SOMAR INTERNATIONAL LTD. 30/10/2006
TEST REPORT

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OUTLINE TEST SCENARIO

A comparative test was initiated to evaluate the performance of Powerboss Eluma Intelligent Lighting versus the conventional high intensity discharge (HID) metal halide lighting within the Plymouth facility.

It was proposed that 4 x Powerboss Eluma fittings were installed in the despatch area of the Sheet Metal Phase 1 building and metering be undertaken to compare the relative kW usage of these fittings against the usage of 4 x metal halide fixtures.

Light levels were to be maintained and thermal images taken.

TEST / AUDIT PROCEDURE

4 x Powerboss Eluma luminaires were installed within the despatch area of the Phase 1 building.

The 4 fixture install was metered and monitored using a Circutor AR5L energy analyser in order to give the total kW consumption for the duration of the test for a period from the 13th to 20th October 2006.

The Powerboss Eluma were set to maintain a light level equivalent to that delivered by the metal halide fittings.

Thermal images were also taken at the end of the pilot period to compare the lamp and fitting temperatures of the respective luminaires.

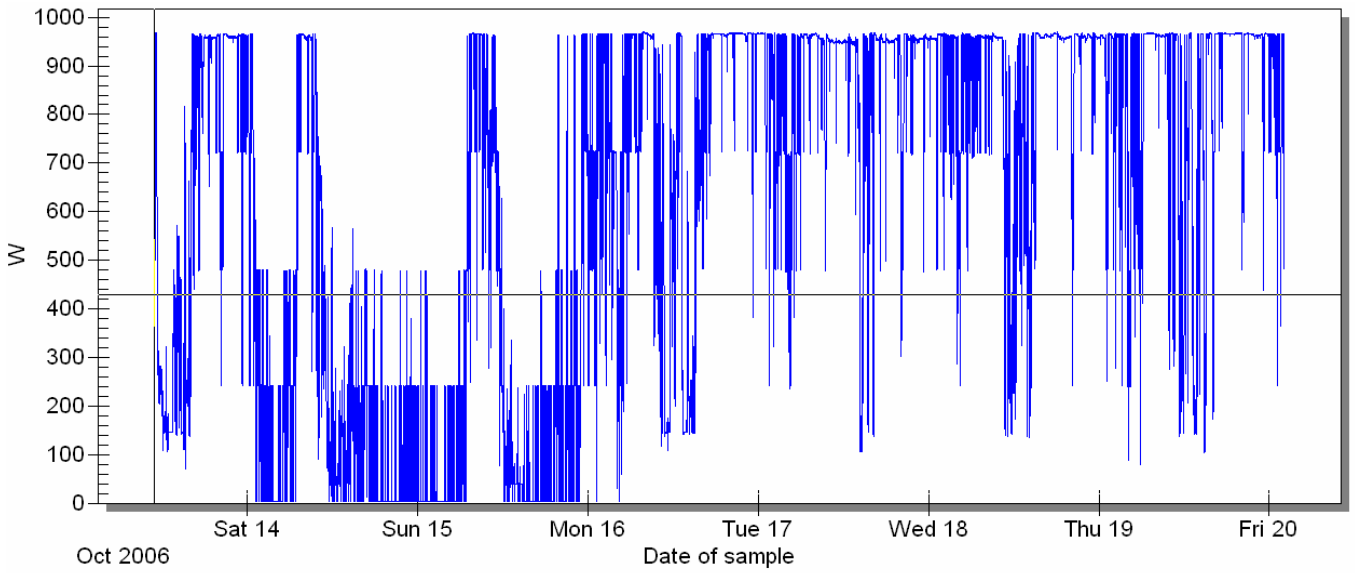
TEST RESULTS – kW

The test demonstrated kW consumption during the sample period extracted from the data as follows:

4 x Metal Halide @ 450W	286.2kW
4 x Powerboss Eluma	94.5kW

These results which equate to a 67% saving in kW are displayed on the graph on the following page:

TEST RESULTS – kW

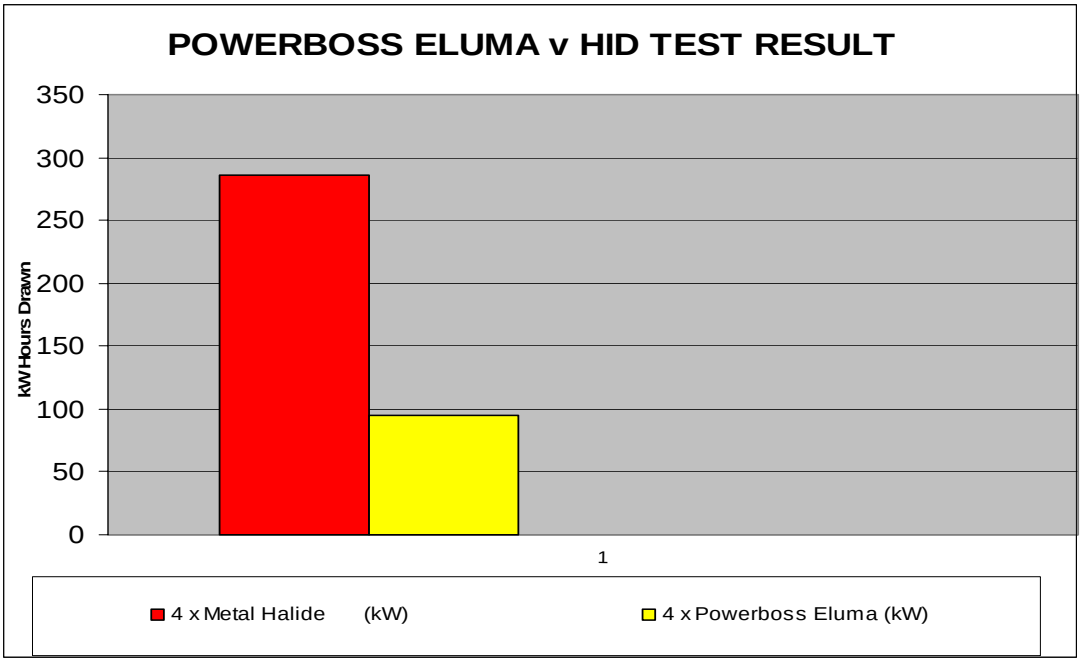


Act : 13/10/2006 10:50:00
Act : 429 (W)

From : 13/10/2006 10:50:00
Maximum : 970 (W)

To : 20/10/2006 02:06:00
Minimum : 4 (W)

TOTAL ENERGY USAGE



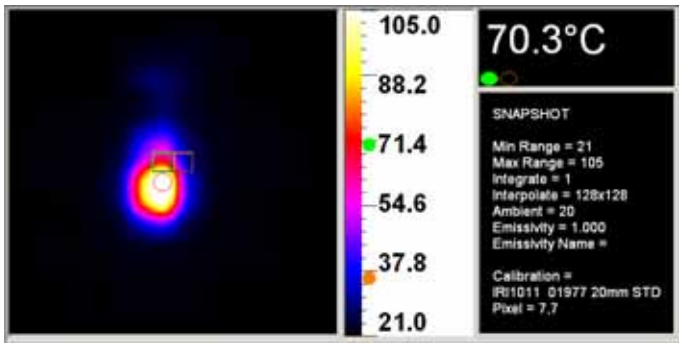
4 x Metal Halide (kW)	4 x Powerboss Eluma (kW)	% Savings
286.2	94.5	67%

