

# Electronic lighting solutions, controls and management

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**ENER-G Group**

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Objective: to provide selection criteria where comparable alternative technologies are suitable for particular applications.

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# ENER-G – Credentials

Design, manufacture, source, install, maintain and manage alternative energy source and management products:

- Renewable, cogeneration, from Waste
- Guaranteed saving solutions

This involvement throughout the lifecycle of a project together with performance guarantees, drives our impartial selection of evaluated through life cost solutions.

We are also one of the top six energy brokerage companies in the UK giving us a minute by minute insight in to market trends.

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# Factors determining selection

Increase efficiency and reduction of waste

- Tariff
- Contract Duration / Renewal Date
- Total Circuit Watts
- Actual Hours Run
- CRC impacted companies the implication of additional carbon costs

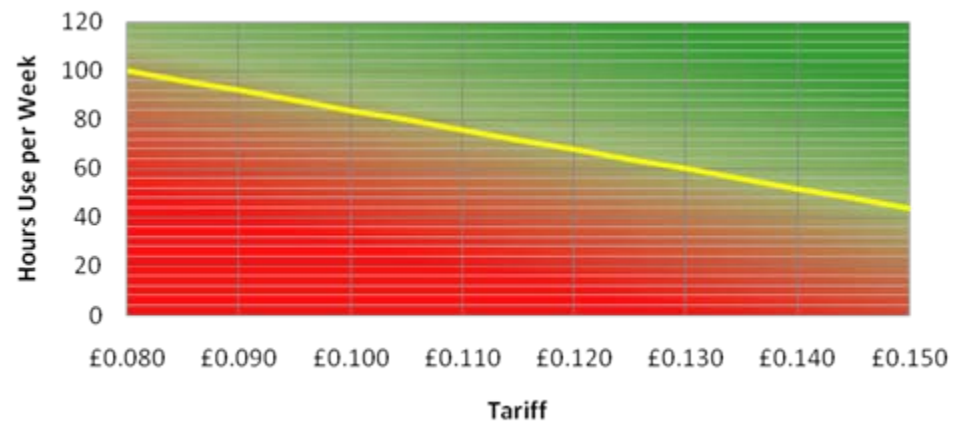
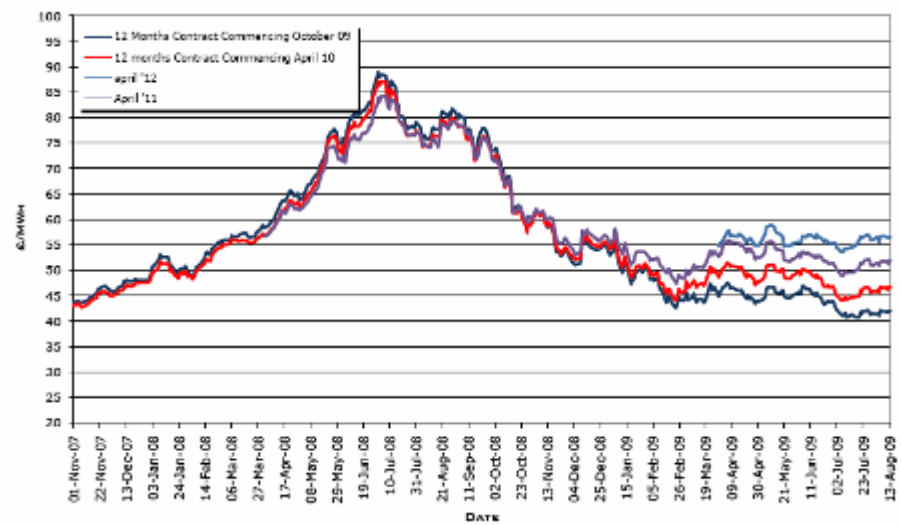
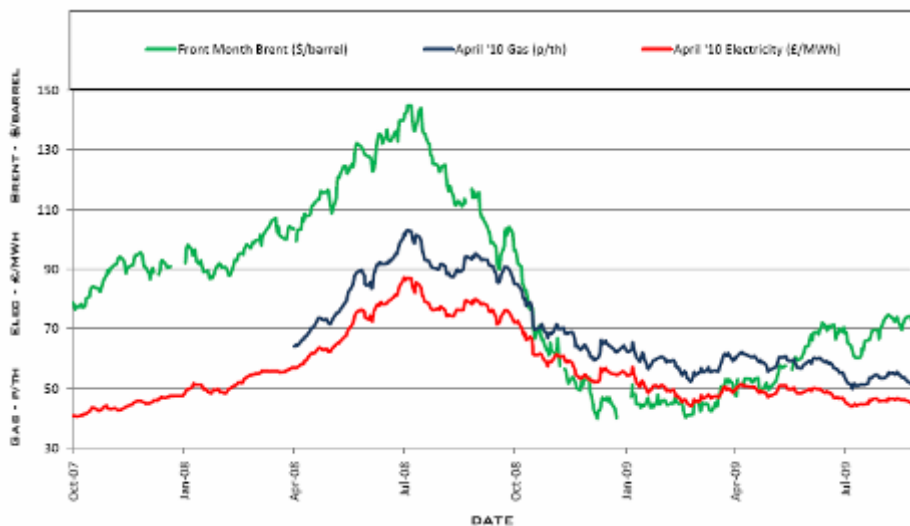
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# Advancement in technologies



