

16 October 2009



Duane Rangihaeata  
Fontera  
PO Box 459  
Hamilton 3240

Dear Duane,

**RE: Save-it-Easy trail at Lvl 1 Fonterra Head Office**

Floor lighting at Fonterra's head office in Hamilton is currently provided by 3-way magnetically ballasted troffas using 36w T8 tubes behind prismatic diffusers. Each area is individually switched and typically consists of a lighting grid containing about nine fittings.

The existing fluorescent tubes are of the older 36w T8 style and ecobright's Save-it-Easy "Plug & save e-Ballast" T5 adaptor is being considered for its energy and environmental saving attributes. These devices offer a guaranteed 25% minimum reduction in energy usage, and when combined with appropriate de-lamping, can achieve far greater savings.

The T5 lamps used in this trial were GE F28w / 840.

A test area was identified where before and after power measurements could be carried out in order to qualify the energy savings. This test area contained nine fittings, of which all but one fluoro tube was working. All the vertical blinds were drawn in the test area and there was little influence from natural daylight.

The circuit feeding this area was logged on the 13<sup>th</sup> of October to ascertain steady-state current, kW load, power factor, and voltage both before and after the Save-it-Easy T5 adaptor installation.

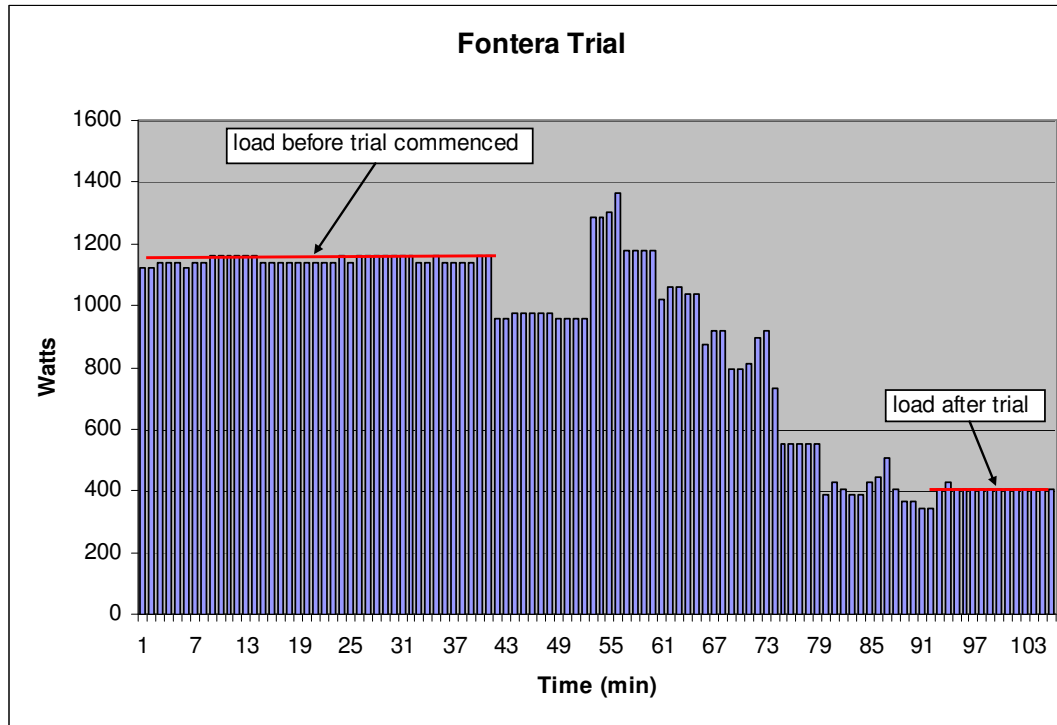
		Steady state load (before)			Steady state load (after)		
Circuit	Rating	Load (amps)	Load (watts)	Tubes	Load (amps)	Load (watts)	Tubes
R1	16A	5.16A	1,148w	27	7.78A	421w	18
					Reduction:	-727w	9
						~63%	~33%

The test area fittings were cleaned (including the prismatic diffusers) prior to the Save-it-Easy T5 adaptor installation and although two adjacent areas were re-lamped, only the test area was logged as it was considered very representative.

An indicative fitting temperature was taken before and after the relamping. A temperature of ~30.1°C was measured inside a fitting which had been burning for at least 3 hrs. The first re-lamped fitting was then measured after a burn time of ~1½hrs with the temperature noticeably lower at ~28.5°C. Although this reduction was not part of the overall savings initiative, we feel that this is an additional benefit resulting from this T5 adaptor technology.

