



GAÑAR GROUP

Lighting Energy Efficiency Consultants

Lighting Audit Report

Company: Lufil

Packaging

170 Units Only

Version 2 Actual Electricity

27th October 2016



Dear Sir,

Thank you for the opportunity to do a Lighting Energy Efficiency Audit of your company based on the light quantities as supplied by you. Please be aware that the calculations as attached are mathematical calculations and although they should be very accurate, there might be some variances caused by the actual usage variances, a tariff variance and the number of hours being incorrect. We have taken the cost of electricity from your electricity account, used the hours you have said your lamps are burning and taken the Wattages of your current installation and placed them in a spread sheet which uses straight forward mathematics to calculate the numbers.

Tariff Used:

We have used the rate as calculated from your estimated electricity account. This rate as used in our spreadsheet makes allowance for Maximum Demand, fixed charges, alternative demand charges, peak and off peak charges, winter and summer. We have not included the latest Eskom increases. This means that the calculations and ROI here are very conservative. What we endeavour to do in this audit report is to produce a fair and factual report with information which will assist you to make an informed decision on whether to proceed with a Green Footprint friendly exercise in retrofitting all of your globes with energy and cost saving replacements. We have used a rate which includes the Eskom percentage increase since June 2015.

Technology Recommended:

We wish to state that we have used Induction energy saving technology which we view to be most suitable throughout. Quality of product and life span is important to us as we want the technology to have reliability. The Induction globes we recommend are always 60,000 working hours and above, but mostly 100,000 hours.

Next Steps:

1. If you decide to proceed we require an official order.
2. A 60% deposit is required for the whole project. The costs in the report include installation.
3. We then carry out the retrofit. This can take between 1 -4 weeks.
4. The balance is then paid upon sign-off.
5. Where we can assist with metering, Power Factor correction, sensors on lights and air conditioners, tariff correction then we do.

Executive Summary:

Executive Summary: Lufil Packaging

Actual Cost Of Electricity per kWh	R 0,62
Current Annual Cost of Lighting Electricity:	R 517 379,03
Retrofit New Annual Cost of Electricity:	R 98 359,36
Rand Savings:	R 419 019,68
Percentage Savings:	81%
Cost of Retrofit:	R 540 380,00
Estimated Eskom Rebate:	R 0,00
Actual Cost of Retrofit to Client:	R 540 380,00
Savings Year 1 After Retrofit Costs:	R -69 622,42
Eskom Annual Increase % Used	15%
Eskom Increases over Last 5 Years	198%
Savings Year 2:	R 470 757,58
Savings Year 3:	R 541 371,22
Savings Year 4:	R 622 576,90
Return on Investment in Months:	13,77

Current Electricity Usage and Grid Situation:

Please note: This spreadsheet is the intellectual property of TFS Energy and should not be distributed without permission.



Current Lighting System Daily Usage

0.23 (04

5% 58; <=>

Area	Measurements	Description	Present Globe Type	Lamp Wattage	Ballast Watt	Hours / Day	Watts / Day	Kilowatts / Lamp / Day	Kilowatts / Day / Total Project Globe Type	Kilowatts / Year / Total Project	Cost / kW	Sub Total	No. of Fittings	kW Cost in R's / Day / Project	kW Cost in R's / Year / Project / 31 Days / 12 Months
Production	Unknown	High Bay	1 105.-400W Mercury Vapour	400 W	60 W	24 hrs	11 040 W	11,04 kW	1 214,40 kW	451 756,80 kW	R 0,62	R 6,82	110	R 749,94	R 278 978,89
Production	Unknown	High Bay	2 105.-400W Mercury Vapour	400 W	60 W	24 hrs	11 040 W	11,04 kW	883,20 kW	328 550,40 kW	R 0,62	R 6,82	80	R 545,41	R 202 893,74
Canteen	Unknown	High Bay	3 105.-400W Mercury Vapour	400 W	60 W	24 hrs	11 040 W	11,04 kW	154,56 kW	57 496,32 kW	R 0,62	R 6,82	14	R 95,45	R 35 506,40
				TOTAL		Hours / Day	33 120 W	33,120 W	2 252,160 W	837 803,520 W			204	R 1 390,80	R 517 379,03

Suggested Electricity Usage and Grid Situation:

