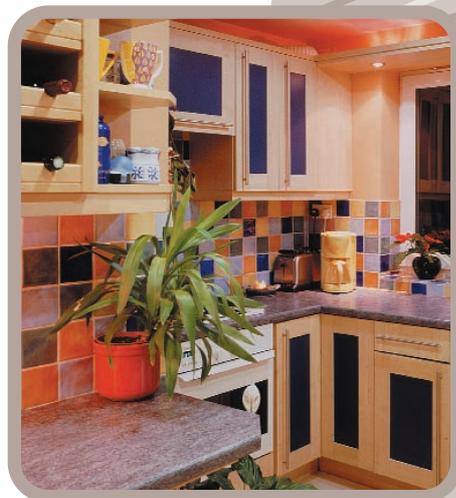
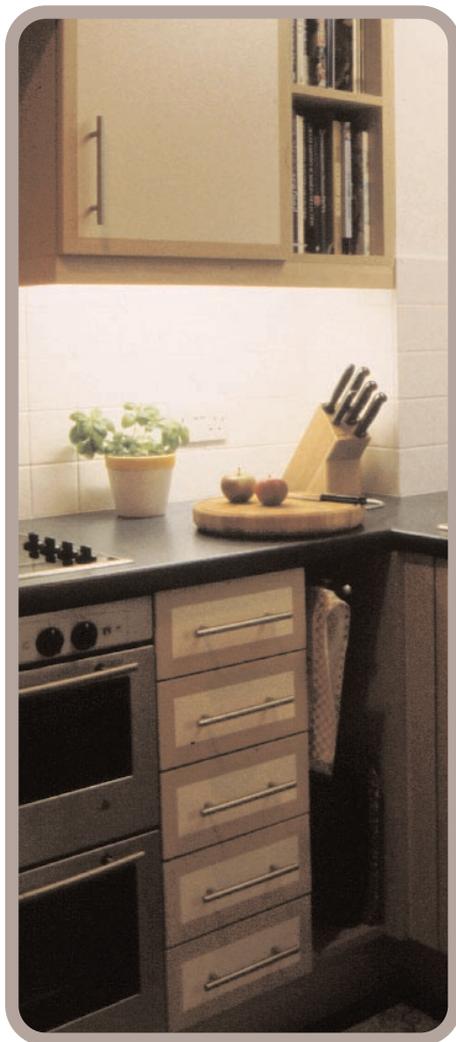




Energy Efficiency Best Practice in Housing

Low energy domestic lighting – ‘looking good for less’



A selection of exemplar rooms showing that low energy lighting can look good.



Low energy domestic lighting – ‘looking good for less’

Introduction

When fluorescent lighting was first introduced in factories in the 1940s it was seen as an efficient but unattractive option.

However there have been many improvements since then with good colour rendering and appearance, improved control gear (including high frequency ballasts) becoming available in an increasing range of suitable luminaries.

These improvements mean that fluorescent lighting can now form a key part of the designer’s specification in many different building types.

The continuing need for energy efficiency means low energy lighting is beginning to be built into UK housing and this poses new challenges for designers and builders.

This publication identifies some of the ways in which low energy lamps such as tubular and compact fluorescent lamps (CFLs) can be used in housing to provide an attractive and energy efficient lighting solution – ‘looking good for less’.

Other guidance on low energy lighting from the Housing Energy Efficiency Best Practice programme is listed on the back page.

All the luminaries containing fluorescent lamps that are illustrated in this publication will only accept lamps that have luminous efficacies greater than 40 lumens/circuit watt (as required by the Building Regulations in England and Wales*).

*The Building Regulations 2000. Approved document L1 Conservation of fuel and power in dwellings. The Stationery Office, London www.tso.co.uk/bookshop

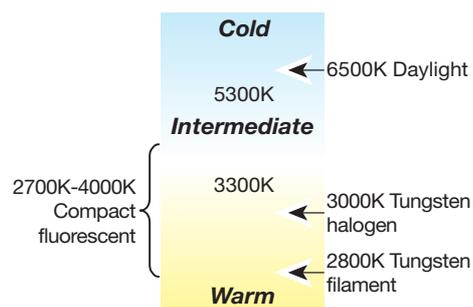
Kitchen extension, Hertfordshire

When the kitchen was refitted in 1996 the decision was taken to install four low energy downlighters at the same time as other kitchen electrics were altered. The kitchen was extended in 2000 and additional downlighters were installed.

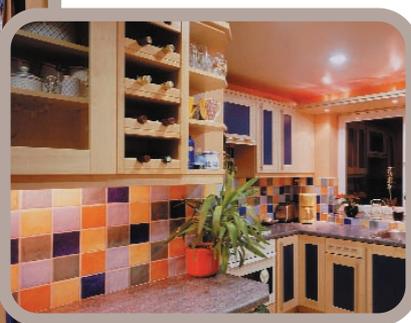
The original luminaries were fitted with 2 pin 13W lamps with a colour temperature of 4000K (see box below) as supplied with the luminaries, whilst the later luminaries were supplied with warmer (2700K) lamps. The older lamps are gradually being replaced, as they fail, with the warmer type to improve the colour consistency of the lighting.

The lamps give an even background level of light which is suitable for general tasks. Additional tungsten halogen lighting is used for task lighting over food preparation areas. These add visual interest through light and shade.

