

Energy Metrics

Floor Area	12,000m ²
Year Built	1999
Elec. use 2007/08	2,545,300 kWh
Gas use 2007/08	1,320,400 kWh
Total Energy cost 2007/08	€337,800
Carbon Footprint 2007/08	1,791 tonnes CO ₂
Energy Performance	323 kWh/m ²



Design Intent

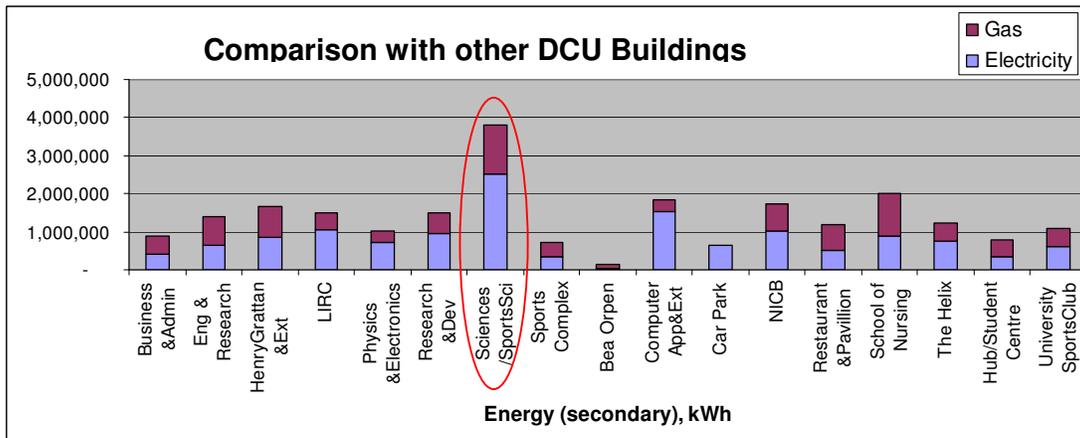
The sciences building is a relatively modern building and consists of 3 floors built over a basement, with a large atrium to the front. Laboratories, classrooms and offices are clustered throughout the building. An extension has been added at the front of the building, this houses mainly offices on the upper floors and classrooms at ground level. Occupants can open windows to provide fresh air and cooling.

Compact and tubular fluorescent lamps provide lighting in corridors, offices and labs. Lighting is controlled locally by manual switches and is dimmable in most classrooms.



What you can do

-  If a room is too hot, check the radiator isn't hot before opening a window.
-  Turn off computers, monitors and office equipment when not in use.
-  Close the windows when a room is being vacated.
-  Close fume cupboard sashes and turn off fume cupboards when not in use.
-  Consolidate fume cupboard content into one cupboard at night and weekends.





Energy Consumption Factors

Buildings in DCU involved in scientific research have a larger relative energy demand than non research buildings. This is due to the higher electricity demand of research equipment. Laboratories also have higher ventilation rates and associated heating loads when compared to office areas. The ventilation rates are typically required to maintain safety and containment levels.

Fume cupboards can be the largest source of energy waste in laboratory buildings since they move large quantities of conditioned air directly outside. This air must be replaced by fresh air which must be heated or cooled, thereby adding to energy needed for both fans and conditioning equipment. Below are a few general housekeeping measures which staff of the building should try to adhere to during the energy challenge and after.

Please note: Safety comes first in DCU and under no circumstances should an energy efficiency measure be implemented if it could cause a safety hazard.

Blinds:

Blinds can help to reduce solar glare and solar over heating. They can also help keep heat in when the weather is cold. But remember to open them too, to let light in.

- If a room is too warm, close the blinds (reduce solar heating) and if possible turned down the heating before opening a window.
- If a room is too cold, close the blinds and turn up the heating if possible.
- Maximise the use of natural light when possible.

Computers:

A computer and CRT monitor with an active screensaver that is not switched off at night can result in over 0.5 tonnes of CO₂ emissions per annum.