Suggested Globe Type	Lamp Wattage	Hours / Day	Watts / Day	Kilowatts / Lamp / Day	Kilowatts / Day / Total Project	Kilowatts / Year / Total Project	Cost / kW	Sub Total	No. of Fittings	kW Cost in R's / Day / Project	kW Cost in R's / Year / Project / 31 days / 12 Months
1 R79.-LED High Bay Sattelite 100W	100 W	24 hrs	2 400 W	2,40 kW	408,00 kW	151 776,00 kW	R 0,62	R 1,48	170	R 251,96	R 93 728,09
2 R82.-LED High Bay 150W	150 W	24 hrs	3 600 W	3,60 kW	0,00 kW	0,00 kW	R 0,62	R 2,22	0	R 0,00	R 0,00
3 R108.-2-Lamp 5ft T8 LED Tube 60W	60 W	24 hrs	1 440 W	1,44 kW	20,16 kW	7 499,52 kW	R 0,62	R 0,89	14	R 12,45	R 4 631,27
TOTAL		Hours / Day	R 7 440,00	7,44 W	428,16 W	159 275,52 W			184		R 98 359,36



Savings Per Product on New Installation:

The below chart reflects the savings per product line or area should you complete the retrofit. We have used an assumption that Eskom will increase its electricity each year and history has shown that over the last 5 years has been in excess of 200%

Area/Department	Energy Efficient Equivalent	Cost of Lighting Electricity Normal Currently	Cost of Lighting Electricity Retrofit	Energy Savings Only	Savings Non-Cost replacement & Maintenance	Total Savings	Total Initial Cost	Total Saving Year 1	Total Saving Year 2	Total Saving Year 3	Total Saving Year 4	
1	Production	R79.-LED High Bay Sattelite 100W	R 278 979	R 93 728	R 185 251	R 27 898	R 213 149	R 521 900	-R 308 751	R 213 148,69	R 245 121	R 281 889,15
2	Production	R82.-LED High Bay 150W	R 202 894	R 0	R 202 894	R 20 289	R 223 183	R 0	R 223 183	R 223 183,11	R 256 661	R 295 159,67
3	Canteen	R108.-2-Lamp 5ft T8 LED Tube 60W	R 35 506	R 4 631	R 30 875	R 3 551	R 34 426	R 18 480	R 15 946	R 34 425,77	R 39 590	R 45 528,09
			R 517 379	R 98 359	R 419 020	R 51 738	R 470 758	R 540 380	R -69 622	R 470 758	R 541 371	R 622 577

Installed Cost of the Project

Area	Suggested Globe Type	Unit Cost	Install	Disposal	Total	PURCHASE VALUE excl	PURCHASE VALUE with Installation excl	Install & Disposal Only	
1	Production	R79.-LED High Bay Sattelite 100W	R 2 700,00	R 350,00	R 20,00	R 3 070,00	R 459 000,00	R 521 900,00	R 62 900,00
2	Production	R82.-LED High Bay 150W	R 3 937,00	R 250,00	R 20,00	R 4 207,00	R 0,00	R 0,00	R 0,00
3	Canteen	R108.-2-Lamp 5ft T8 LED Tube 60W	R 1 150,00	R 150,00	R 20,00	R 1 320,00	R 16 100,00	R 18 480,00	R 2 380,00
TOTAL						R 475 100,00	R 540 380,00	R 65 280,00	

This does not include emergency lights or the separating the 4 sections onto their own switches. This is on a separate quote as per given to Patrick Fick.

Please note that most companies going green demand that **all removed globes must be destroyed and cannot be used anywhere else on the site or at any other site.** They require a disposal certificate to confirm this.



Retrofit Return on Investment:

The below chart shows the return on investment and takes into consideration the initial cost, the savings achieved and the Eskom calculation on the savings (both product cost and labour) effected by the non-necessity to replace or change globes for 3 years.

Annualised Savings Model

Lufil Packaging		ROI Time Frame				
!"\$%&'(&)*	+,"-).- /01'	2345-6	2345-7	2345-8	2345-9	+)0:#
Cost of Lighting Electricity Normal Currently	Normal	R 517 379	R 594 986	R 684 234	R 786 869	R 2 583 468
Cost of Lighting Electricity Induction/LED/T5	Induction/LED/T5	R 98 359	R 113 113	R 130 080	R 149 592	R 491 145
Energy Savings Only		R 419 020	R 481 873	R 554 154	R 637 277	R 2 092 322
Savings on Non-Cost replacement 220v lamps reaching lifespan	Normal	R 51 738	R 59 499	R 68 423	R 78 687	R 258 347
Total Savings		R 470 758	R 541 371	R 622 577	R 715 963	R 2 350 669
Total Initial Cost	R 540 380	R 0	R 0	R 0	R 0	
Deficit from Previous Year		R 0	R -69 622	R 471 749	R 1 094 326	
TOTAL CUMULATIVE SAVING		R -69 622	R 471 749	R 1 094 326	R 1 810 289	
Total Annual Savings		R 470 758	R 541 371	R 622 577	R 715 963	
Monthly Savings		R 39 230	R 45 114	R 51 881	R 59 664	
Payback ROI in Months		13,77				
Initial Investment		R 540 380				
Monthly Savings 1st 2 Years		R 42 172,03				



Net Present Value:

This matrix shows how well the money invested in the projects would have performed against a barometer of 11% if invested otherwise in a high performing stock or bank investment.