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# Advancement in technologies

## Lamp Types

## Historic application

Led

Entertainment

fluorescent

Commercial Office, Storage

High Intensity Discharge (HID)

Logistics

All these lamp types could have their output varied (dimming) as and when the control gear was developed

Today this is true of them all

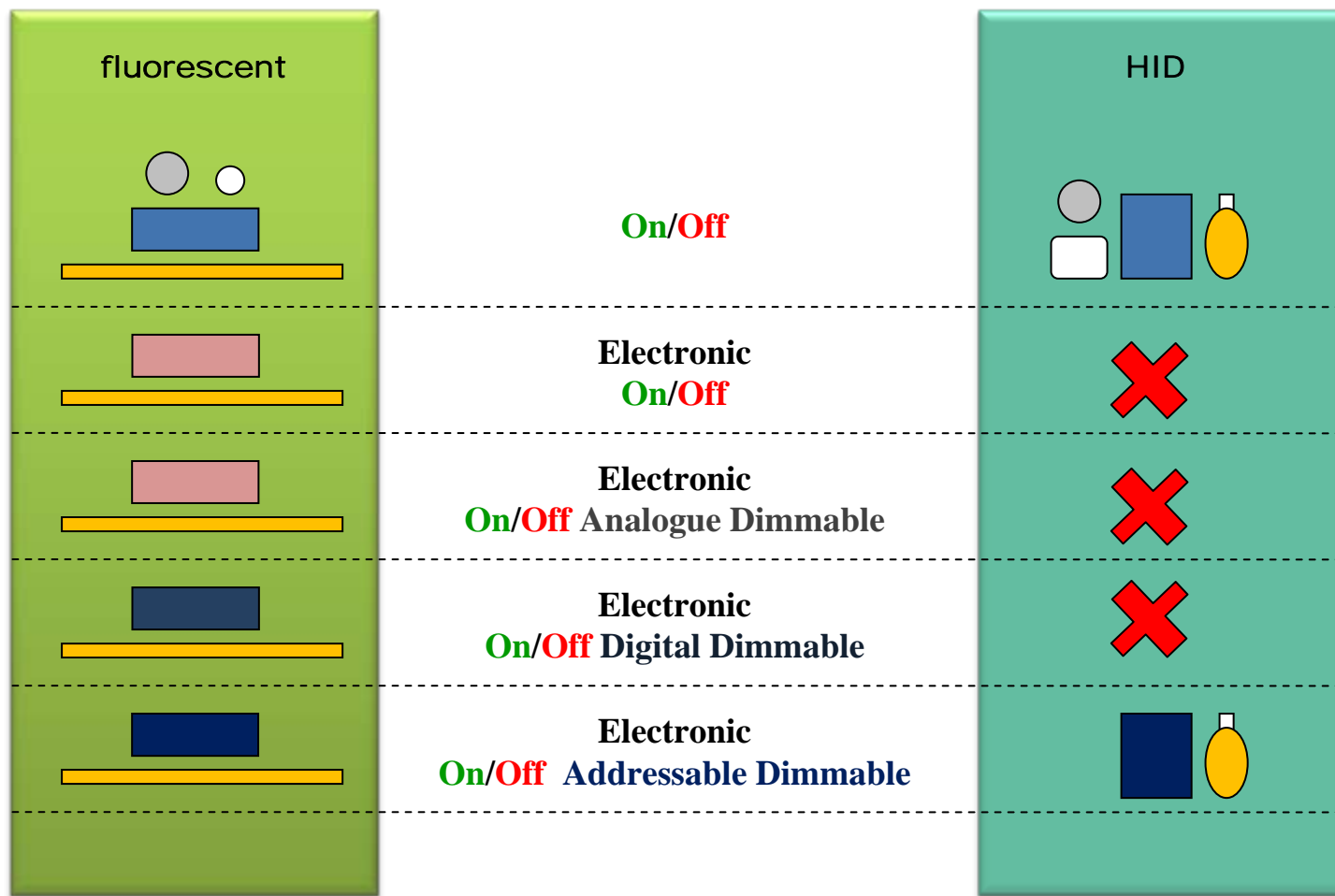
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# Parallels