OTHER OBSERVATIONS

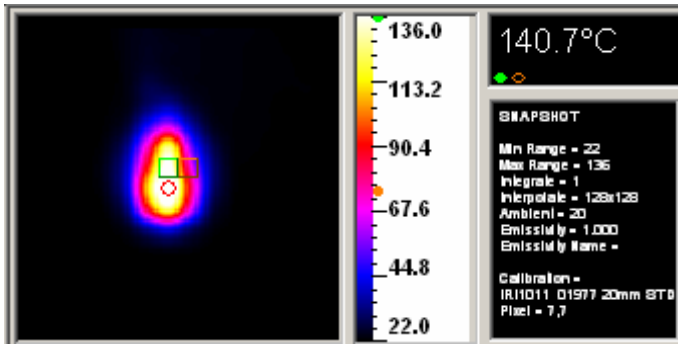
In addition to the reduced kW usage the increased glare from the HID lighting was commented on by the site operatives. The level of glare produced by HID lighting creates significant discomfort to facility operatives, fork lift drivers, etc. The Powerboss Eluma luminaires provide a linear distribution of light and hence do not exhibit the same levels of glare.

THERMAL IMAGING ASSESSMENT

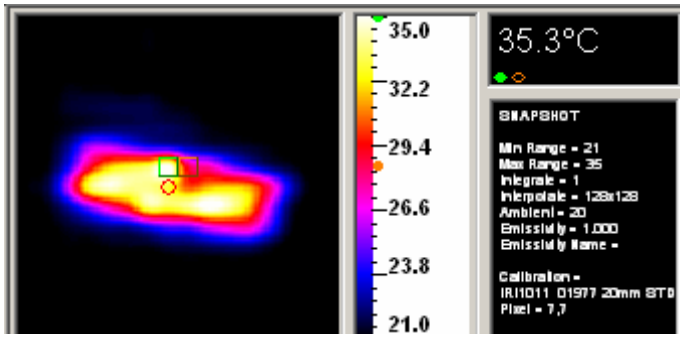
At the end of the trial week thermal Images were taken of an existing 400W metal halide fitting and a Powerboss Eluma fitting. These images displayed below show the relative temperatures of the fittings and lamps:



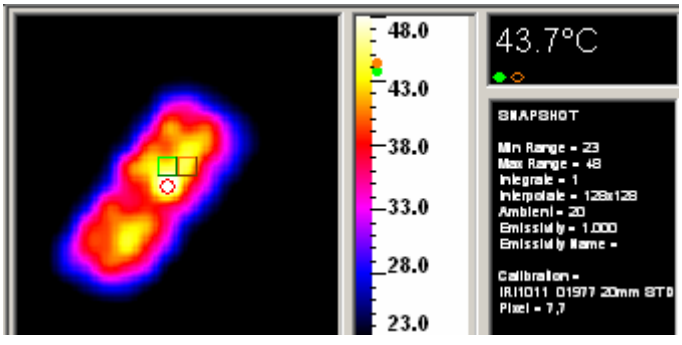
THERMAL IMAGE HIGHLIGHTING TEMPERATURE OF 400W METAL HALIDE FITTING



THERMAL IMAGE HIGHLIGHTING TEMPERATURE OF 400W METAL HALIDE LAMP



THERMAL IMAGE HIGHLIGHTING TEMPERATURE OF ELUMA LUMINAIRE FITTING



THERMAL IMAGE HIGHLIGHTING TEMPERATURE OF ELUMA LUMINAIRE LAMP

SUMMARY

The testing undertaken illustrated a significant kW reduction, which would equate to 793054kWh per annum (67%) and hence cost reduction from the use of Powerboss Eluma over conventional metal halide lighting.

Additionally, further optimisation of a complete facility installation would potentially deliver additional savings in the form of occupancy and daylight saving benefits.

Substantial maintenance and operator benefits will also be achieved through significant reduction of maintenance overheads associated with the existing fittings. Somar has partnered with Osram to provide a 3 year guarantee on the lamps and 5 year guarantee on the ballasts. High bay lamps suffer a 35% - 40% reduction in light output over their first 6000 burning hours. Using Osram constant output lamps, the Eluma fittings provide constant light output for 20,000 hrs, i.e. minimal reduction in light output over the lamp life.

