CASE STUDY

OFGEM
9 MILLBANK

DISPLAY ENERGY CERTIFICATES – HOW THEY IMPACTED ON ENERGY SAVING INITIATIVES IN OFGEM

About Ofgem

Ofgem is the Office of Gas and Electricity Markets. Ofgem protects consumers of gas and electricity by promoting competition and regulating the companies that run the gas and electric networks. It is Ofgem's role to shape the future of electricity and gas supply in the UK.

As a result the importance of saving energy within the facilities function is paramount.

General

Ofgem has always viewed saving energy as a key factor in good environmental performance as well as making sound financial sense. However, it was not until 2004 that meaningful data was collected in order to join the Carbon Trust's Energy Efficiency Accreditation Scheme (EEAS).

This data became the basis on which Ofgem's energy achievements against its Sustainable Development Action Plan was assessed. However, there had never been a specific amount of target energy consumption until the introduction of the Display Energy Certificate (DEC).

One result of the introduction of the DEC has been our gaining the ability to identify both where we are compared to other buildings, and where we would like to be, due to the ability to measure and benchmark through audited means.

This has enabled us to make direct comparisons with other buildings and set viable targets through the system's built in auditing of measurements and use of benchmarking.

Using DEC data, the table below demonstrates Ofgem's DEC ratings for 2008 & 2009 and ratings projected back to 2001 (although DECs were not introduced until 2008 we have found this a useful tool for demonstration purposes).

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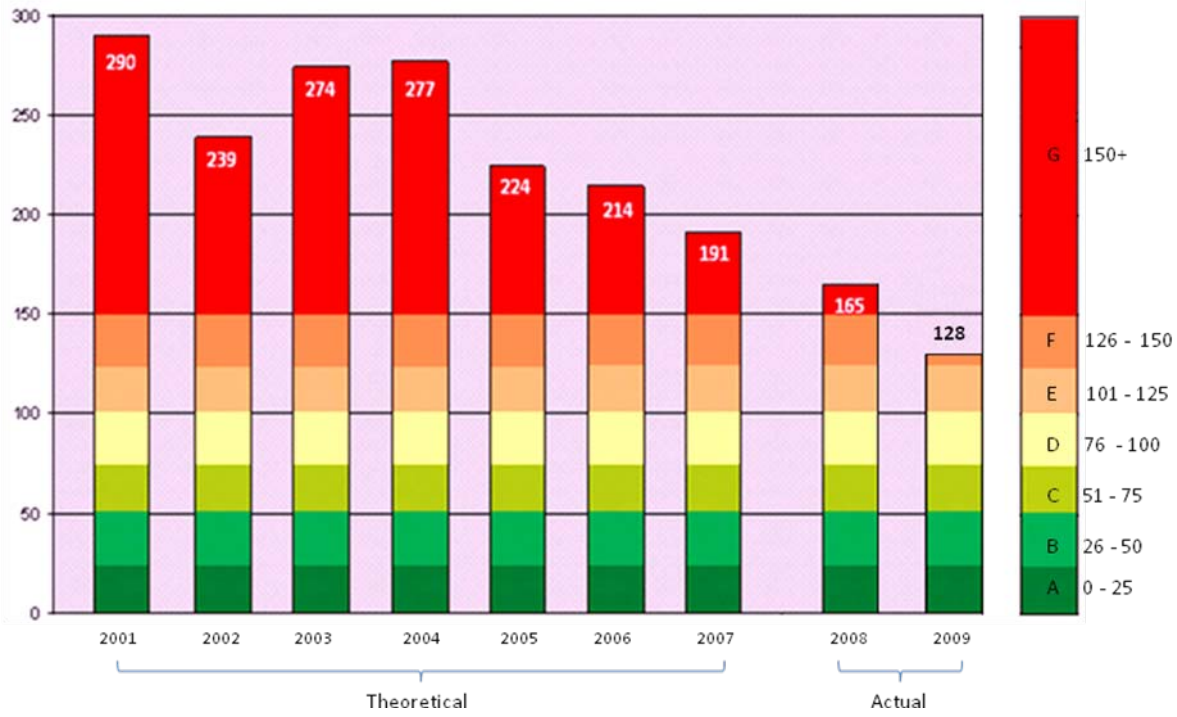
DISPLAY ENERGY CERTIFICATE (DEC)



Display Energy certificates

Display Energy certificates (DECs) show the energy use of a building as an operational rating from A to G (A being the most energy efficient) with an associated numerical score. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicative of all buildings of this type.

We trust that this case study will demonstrate to those in less energy efficient rating bands that organisations can improve their buildings' rating over time.

Ofgem's energy goal

Ofgem has set itself the goal of achieving a Display Energy Certificate rating of D by 2013.