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# Parallels

Developments in control gear led to the design of new lamps with

- improved efficiency
- increased useful life (lumen output) #
- improved mortality #
- T12 – T8 – T5

Reduced wattage lamps producing same output to previous alternatives

Result being both technologies offer

- 20,000 hours lumen depreciation
- 100 lumens per watt
- 20,000 hour mortality rate

Matched with correct gear variable light output via analogue, digital or addressable control options

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# Advancement in technologies

## Lamp mortality

LED	<i>n/a</i>	
fluorescent	20,000hrs	<i>(3hr on /1hr off (7 switch cycles in 24hrs))</i>
HID	20,000hrs	<i>(7hr on /1hr off (3 switch cycles in 24hrs))</i>
<i>(HID/Flo gear)</i>	<i>50,000</i>	<i>3% failure</i>

## Useful Life

LED	40,000hrs	50 to 70% (temperature dependent)
fluorescent	20,000hrs	80%
HID	20,000hrs	80%

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# Lamp selection criteria

Today convergence of applications

What is the application

- Specified minimum LUX Levels (CIBSE)
- Uniformity
- Rendition

Recognised tools and information available to base and validate design

- Manufacturers photometric data
- Relux and Dialux Software

Impact on productivity, well being, etc

Value of light to your business

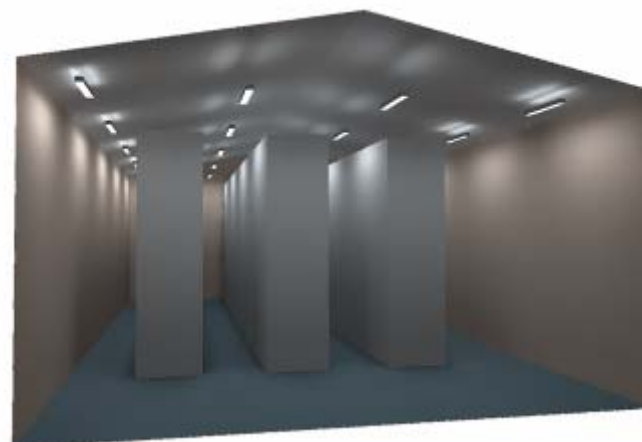
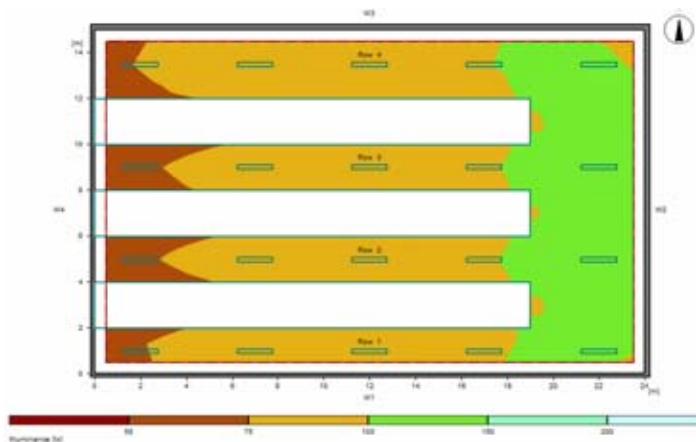
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# Lamp selection criteria



## General

Calculation algorithm used  
 Height of evaluation surface  
 Height of luminaire plane  
 Maintenance factor