Overall, load measurements commenced at ~10.30am and were completed at ~12.20pm. Sufficient time was allowed before and after the T5 Save-it-Easy installation to obtain steady state loads.

The loads were as follows:



The load reductions are clearly visible, as is the de-lamping process which shows the gradual reduction in load as each lamp is replaced.

Based on these test results we have no hesitation in confirming that the Save-it-Easy T5 adaptor trial was a complete success. The combination of new technology and de-lamping has resulted in energy savings well above the guaranteed 25% minimum.

From our tests, the trial savings are in the order of ~63%.

*Please note that our calculations are based on temporary data logging of steady state watts, and not current.*

If you have any questions regarding our report, or require any further clarification, please don't hesitate to contact us.

Kind regards,

Brett Cameron  
**Consultant, NZ Tariff & Fuel Consultants (2003) Ltd**

4 December 2009



Bruce Freeth  
Plant & Food Research  
Via email

Dear Bruce,

**RE: Save-it-Easy trail at Lvl 2 Function Room**

Floor lighting at Plant & Food Research's level 2 function room at 120 Mt Albert Rd, Mt Albert is predominantly provided by 2-way magnetically ballasted troffas using 58w T8 tubes behind open mesh diffusers. This room is artificially lit by 13 fittings in total, consisting of one row of eight fittings (down the centre of the room), and the remaining five fittings in another row close to the windows.

Switching is such that either the front or back of the room can be illuminated for presentation purposes. Unfortunately five of the fittings in the front circuit had their ballasts replaced with modern electronic ballasts, so our testing had to focus on the rear circuit.

The existing fluorescent tubes are of the older 58w T8 style and ecobright's Save-it-Easy "Plug & save e-Ballast" T5 adaptor is being considered for its energy and environmental saving attributes. These devices offer a guaranteed 25% minimum reduction in energy usage, and when combined with appropriate de-lamping, can achieve far greater savings.

The T5 lamps used in this trial were 35w / 840.

A test area was identified where before and after power measurements could be carried out in order to qualify the energy savings. We installed our measurement equipment in such a way that we could measure not only the entire lighting circuit (13 fittings), but also our specific test circuit consisting of six fittings. At the time of our testing (~11.00am to 12.30pm) there were no failed tubes and the curtains were fully drawn.

The lighting circuit was logged on the 4<sup>th</sup> of December to ascertain steady-state current, kW load, and voltage both before and after the Save-it-Easy T5 adaptor installation.

Test results are as follows:

**Entire lighting circuit**

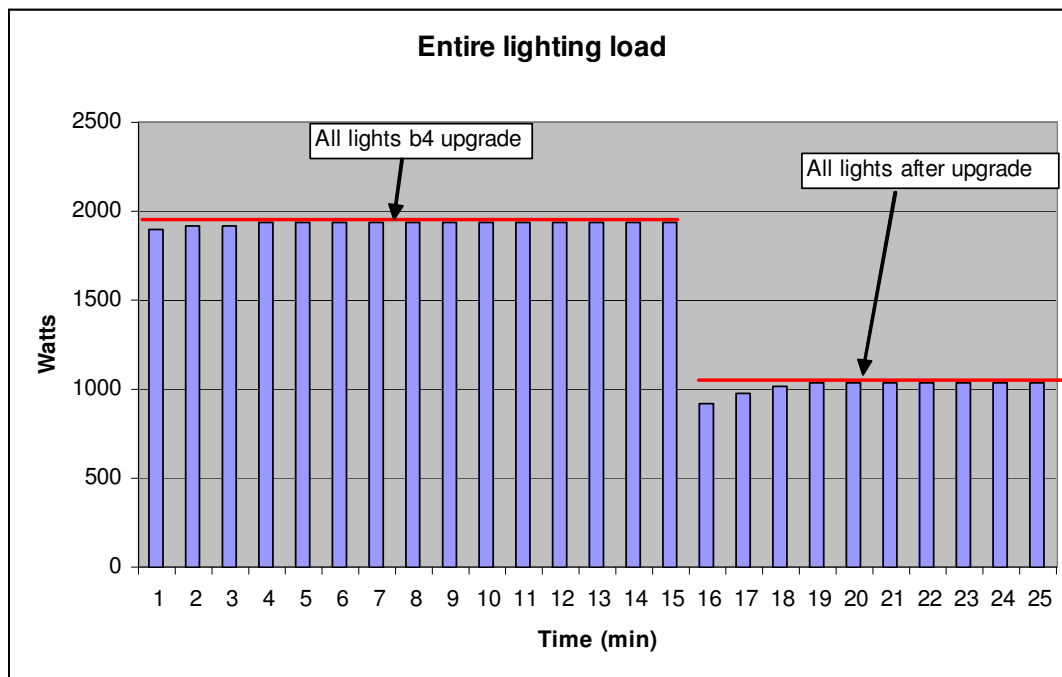
Circuit	Rating	Steady state load (before)			Steady state load (after)		
		Load (amps)	Load (watts)	Tubes (T8)	Load (amps)	Load (watts)	Tubes (T8/T5)
unknown	unknown	9.67A	1,940w	26	4.76A	1,041.5w	10/16
					Reduction:	-898.5w	-
						~46.3%	-

