

# A Report on Energy Audit

For

**Info Lab Ltd.**  
**Annacotty Ind. Estate**  
**Annacotty**  
**Co Limerick**  
**Ireland**

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## 1 INTRODUCTION

The consultant (Maz Ali MSc MEI) was appointed to review and identify the scope of reducing energy consumption (particularly after the changes in occupied areas of the site) as a part of the ongoing objective of minimising the factory emissions at the client's site in Limerick.

The survey work was undertaken on 18<sup>th</sup> December 2008 and the assistance received from H McKeon, D Ryan and M Holmes in collecting the required site information for compiling this report is gratefully acknowledged.

## 2 SITE DESCRIPTION

The client has sold part of its business, involving gel and toner manufacturing, and now retains the facility for producing dampening additives and food rated printing ink.

The site occupancy is reduced to units 12, 13 and 14 while the remaining (units 1A, 15 and 16 etc) parts of the original factory are now occupied by a third party. There are in total 25 staff members working in the client's factory, which is operated from 7.30 am to 4.0 pm on daily basis from Monday to Friday.

There are two main sources of energy used on site; electricity and natural gas.

Electricity is utilised mainly for production purposes while natural gas is used for thermal oil heating and space heating reasons.

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### 3 ENERGY CONSUMPTION AND COST ANALYSIS

The tables below and on the following pages represent utility consumption and cost information provided by the Client and covers the twelve month period from October 2007 to September 2008.

#### 3.1 Electricity Usage

Consumption Date	Consumption kWh		Max Demand kW	Cost €
	Day Units	Night Units		
Mar 08	50,013	14,443	336	10,019
Apr 08	47,323	15,897	307	9,676
May 08	39,564	14,162	277	8,641
Jun 08	39,154	12,646	294	8,405
Jul 08	43,280	11,281	305	8,892
Aug 08	35,219	10,115	284	7,800
Sep 08	36,737	10,485	319	7,983
Oct 08	27,787	8,870	-	6,401
Nov 08	35,440	11,375	-	7,791
<b>TOTAL</b>	<b>354,517</b>	<b>109,274</b>		<b>75,608</b>

The average price of electricity over the above period was 16.3c/kWh

The above consumption is attributed, based on sub-meters reading, to the different areas of the factory as follows on an annual basis.

Area	Consumption kWh/annum	Cost €/annum	Production Tonnes/annum	Specific Energy Consumptn. (SEC)
Unit 12 (DA Production)	222619	36,291	4,791	46.5 kWh/tonne
Unit 13 (MGAProduction)	227257	37,048	124	1.8 kWh/Kg
Unit 14 (offices)	13914	2,268	N.A	N.A

### 3.2 Natural Gas Consumption

The total gas consumption is calculated to be around 295,584 kWh in all the units. However, the bulk of the gas usage is in the unit 13, which account for 90% of the total usage.

The annual gas expenditures associated with the above consumption are calculated to be €14,744. The unit cost of gas is estimated to be 4.5c/kWh

## 4 ENERGY MANAGEMENT

The existing Energy Management system on site include the monthly gas and electricity meter readings and monitoring of energy consumption against production in both the production areas of the factory.

The current energy cost, which is much lower as compare to the original factory, only require a simplistic energy management programme to ensure an effective monitoring of energy consumption and cost. Therefore, the following improvements can be made in the existing programme to further improve its effectiveness:

- Initiate weekly meter readings to ensure anomalies, if any, are identified at early stages to eliminate the possibility of the source of energy waste being left unattended for a long period.
- Circulate the energy consumption and specific energy consumption information to all the critical departments on a weekly basis.
- Make someone responsible for energy matters on site
- Implement the measures proposed in this report on a priority basis

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## 5 SUMMARY OF RECOMMENDATIONS

	Recommendations	Investment Cost Category <sup>6</sup>	Payback Period	Predicted Annual Savings		Annual CO <sub>2</sub> Emissions Savings
				Energy	Cost	
			[Year]	[kWh]	€	[Tonne]
1	Reduce MIC (Maximum Import Capacity) on the electricity contract From the existing level of 800 kVa to 400 kVa	Low Cost	0.3	–	6,500	–
2	Eliminate poor factor charges	Low Cost	1.5	–	500	–
3	The gas supply tariff for unit 12 should be changed to Small Business User	Low Cost	–	–	1,500	
4	Operate the Vacudest 400 machine during the night time tariff	Low Cost	–	–	3,000	–
5	Install PIR controllers for the lighting control in the locker room/toilet, canteen and entrance areas of unit 12	Low Cost	1	1,534	250	1.2
6	Replace the existing 100W (T12) fluorescent tubes in unit 13 main areas by T5 tubes to save 50% energy use for lighting in this area	Medium	2	4,908	800	3.8
7	The lights in the storage areas, mixing room and toilet /locker room of unit 13 should be controlled by PIR switches	Medium	1	6,135	1000	4.7
8	Install PIR controllers to control lighting in the corridor and relevant individual offices in unit 14	Medium	1	1,534	250	1.2
9	Install TRVs (Thermostatic Radiator Valves) on the radiators in unit 13	High	1.5	33,333	1,500	8.6
10	The hot room temperature in unit 12 should be controlled at optimum level and the existing temperature of over 39C is considered excessive	Low	0.5	6,135	1,000	4.7
	<b>T</b>					
	<b>TOTAL</b>			<b>53,579</b>	<b>16,300</b>	<b>24.2</b>

<sup>6</sup> Either no/ low cost, medium cost, high cost

## 6 CONCLUSION

A potential savings of around **€16,300** per annum in energy consumption costs are highlighted in this report, which also account for a reduction of **24.2 tonnes of CO<sub>2</sub>** emission per annum.

The reduction in the MIC for electricity supply contract would make significant cost savings on site. Also, the operation of vacudest machine during the night rate electricity offers a considerable scope of savings.

There are also potential savings achievable through improvements in lighting control by installing PIR controllers, in identified areas of the factory, as well as by changing the old T12 fluorescent lamps by modern T5 lamps

The specific Energy Consumption figures for the different products manufactured in the factory cannot be compared with other factories, as these are specialist commodities manufactured only in a limited factories around the world, and as such Performance Indicator's information is not available in the published data. However, the plant could utilise the base year figures to monitor energy performance of the plant.

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