Net Present Value & Internal Rate of Return

Date: 2016-10-27

Company: Lufil Packaging

Operational Costs	Value
Initial Outlay	R 540 380,00
Eskom Rebate	R 0,00
Electricity Rand Savings Yr 1	R 419 019,68
Electricity Rand Savings Yr 2	R 481 872,63
Electricity Rand Savings Yr 3	R 554 153,52
Maintenance Savings Yr1	R 51 737,90
Maintenance Savings Yr2	R 59 498,59
Maintenance Savings Yr3	R 68 423,38
Interest Rate	11%

	Year 0	Year 1	Year 2	Year 3
Initial Outlay	R -540 380,00			
Eskom Rebate		R 0,00		
Electricity Savings		R 419 019,68	R 481 872,63	R 554 153,52
Maintenance Savings		R 51 737,90	R 59 498,59	R 68 423,38
Cash Flows	R -540 380,00	R 470 757,58	R 541 371,22	R 622 576,90
NPV	R 778 337,82			
NPV (Using Formula)	R 778 337,82	11%		
Internal Rate of Return	79,0%			



Savings Kwh and Rand Savings: Solution Summary For - Lufil Packaging

2016-10-27

Below, we demonstrate the savings on our offering compared against your present situation.

FINANCIAL SUMMARY						
COST OF CURRENT 'TRADITIONAL' INSTALLATION OVER THE 3 YEAR TERM						
	DAY	MONTH	YEAR 1	YEAR 2	YEAR 3	TERM
CONSUMPTION IN R's	R 1 390,80	R 43 114,92	R 517 379,03	R 594 985,89	R 684 233,77	R 1 796 598,69
MATERIAL REPLACEMENT	R 139,08	R 4 311,49	R 51 737,90	R 59 498,59	R 68 423,38	R 179 659,87
	R 1 529,88	R 47 426,41	R 569 116,94	R 654 484,48	R 752 657,15	R 1 976 258,56
CONSUMPTION IN kW	2 252,16 kW	69 816,96 kW	837 803,52 kW	837 803,52 kW	837 803,52 kW	2 513 410,56 kW
COST OF LED OVER SAME TERM						
	DAY	MONTH	YEAR 1	YEAR 2	YEAR 3	TERM
CONSUMPTION IN R's	R 0,00	R 0,00	R 98 359,36	R 113 113,26	R 130 080,25	R 341 552,86
MATERIAL REPLACEMENT	R 0,00	R 0,00	R 0,00	R 0,00	R 0,00	R 0,00
	R 0,00	R 0,00	R 98 359,36	R 113 113,26	R 130 080,25	R 341 552,86
CONSUMPTION IN kW	428,16 kW	13 272,96 kW	159 275,52 kW	159 275,52 kW	159 275,52 kW	477 826,56 kW
THE SAVINGS						
	DAY	MONTH	YEAR 1	YEAR 2	YEAR 3	TERM
CONSUMPTION IN R's	R 1 390,80	R 43 114,92	R 419 019,68	R 481 872,63	R 554 153,52	R 1 455 045,83
MATERIAL REPLACEMENT	R 139,08	R 4 311,49	R 51 737,90	R 59 498,59	R 68 423,38	R 179 659,87
ANTICIPATED SAVINGS IN R's	R 1 529,88	R 47 426,41	R 470 757,58	R 541 371,22	R 622 576,90	R 1 634 705,70
CONSUMPTION IN kW	1 824,00 kW	56 544,00 kW	678 528,00 kW	678 528,00 kW	678 528,00 kW	2 035 584,00 kW
						82,7%
						81,0%

SUMMARY PAGE III

Lufil Packaging

Carbon Tax Estimate: Lighting Only

The South African Government Estimated Start 1st January 2017

Solution Summary For - Lufil Packaging

(See Brief as attached:)

The initial marginal carbon tax rate will be R 120 per tonne of CO2e (Carbon Dioxide equivalent.) Taking into account the thresholds mentioned below, the effective tax rate is much lower and ranges between R 6.00 and R 48.00 per tonne. Electricity Carbon Tonnes are

	Annual Kw Hours	Co2 Tax per tonne	Carbon Emission Tonnes	Carbon Emission Tax Payable
Current Electricity Usage	837 803,52	R 120,00	496,40	R 59 567,83
Electricity After Recommended Changes	159 275,52	R 120,00	94,37	R 11 324,49
Savings Achieved	678 528,00	R 120,00	402,03	R 48 243,34