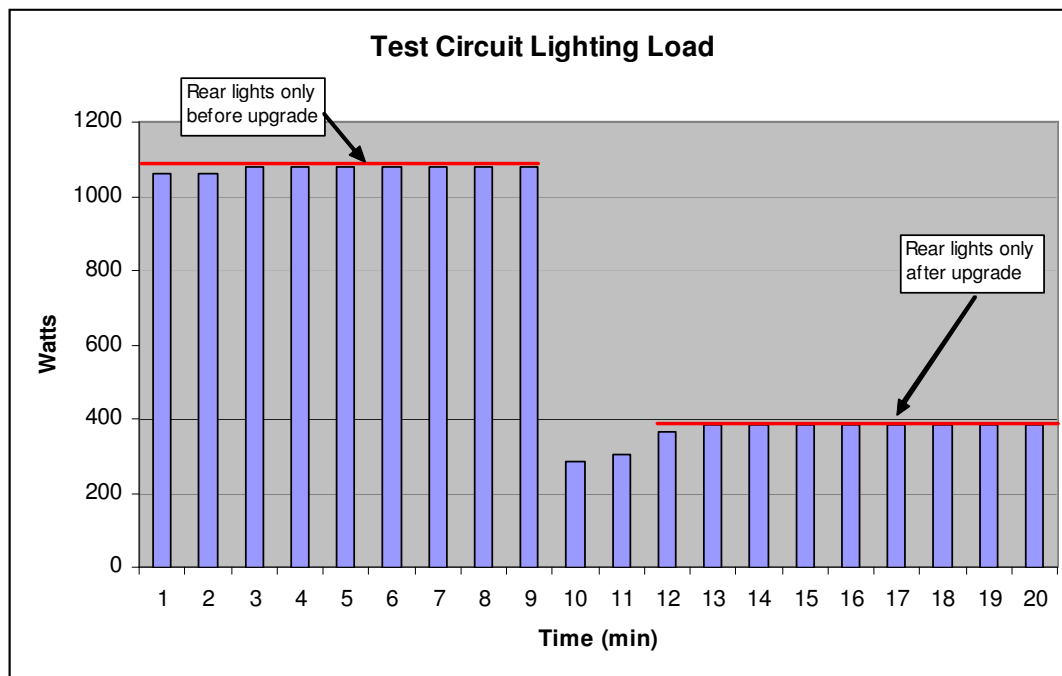
**(Rear) Test lighting circuit only**

Circuit	Rating	Steady state load (before)			Steady state load (after)		
		Load (amps)	Load (watts)	Tubes (T8)	Load (amps)	Load (watts)	Tubes (T8/T5)
unknown	unknown	6.33A	1,082w	12	1.81A	388w	0/12
Reduction:						-694w	-
						~64%	-

All light fittings were cleaned prior to the Save-it-Easy T5 adaptor installation and although 10 lamps couldn't be changed due to their ballasts, the results were particularly good due to the age of the magnetic ballasts. In our opinion, these old ballasts are very inefficient, and have somewhat distorted the results. More modern magnetic ballasts typically have a loss of ~6-10w, while these older ballasts appear to have a loss factor of ~25w (from out testing).

Using the data from our temporary data logger, the lighting loads are as follows:

**Entire lighting circuit**

**(Rear) Test lighting circuit only**

The load reductions are clearly visible; not only for the test circuit but also for the entire lighting load in this function room.

Based on these test results we have no hesitation in confirming that the Save-it-Easy T5 adaptor trial was a complete success. This new technology has not only resulted in energy savings well above the guaranteed 25% minimum, but also extended the working life of these T8 fittings.

From our tests, the trial savings are in the order of ~55-64% (taking into consideration the excessive ballast losses).

*Please note that our calculations are based on temporary data logging of steady state watts, and not current.*

If you have any questions regarding our report, or require any further clarification, please don't hesitate to contact us.

Kind regards,

Brett Cameron  
**Consultant, NZ Tariff & Fuel Consultants (2003) Ltd**