Average indirect fraction  
 0.75 m  
 8.00 m  
 0.80

Total luminous flux of all lamps  
 Total power  
 Total power per area (360.00 m<sup>2</sup>)

172000 lm  
 2380 W  
 6.61 W/m<sup>2</sup> (6.99 W/m<sup>2</sup>/100lx)

## Illuminance

Average illuminance  
 Minimum illuminance  
 Maximum illuminance  
 Uniformity g1  
 Uniformity g2

Eav 95 lx  
 Emin 56 lx  
 Emax 141 lx  
 Emin/Em 1:1.69 (0.59)  
 Emin/Emax 1:2.52 (0.4)

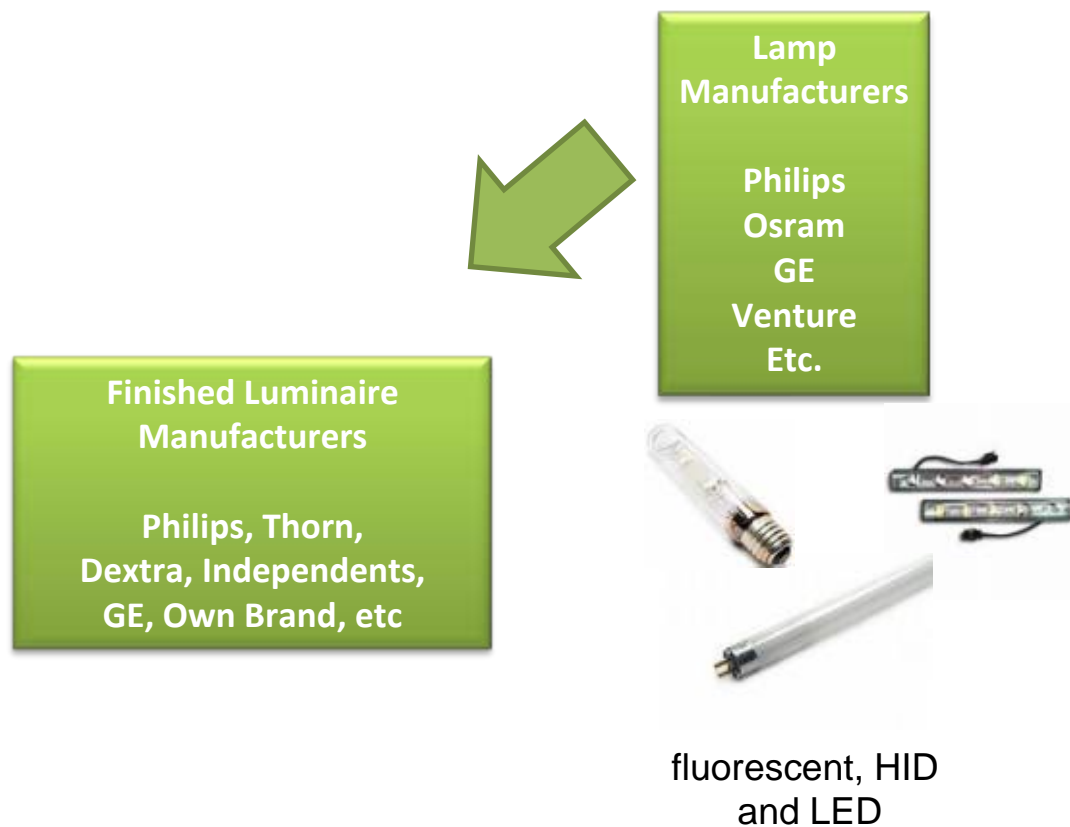
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# Lamp selection criteria



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# Control and additional benefits of lighting management

- Lighting controls / management systems cannot improve a poor lighting design
- Lamp life can be influenced by the control strategy
- The range of control / management strategies available will be determined by the lamp control gear
- Significantly influences the cost of the selected luminaire

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# Control and additional benefits of lighting management

Manual / Automatic

- Switching
- Dimming
- Absence (presence)
- Daylight Linking

User comfort/control – Management objectives

Fit and Forget solutions

Emergency lighting has to be tested to confirm functionality

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# Control and additional benefits of lighting management

