Standards*
3. *Investment*
4. *Operation, and*
5. *Material*

This table may be useful when comparing the installation and performance of *Save It Easy*® against other T5 adapter products. Should you have any questions on this or any other information, in this bulletin please contact our staff at your nearest ecoBright® office.

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Feature	<i>Save It Easy</i> ®	Fitting within fitting	Comments
<b>Technology</b>	Patented globally and manufactured in one location for distribution internationally. Single source of Research and Development (R&D), Product Design and Quality Control.	Many different brands and many different manufacturers. Variable R & D standard, variable design, variable component quality and variable (and at times untested) component life.	Check for : <ol style="list-style-type: none"> <li>1. rated life of fitting and lamp,</li> <li>2. construction of fitting, and</li> <li>3. documentation that shows compliance with electrical safety regulations.</li> </ol>
<b>Standards</b>	Complies with all known European, Asian, Australian and New Zealand Standards. T5 adaptors are "Prescribed Items" and must be labelled accordingly. Labelling includes either the use of the Regulatory Compliance Mark (RCM) and number, or the electrical safety certificate and C-Tick markings as per AS61347.1. For temperature considerations (Tc & To) and the Energy Efficiency Index (EEI) labelling must comply to AS4883.2.	High quality products from reputable suppliers comply with all relevant standards. Lower quality products will often not comply with Australian and New Zealand standards and regulations. Most other brands carry some but not all the required markings and are therefore non-compliant in Australia and New Zealand.	Check for documentation or reports on: <ol style="list-style-type: none"> <li>1. EMC compliance,</li> <li>2. Electrical Safety certification,</li> <li>3. Australian Declaration of Conformity (also acceptable in New Zealand).</li> </ol> <p>If the other product is not correctly marked, it is unlawful to sell it or to use the item in any electrical installation.</p>
<b>Investment</b>	Normal Return on Investment of between 2- 3 years.	High quality, compliant products normally provide a return on investment (ROI) of between 2-3 years. Lower quality and often non-compliant products show an ROI of between 6-24 months.	Low cost may also mean: <ol style="list-style-type: none"> <li>1. Low quality components,</li> <li>2. Reduced life, and</li> <li>3. Non-compliance for EMC and Electrical Safety.</li> </ol>
<b>Operation</b>	Operates the electronic T5 lamp at its rated power within the manufacturer's performance range.	Most other brands operate the T5 lamp at between 10-15% below the lamp manufacturer's required power and lumen output. Lamps are often "bundled" with the adaptor and have unpredictable quality and lamp life issues.	Check for : <ol style="list-style-type: none"> <li>1. power and light output of the lamp is within the lamp manufacturer's required range,</li> <li>2. quality of lamps and</li> <li>3. the rated life of lamps.</li> </ol>
<b>Material</b>	The <i>Save It Easy</i> ® kit comprises 2 end caps, a green starter and there are 50 kits to each shipping box. There is minimal waste and any waste generated is fully recyclable.	Most other brands are normally individually packaged in a cardboard sleeve per item. They are typically bulky and transport intensive.	Check for : <ol style="list-style-type: none"> <li>1. environmental impact over the device's lifetime,</li> <li>2. can materials used for manufacture be recycled?</li> </ol>

## Retrofitting Fluorescent Luminaires to Improve Energy Performance

Most fluorescent lighting in Australia is provided by T8 (25mm diameter) tubes operating with a magnetic ballast. Renewing, refurbishing or retrofitting fluorescent luminaires is usually done to achieve a new outcome. This may be for aesthetic reasons, to improve the lighting or to reduce energy consumption.

A number of technologies and methods are available to improve the luminaires in a lighting installation. Some of these are:

- install new luminaires and smart control systems
- re-lamp and clean the existing luminaires/paint walls etc
- add retrofit reflectors to improve light output and direction, thereby reducing the number of tubes required
- remove excess tubes and centre those remaining
- replace the magnetic ballast(s) with a high frequency (HF) electronic ballast
- convert the luminaire from T8 to T5 (16mm) by replacing the ballast, lamps and lampholders
- convert to T5 lamps using a T8 to T5 adaptor kit

An increasingly common reason for refurbishing a lighting installation is to reduce energy consumption. All the above methods can be used separately or in combination. A relatively new method is to use a T8 to T5 adaptor. These are promoted as a cost-effective, energy efficient replacement for existing T8 lamps. The procedure involves, for example, removing a 36 Watt T8 lamp and replacing it with a 28 Watt T5 lamp and electronic ballast adaptor installed between the existing lampholders. The fluorescent starter is also changed.

### Safety and EMC

Ballasts, including lamp adaptors, are 'Declared Articles'. That is, they require mandatory approval prior to sale. By installing ballasts, adaptors, lampholders, or re-positioning lamps, the installer legally assumes the role of luminaire manufacturer and therefore has a duty to ensure compliance with all statutory safety, performance, EMC and energy requirements.

### Compatibility with existing maintained emergency luminaires

A new T5 HF ballast or a T5 lamp adaptor may not be compatible with the power pack installed in an existing T8 maintained emergency luminaire – that is, where an emergency inverter and battery is provided to operate the T8 lamp. At best, the result would be non-compliance with the Australian standard for emergency lighting (AS 2293) and at worst, safety may be compromised. Damage to the emergency luminaire, lamp, adaptor, emergency power pack, or all of these, is likely if components are mixed. Excessive battery discharge currents, inability to strike the lamp, low light output and shorter duration

than the original configuration could all contribute to poor performance or outright failure in an emergency. Rather than convert an old luminaire, the installation of a new dedicated emergency luminaire is recommended.

### Lighting considerations

The light output of a modified T8 luminaire fitted with new ballasts, reflectors or T5 lamps and associated adaptors will be different to the original. The client/user responsible for the space under occupational health and safety requirements should ensure that the criteria used in the original lighting design are maintained or they should have the installation reassessed. These criteria include illumination levels as well as glare and any task specific lighting requirements. Australia has legal requirements for minimum task illuminance. These are contained in Australian Standard AS 1680.

### Light distribution

Changing the lamp diameter or position in a luminaire will affect the light output and produce a different light distribution. This effect will compound if a semi or specular reflector system is used. The T5 lamp will also appear brighter than a T8 lamp. This may affect visual comfort associated with display screen equipment and other tasks. The installation may not meet its original design parameters, including glare.

### Lamp warranty

The lamp manufacturer's warranty may be void if the ballast or adaptor and luminaire do not operate the lamp in accordance with internationally agreed lamp safety and performance standards for starting and operation.

### Summary

Organisations modifying a luminaire to use a new ballast, lamp or adaptor assumes responsibility for the luminaire they have constructed. This extends to safety, performance, energy efficiency, EMC, photometrics, emergency operation and any other product-related legal responsibilities.

If you are contemplating energy saving upgrades to fluorescent lighting, you should insist on independent test and certification documentation from the supplier.

Lighting Council Australia member companies have agreed to abide by a Code of Conduct. The Code includes a provision that the products they offer meet all necessary product compliance requirements.