- Switch off computers at night and over the weekend where possible.
- Leave peripherals such as printers, speakers, scanners turned off until they are required.
- Active image screensavers only save about 20% of the monitor's power use, and keep your computer processor working. We recommend you use a blank screensaver after 5minutes (50% saving), and switch the monitor into standby after 15minutes (95% saving). You can set this up without affecting the operation of your processor.
- Even if your monitor is in standby your computer may still be on. Most computers have a green light indicating if they are on; orange is standby/off. Also, if you roll your mouse and the monitor wakes up to normal desktop mode, then your computer was on. We recommend you set your computer to go into standby after 20minutes (90% saving). To bring it out of standby you generally have to press the power button, but the computer returns to its previous state.
- Purchase energy efficient computers, monitors and peripherals.



Lights:

Let's start by dispelling the myth that fluorescent lights should be left on rather than regularly switched. It's not true, so switch off the lights when a room is unoccupied, even if you are going for a tea break. This is particularly important in meeting rooms, laboratories, toilets and other unoccupied service areas.

- Therefore, turn off lights in labs, offices, toilets etc. when possible.
- Try leaving the lights off where natural light is sufficient. Not only does it save energy but you are likely to find it more relaxing.
- Lights may be switched on during dark mornings, but it may be possible to switch them off later in the day.
- Ensure all lights are turned off at night and over the weekend. (Especially toilets / locker areas and communal areas which are under no ones direct responsibility)
- If you notice older, inefficient bulbs in use in the building, contact the maintenance staff or e3 to have them replaced.

Fume Cupboards:

A fume cupboard operating continually cost approx. €2000 to operate (about the same as a house) and can result in up to 10 tonnes of CO₂ emissions. About half of this electricity cost, and half is heating costs. In fact, continually extracting heat from labs by fume cupboards makes it very difficult to keep labs warm in winter.

- Pull down the sash: On most fume cupboards pulling down the sash will reduce heat loss by extraction and in many cases will reduce electricity use. Keeping the sash down can save up to 50% of the energy use.
- Stow Chemicals and switch off: Many fume cupboards are left running continually because they are used to store chemicals, rather than for active research. This casual approach to housekeeping ignores the energy impact. Check if chemicals can be safely consolidated into a single fume cupboard, allowing others to be switched off. Switching off at night and weekends can save up to 75% of energy use.
- We understand that its not possible to turn off some fume cupboards locally. If you think that a particular fume cupboard is running for longer than is need and local control would be beneficial please contact the relevant faculty managers and the e3 bureau.



Fridges & Freezers

Fridges and freezers are often used in research buildings, adding to the buildings base load. There are a few simple things that can be done to reduce the associated carbon footprint.

- Don't overcool – operate the unit at the correct temperature.
- Allow air to circulate – make sure the coil (condenser) at the back, top or bottom is clean and air is able to circulate freely. If there is a filter, clean it regularly.
- Keep in a cool place – fridges and freezers operate more efficiently in a naturally cool environment. (keep fridges away from heat sources e.g. radiators / windows)
- Clear out and consolidate contents that are no longer required regularly, and then seek to consolidate contents into a smaller number of freezers. Switch off the unused freezers where possible.
- Purchase efficient units – when it comes to replacing old units, be sure you select an A- rated appliance.

Research equipment

Building with scientific or engineering research consume twice as much energy per square meter as buildings without applied research (e.g. libraries, administration and business schools)

Let's start with glass ovens, common in chemistry labs. These have no insulation and are typically left on continually. We have found they cost up to €500 per year for electricity. They could be switched off at night and weekends either manually or using a time switches.

Often research equipment is left on, or in hot standby, when it could be switched off. So if you know what it does, and know it ought to be off, then switch it off.

- Turn off bunsen burners when not in use
- Turn off miscellaneous lab equipment when not in use.
- Turn off fridges, ovens, autoclaves etc when not required.
- When using ovens and autoclaves try to run with full loads to reduce the amount of daily loads that are required.

Feedback:

The e3 energy project wishes to actively work with building staff to help reduce the buildings energy consumption. Please contact the e3 energy manager if:

- You require further advice on how to improve your energy efficiency.
- You have identified an area where energy can be saved in the building.
- You require a timer/ improved controls on a piece of equipment.
- You would like to receive a one page monthly report regarding energy use in the building.

Contact:

Pat Kennedy Email: Patrick.kennedy@wyg.com

Or

David Hayes Email: David.Hayes@wyg.com