COMMERCIAL CONSIDERATIONS

In addition to the kW load metered, a savings calculation has also been included on the basis that this trial is to be extended to an installation in all four Phases of the facility in Plymouth:

1. Projected savings in **electrical energy running** costs of £48376 per annum (67% saving).
2. Payback within 1.75 years in electrical energy costs alone based on quoted cost below.
3. 100% first year tax benefits are also available under the **Enhanced Capital Allowance scheme** (ECA) to which Eluma applies.
4. **Substantial maintenance costs** will be achieved owing to the low maintenance, long lamp life of the Eluma fittings.
5. **CO_2 saving of 341013kg** per annum

If the above project was supplied on the basis of a **3 year fixed term lease**, the monthly electrical energy savings of £4031 would fund a monthly lease payment of £2626 and also provide an **immediate positive monthly cashflow benefit of £1405** at current energy rates.

Powerboss Eluma Audit Summary

Annual Energy Usage - Existing Installation	1179360 kWh
Annual Energy Usage - Powerboss Eluma Solution	386306 kWh
Projected Annual Energy Savings	**793054 kWh**
Projected Annual Energy Savings	**67%**
Projected Annual CO2 Saving	**341013 kg**
Annual Running Costs - Existing Installation	£71,940.96
Annual Running Costs - Powerboss Eluma Solution	£23,564.66
Projected Annual Cost Savings	**£48,376.30**
Projected Annual Cost Savings	**67%**
Monthly Cost Saving	£4,031.36
* Monthly Cost of Eluma Solution	£2,626.16
*** Immediate Monthly Cashflow Benefit**	**£1,405.20**

* Based on a 3 year fixed lease agreement

LIGHTING AUDIT ANALYSIS **CUSTOMER:** **DATE:** 30/10/2006

EXISTING INSTALLATION

Facility Area	Burning Hours per Day	Burning Days per week	Existing Fittings	Existing Connected Load per fitting (W)	No. of fittings	Total Existing Connected Load (kW)	Total existing kWh p.a.	Existing Maintenance Cost (Lamps/ Labour)	Total Running Cost £ p.a. existing fittings
Facility	24	7	Metal Halide	450	300	135.00	1179360		£ 71,941

PROPOSED SOLUTION

Facility Area	Burning Hours per Day	Burning Days per week	Proposed Fitting	Connected Load per PB Eluma (W)	Proposed No. of Eluma fittings	Total Proposed Connected Load with Eluma (kW)	% Saving Benefit from Occupancy / Daylight sensing	Total Proposed kWh p.a with Eluma	Maintenance Cost Eluma (Lamps/ Labour)	Total Running Cost £ p.a. proposed Eluma solution
Facility	24	7	Eluma 4x55W	220	300	66	33	386306		£ 23,565

POWERBOSS ELUMA & PAYBACK

Facility Area	Approx. Return in Payback of Eluma £ p.a.	Eluma Payback in Years	Eluma Type Rec	Price of Eluma Unit	Total Investment
Facility	**£ 48,376**	**1.75**	ELUMA/OP/S	£ 281.48	£84,443

SUMMARY INFORMATION

EXISTING FITTINGS Annual kWhs	ELUMA SOLUTION Annual kWhs	PROJECTED SAVINGS Annual kWhs	% kWh Savings
1179360	**386306**	**793054**	**67%**

UNIT PRICE PER kWh	EXISTING FITTINGS Annual Cost	ELUMA SOLUTION Annual Cost	PROJECTED SAVINGS Annual Saving	% Cost Saving
£0.06100	**£71,941**	**£23,565**	**£48,376**	**67%**

TOTAL INVESTMENT	AVERAGE PAYBACK PERIOD	CO2 SAVING kg
£84,443	**1.75 Years**	**341013**

TOTAL LIFETIME BENEFITS

Based on 10 year lifetime

PROJECTED SAVINGS

First Year	£48,376.30
3 Years	£145,128.90
Lifetime (10yr) Savings	£483,762.99
Total Investment	£84,442.50