

SIMPLE SAVING

Cath Hassell explains the extent of water, carbon and cost saving that can be achieved by specifying water efficient products in both new and existing buildings.

The pressure on water resources is increasing across the whole of the UK and is at a critical level in parts of the south and east of the country. This message was brought home forcefully during 2006 when hosepipe bans were implemented from as early as April 1st across many areas of the south of England and drought orders were applied for by some water suppliers.

The situation was exacerbated not by a hot summer but by two very dry winters. Although we have now seen above average rainfall and a lifting of the hosepipe ban, the requirement to address water usage in the UK's buildings is still important. The average amount of energy used in the UK to supply 1cu m of potable water and remove and clean 1cu m of foul water is 1.2kWh. Thus there is a carbon load of almost 0.6 kg of CO2 for every cubic metre of water used.

The first part of any sustainable water strategy, whether for a single building, a development or for an entire region, is to reduce the amount of water required by specifying water efficient appliances. This holds true for both new and existing buildings in the private, commercial and public sectors. As our building stock is replaced at less than three per cent per year it is apparent that addressing water use in existing buildings is

Comparative savings

One school in South London wanted to install a rainwater harvesting system as part of a new extension. Harvesting rainwater off the new roof had the potential to offset 100cu m of mains water. However, replacing the existing 9 litre flush WCs in this school with 4/2.5 litre dual flush would save 907cu m of mains water a year. Even replacing with six litre single flush WCs would save 454cu m and adding simple urinal controls would save a further 355cu m.

of great importance.

Replacing existing WCs with low flush/dual flush WCs has the potential to save large amounts of water per year. Upgrading nine litre flush WCs to 4/2.5 litre dual flush WCs in office environments and schools saves 5.0cu m of water per user per year. A housing association property with similar upgrades would save 52cu m for an average household. If funds are not available for new WCs, cistern displacement devices (such as water savers) or flush reduction mechanisms (dual flush valves or siphons) provide large savings for little initial outlay.

Retrofit rewards

An uncontrolled urinal can use 90,000 litres of water per year. Ensuring urinals flush only when the building is occupied by retrofitting urinal controls can save over 66,000 litres of water per urinal per year and pay back within months. If refurbishing urinal blocks, consideration can be given to installing waterless urinals. As no water is used, limescale problems within discharge pipes are sharply reduced. However, removal of the uric sediment is still required and there is a consumables cost to waterless urinals which can be quite high.

Flow regulators fitted in place of isolating valves (or just downstream of the valves in a retrofit situation) on showers and taps can give constant flow regardless of pressure fluctuations at one bar and above. As well as reducing water use down to the specified limit, they prevent starvation at end appliances and are very suited to commercial situations where they should be combined with automatically controlled taps with aerated heads. Four litres/minute for basins is an adequate flow rate whether in a commercial or domestic situation.

Average daily water use in existing dwellings is 150 litres per person per capita. In new build it is 130 litres per capita. The recently published Code for Sustainable

Homes requires an average daily use of 120 litres per person at Levels 1 and 2 (1 is the entry level) falling to 105 litres at levels 3 and 4. Installing water efficient dual flush WCs and flow regulators on taps and showers will enable these parameters to be met.

There are many 6/4 litre dual flush WCs available in the UK market. There are also a few choices that flush using just four litres for a full flush and 2.5 litres for a half, such as the IDO Trevi E available from Construction Resources. At higher levels of the Code a reduction to a daily average of 80 litres per person is required.

Although there are examples of water efficient households using this reduced amount of water, purely due to efficient appliances and water aware occupiers, it is likely that to reach such a low level of per capita use rainwater harvesting will be required. In social housing this is best achieved by a centralised store of collection from all the roof areas and the supply, via centralised pumps, to rainwater header cisterns in individual dwellings.

Far higher potential

There is a huge potential for water saving in virtually all of the UK's buildings, whichever sector is considered. There are some excellent case studies around of new social housing developments with very water efficient appliances combined with a centralised rainwater harvesting system for WC flushing. However, there are no examples of housing associations that have specifically targeted their existing stock to make it as water efficient as possible by installing low flush/dual flush WCs and flow regulators to taps and showers - yet the potential for water saving by doing the latter is far higher. In schools this potential is even greater and under Schools for the Future, water efficient upgrades should be implemented.

It is important not to underestimate behavioural changes in saving water. All public buildings and schools should clearly signpost when they have reduced water use and staff and pupils should be encouraged to save water at home as well as at work.

The best option to satisfy the increasing water demand is not more reservoirs or desalination but leakage control, education and retrofitting of efficient appliances and controls into existing buildings.

ech₂o

Cath Hassell is the founder of ech2o, an environmental

consultancy offering design advice and seminars on sustainable water use, low carbon energy systems and environmental choice of materials. For further information, please visit www.ech2o.co.uk

www.pslg.co.uk >>> 71