Manual / Automatic

- Switching
- Dimming
- Absence (presence)
- Daylight Linking
- Shared devices

Continuous adaptable to change

User comfort – Management objectives

Continuous monitoring and measurement of performance

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# Control and additional benefits of lighting management

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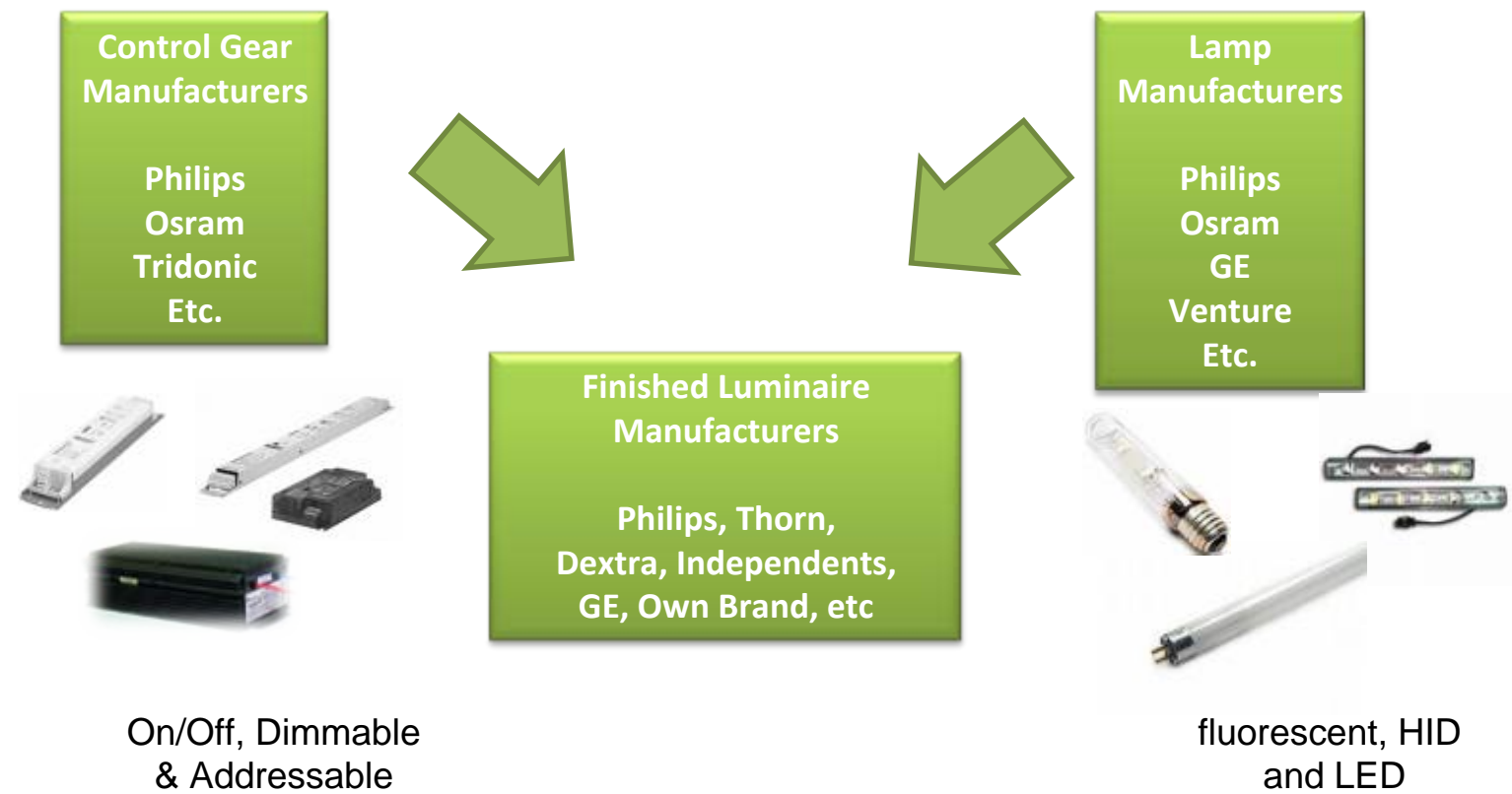
On/Off site continuous monitoring provides continuous savings and improvement

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Dali is the recognised addressable standard adopted by the leading control gear manufacturers

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Thank you

[www.energ.co.uk](http://www.energ.co.uk)

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