

**Toyota Tsusho**  
Distribution Centre

**SOUTH AUSTRALIA**

C-Bus Control and Management System

*Case Study* 20



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## Project Background

*When automotive parts distributor Toyota Tsusho Australasia decided to upgrade to new purpose built premises in South Australia, builder Ahrens Group contracted Rob Scamoni and Tip Top Electrical Services to design and construct an environmentally conscious lighting solution that would save on energy and running costs.*

*Toyota Tsusho's South Australian operations are based in their impressive 15,000m<sup>2</sup> storage facility complete with extensive racking to ensure optimal logistical performance and upkeep of stock.*

*The lighting and lighting control system design was a key part of the electrical installation. Rob and his team worked closely with the luminaire manufacturer and Clipsal to ensure the project delivered maximum energy savings.*

### Tip Top Electrical Services

The Tip Top Electrical Services Team has been providing energy efficient electrical solutions since 1989. The business specialises in industrial and commercial electrical installations.

#### Natural and artificial lighting working in tandem

Tip Top Electrical Services installed 165 x 450w metal halide highbays at Toyota Tsusho's warehouse, which are divided into seven zones. The highbays incorporate 2-stage step dimming control gear. Each zone is controlled with 2 C-Bus relay channels in conjunction with a C-Bus light level sensor.

Natural light from the warehouse's skylights allows the artificial lighting to be reduced via the step dimming resulting in maximum lighting efficiency.

Programmed functions through C-Bus include 'all on', '50% dimmed' or 'all off' dependant upon the natural light level.



### Master switching from one location

A C-Bus black and white touch screen was installed to allow for centralised lighting control. All of the C-Bus relay units were housed within two custom built switchboards.

### User friendly

The light level sensors have been programmed to allow for short changes in natural light such as cloud cover. In this instance, the lights remain at their existing level for a predetermined time before the step dimming is initiated either up or down.

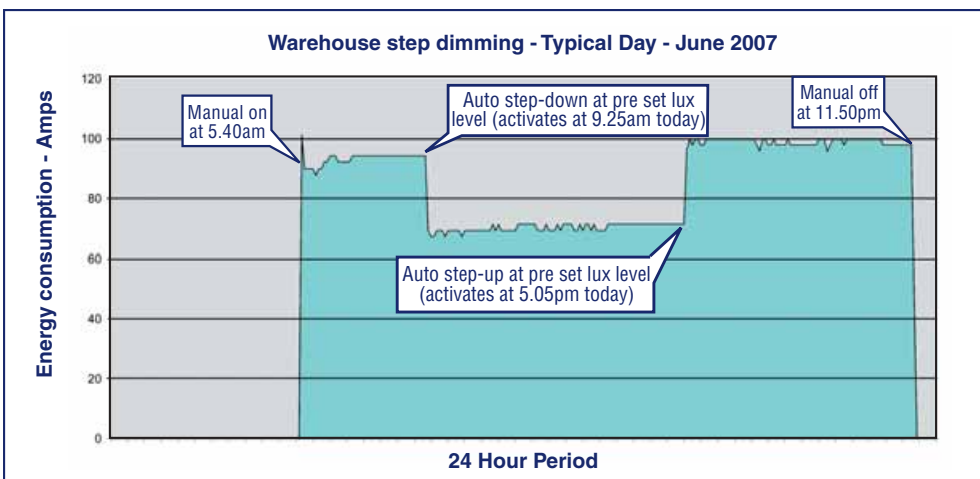
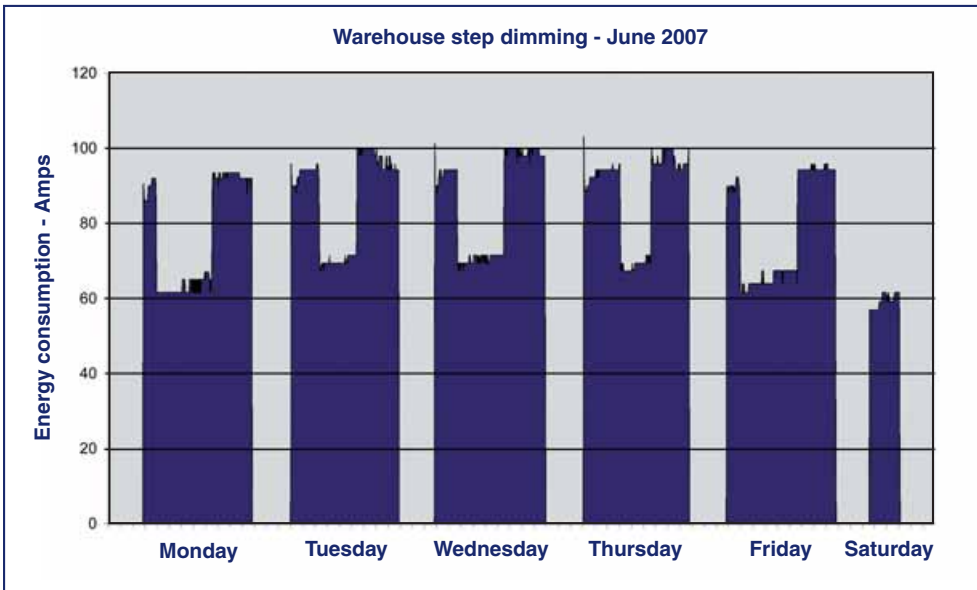


### C-BUS CONTROL FEATURES & BENEFITS

Features	Benefits
Local control at each zone	Ability to control lighting as required
Master switching	Convenient, single control point for lighting throughout the entire premises
Multiple light level sensors	Light switching thresholds are maximised in each zone. Reduced energy costs through utilising natural light
Programmable switch activation	Prevents lights from turning off during normal operating hours

### INSTALLATION DETAILS

Project	Toyota Tsusho Australasia Pty Ltd Woodville, South Australia
Electrical contractor	Tip Top Electrical Services
Builder	Ahrens Group
C-Bus products	2 x 12 channel relays (L5512RVF) 8 x light level sensors (5031PE) 1 x B&W C-Touch (SC5000CT)
Total lighting costs for C-Bus and step dimmed highbays	Approx \$30,000
Energy savings per annum	Approx 21,000 kWh
Reduction in CO <sup>2</sup> greenhouse gas	Approx 32 tonnes
Simple payback period	Approx 21 months



### Measurable energy savings

Toyota Tsusho is very pleased with the installation and are now realising the benefits of reduced energy consumption resulting in significant monetary savings.

Through the use of intelligent lighting design and Clipsal C-Bus, Toyota Tsusho can expect to enjoy up to a 50% saving on their energy costs when compared to standard lighting fit outs.

Data logging of the lighting circuits at one of the two switchboards validates the energy savings. The load charts show the step dimming function operating in the morning and continuing for most of the day. The data logging was carried out in June close to the shortest day of the year. Savings will increase during the Summer period, well above the levels identified, as the warehouse is operational up to midnight.

A payback in under 2 years is expected based on electricity tariff – 13 cents/kW hr, energy saving from step dimming – 12kW, and operating hours in dimmed mode – 1750 hrs per annum (7 hrs/day average).

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