The luminaries were sourced from local electrical wholesalers. Care had to be taken to ensure that the chosen luminaries could be fitted into the first floor void.



Colour temperatures of different lamps





Entrance hall, Kent

The requirement here was to light a double height entrance hall. In order to provide sufficient light to the upper area the luminaire needed to be positioned out of reach of a conventional domestic stepladder. This would create a regular access problem and potential health and safety risk whenever the lamp needed replacement. The use of a ceramic uplighter with integral ballast and fitted with a 18W compact fluorescent lamp proved to be the solution.

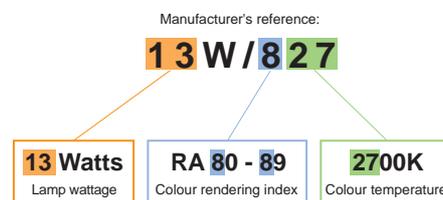
The uplighter provides a pleasing, soft, distribution of light to the hall area whilst being unobtrusive in itself and avoiding glare direct from the light source. The long life of a compact fluorescent lamps (around 8,000 -10,000 hours compared to 1,000 for a standard incandescent lamp) means that the lamp will only need to be replaced at very long intervals so reducing the inconvenience and risk to the householder.

Dining room extension, Cambridgeshire

This extension was originally designed with wiring for a single central ceiling fitting but the vaulted ceiling made it ideal for some form of light ‘wash’, and the design was amended.

Tubular fluorescent lamps were chosen as the best method of achieving this effect and light shelves were fabricated on site from MDF board. An angled upstand to each shelf hides the control gear and lamps from view so avoiding glare. The initial installation included wire wound ballasts and 58W/840 lamps (see box below). These were upgraded to high frequency (HF) control gear to avoid the faint ‘hum’ of the wire wound ballasts and avoid flicker on start up. At 4000K the initial lamps were ‘cool’ in appearance and they were changed to 58W/827 lamps to provide a warmer light for this relaxing environment. The lamps have an average lamp life of 20,000 hours, equivalent to over 13 years (based on 4 hours per day).

Dimmable HF ballasts were chosen to increase the versatility of the lighting design. When undimmed the good brightness levels make the room suitable for general family use, hobbies and homework. When dimmed the ceiling has areas of light and shade so adding visual interest, and when supplemented by candlelight, the room provides a pleasant setting for entertaining.





Kitchen replacement, Hertfordshire

This kitchen replacement provided the opportunity to review the lighting arrangements in this 1950s house. Fluorescent lighting was chosen for its efficiency and visual appearance.

The main lighting consists of a 1.5m 58W/840 and two 0.6m 18W/840 lamps. The lamps themselves are screened from normal view by elements of the wall cupboards and the ceiling. This prevents glare which can be visually uncomfortable and provides a more integrated and ‘designed’ appearance to the kitchen.

The location of the lamps is designed to provide good light levels on all the work surfaces making food preparation easy and safe. Light wall and floor colours reflect the light and give a brighter feel to the room.

The 840 lamps provide good colour rendering (Ra 80-89) and a colour appearance (4000K) that complements the daylight at the beginning and end of the day when most food preparation takes place.

An additional recessed downlight is used to increase brightness in the cooker area. This is currently a 100W incandescent lamp but is due to be upgraded to a low energy recessed downlighter in the future.

This publication (including any drawings forming part of it) is intended for general guidance only and not as a substitute for the application of professional expertise. Anyone using this publication (including any drawings forming part of it) must make their own assessment of the suitability of its content (whether for their own purposes or those of any client or customer), and the Energy Saving Trust cannot accept responsibility for any loss, damage or other liability resulting from such use.

Energy Efficiency Best Practice in Housing

Helpline: 0845 120 7799

Fax: 0845 120 7789

Email: bestpractice@est.co.uk

Web: www.est.org.uk/bestpractice

Energy Efficiency Best Practice in Housing is managed by the Energy Saving Trust on behalf of the Government.

© March 2004. Energy Saving Trust. E&OE. CE81.

All technical information was produced by BRE on behalf of the EST. This leaflet was printed by a Carbon Neutral® company.

Further reading

Energy Efficiency Best Practice in Housing Publications

These publications can be obtained free of charge by telephoning the Helpline on: **0845 120 7799** or by visiting the website at: www.est.org.uk/bestpractice

- Domestic Lighting Innovations (CE80)
- GIL 20: Low energy domestic lighting – A summary guide
- GPCS 361: Energy-efficient lighting for housing – Exemplars for builders; installers; owners and managers
- Energy efficient lighting – A guide for installers (CE61)

Further information

Action Energy

Action energy publications are available from www.actionenergy.org.uk or **0800 585 794**

- GPG 300: The installer's guide to lighting design
- ECA 3: Installer's lighting guide number 3 – Exterior lighting for small premises
- ECA 4: Installer's lighting guide number 4 – Lighting requirements for Part L of the Building Regulations England and Wales

BRE

BRE publications are available from www.brebookshop.com or **01923 664262**

Dwellings and energy efficient lighting: new regulation Part L, BRE IP5/02, BRE

Relevant organisations and websites

The Lighting Association
www.lightingassociation.com
Tel **01952 290905**

The Lighting Industry Federation
www.lif.co.uk