By the 1st January 2009 Ofgem had reduced its energy consumption by 42% compared to 2004 and we anticipate the need for a further 25% reduction in order to achieve this goal.

Attached at annex A is a list of energy saving achievements since 2004.

This Case Study briefly highlights 4 of these achievements and outlines 4 projects being considered in the near future.

Achievements

IT server room - utilising free cooling during an upgrade to the IT air conditioning system

The planned replacement of an air conditioning unit for Ofgem's server room allowed a fresh approach to the solution of providing cool air. Its location in the centre of the building's basement area and a historical need to cool to 19C as stated by the IT director gave us some areas to think about.

The solution allowed us to install free air coolers which use external air to cool for several months of the year leading to mechanical cooling for the remainder only. We also proved that our new servers worked perfectly well at 24C which allowed even greater use of free cooling.

Fitting timers to all kitchen hot water boilers

Hot water for tea and coffee is provided in all staff kitchens by a small boiler. Initially, basic timers were fitted which controlled the on/off function but during an annual energy audit, it was discovered that by fitting a 7 day timer a further 24 hours of energy saving could be achieved each week.

Implementation of a lighting strategy

Using external specialist advice, Ofgem commissioned a building wide lighting strategy after identifying that a considerable part of the building's energy is used to provide lighting.

The strategy has been used to identify the best areas to attack and to formulate a standard specification for the majority of the fittings.

Installation of two Voltage Power Optimisers

A separate case study has been written to cover this specific achievement. However, the main benefits are a 9.1% drop in electricity consumption from day one and a significant reduction to the impact of power surges from the grid.

Future projects

Modernisation of the hot water system

Since the last major building refurbishment, a number of alterations have been made to the hot water system to meet the changing needs of the organisation. The outcome is that the hot water system needs to be rebalanced. It is anticipated that better control and therefore energy reductions will result.

Replacement of the chiller

The latest condition survey has indicated that within the next 2 to 3 years the two1MW chillers will need to be replaced. Options are being reviewed but at this early stage it is hoped to utilise free air cooling and significantly reduce the energy consumption on cooling in the summer months.

Rationalisation of the emergency lighting system

Ofgem's emergency lights are operational 24/7 in most of the building. By reducing the overall number of light fittings and making alterations to the switching mechanisms it is possible to reduce the electricity consumption. Although the number of lights concerned is low in comparison to the overall number of office lights, the fact that they are on all the time makes the potential saving about 2% of the overall electricity use.

Summer boiler

The heating and hot water for the building is provided by a combination of boilers and a Combined Heat and Power unit. This combination has too much output for the hot water needs of the staff and kitchens during the summer months and, therefore, produces more hot water than is needed.

By installing a smaller unit which will run at 75% efficiency, during the summer months only, summer heating costs will be reduced by up to 30%.

Annex A

Energy Saving Achievements since 2004

Building

1. Removed calorifiers and installed Power Heat Exchangers (PHEs), 2004
2. Air Con system for IT Server room, new free air cooling system, 2006
3. Reduction of personal appliances e.g. fans and heaters, 2007
4. Changed building comfort levels seasonally, 2007
5. Timers on hot water boilers in all floor kitchens, 2007
6. Ultrasonic humidifiers, 2007
7. Major redesign of 8th Floor lighting system, 2007
8. Inverter drives to fans and motors, 2008
9. Installation of two Voltage Power Optimisers, 2008
10. Lighting strategy implemented, 2008
11. Installed low energy lighting in common and plant areas, 2008
12. Trained 'Environmental Champions' to advertise wider environmental initiatives, 2008
13. Upgrading of dishwashers to 'A' rated for efficiency, 2009
14. Thermal Imaging taken of whole building with view to reducing leakage, 2009.

Restaurant:

1. Saver plugs/e-cubes on fridges – reduce the amount of electricity to run the equipment by 21% in 5 weeks, 2008
2. Removal of 3 commercial fridges, 2008.

IT

1. 25-30 servers now moved to 3 virtual servers, 2006
2. Printers turned off every night/reduction in number printers round the building, 2006
3. No new fax machines – the scanners are multifunctional, 2008
4. Photocopiers have shorter boot up time and lower power settings, 2008
5. Reduction in the number of photocopiers, printers and fax machines. Implemented 2008 – ongoing 2009.

Looked at but not followed through

1. Wind Turbine. Trialled for five years but planning restrictions meant that it proved ineffective. Introduced 2003.
2. Solar film on atrium roof. Poor financial and environmental return. 2007
3. Replacing the reusable polystyrene takeaway containers in the restaurant with biodegradable ones. Manufactured in China, prohibitively expensive, tendency to biodegrade too quickly with hot food, 2008
4. Solar panels to heat hand washing water in the summer to reduce gas used in the boilers