

FIRST STEPS IN WATER SAVING

The first, simplest and most cost effective measure in energy conservation in buildings is draught exclusion; so in water conservation the first and most cost effective action is to limit flow.

Flow limiting valves are compact, reliable, proven and easy to install, also inexpensive for fitting to hand basins, sinks and showers. Even though taps are sometimes equipped with spray outlets, there is no compensation for variations in pipe pressure due to different levels in the building and fluctuations in demand.

A diversity factor may have been applied in designing pipe sizes and supply pressures to ensure that reliable water services reach even the remotest parts. The consequence may be a more costly plant and pipe layout and worse still even greater wastage in rooms nearest to the supply, due to excessive pressure there. Pressure regulators or break tanks may then be added to correct excess pressures and so the system gets more and more complex.

In a well-designed distribution system, there should be an equitable supply of water services throughout the building; everywhere gets a reliable and measured supply. This is simply achieved by installing flow-limiting valves behind each outlet. Maximum flow will be fixed and this will remain constant while pressures fluctuate by as much as one to ten bar. Each tap or shower will have a maximum draw off determined by management not the user.

Whenever the maximum flow is reduced, there is a potential for savings not only in water costs, but with energy bills too. With sewage charges being based on metered water, there are further savings. For example, a typical unrestricted shower will use in excess of 18 litres per minute and this can comfortably be halved. Taking an average combined water/sewage charge of £1.60 per m³ and energy at 1.5p per kWh, the savings would be 2p per minute or 10p for a five minute shower. This equates to a payback in less than three months. Similarly flow limiting valves on public toilet hand basins, will show a payback in less than two months.

Many other benefits resulting from fitting flow-limiting valves at each outlet include:

- Pressure variations due to fluctuating demand and the position in the building, have no effect on the flow
- Showers do not run hot and cold due to demands from others. People are consequently not discouraged from using showers instead of baths
- Splashing resulting from excessive pressure is prevented
- Peak demand on the distribution system is reduced. Plant sizes may be reduced giving capital cost savings
- There is no need for pressure regulators, break tanks and other complications in the design, with further capital and operational savings

A range of over forty different factory set flow rates is available in a variety of formats, ranging from 0.4 l/min and upwards. Two designs are specifically for use on taps and showers. Other types such as the 'screwed' and 'top hat' are tailor made to the users requirements. The made to order service is particularly valuable when valves are supplied into integration in production equipment, such as water treatment, combination boilers, electric water heaters, meters and heat exchangers.

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