

These application notes are for general guidance and information only. Users will need to undertake independent analysis for specific sites if any of these measures are to be implemented. Consideration should be given to engaging the services of a suitable consultant to assist with this task.

Summary

Domestic hot water is a significant energy consumer within the hospital environment. Considerable improvements have been made in the design of tapware and appliances in response to water conservation initiatives, leading to a significant reduction in both hot and cold water usage. This correlates directly into savings in domestic hot water (DHW) energy usage.



Water efficient fixtures and appliances can be progressively installed during ongoing building maintenance, refurbishment or as a separate refit program. Ensuring the water pressure is limited to code requirements (AS 3500 requires 500 kPa maximum) at all taps and showers can also reduce water use with existing fixtures.

Background

Cleanliness within hospitals is of utmost importance. This can lead to a high demand on the DHW system through the use of showers, wash basins kitchens, laundries and the like.

Over the past twenty years, there have been continual improvements in the design of tapware and appliances with the current water efficient tapware (classified as AAA) using around 50% or less water compared to the older tapware with the same comfort or performance. Reductions in water consumption can be achieved through the installation of flow restricting devices in the pipework feeding the existing tapware however comfort factors may change.

The reduction in total water usage is directly relates to a corresponding reduction in DHW usage and the associated reduction in energy consumption. Savings in water supply and sewer disposal costs can also be expected.

Opportunities and Constraints

There are opportunities for the use of high efficiency tapware and fixtures throughout the hospital environment where water is used for washing and/or rinsing including shower heads, hand basins and kitchen sinks associated with food preparation. In all these circumstances there is the opportunity to use low flow tapware through the design and inclusion of aerators.

There are additional economic benefits where a high cost fuels, such as LPG or electricity is used to provide the DHW.

Although simple flow restricting devices installed in the pipework provide a low cost alternative, there may be a perceived reduction in effectiveness. In a hygiene conscious environment, this may lead to staff resistance. In these circumstances, the application of flow restricting devices may have to be limited to public areas, such as hand basins and the like.

However staff awareness campaigns regarding the extent of water and energy savings available may be of assistance.

Impact of Implementation

Changing tapware will have a direct impact on the consumption of domestic hot water and therefore a corresponding impact on energy used to provide the DHW. Water efficient fixtures will change the “experience” of the shower and/or tapware and may require a period of adaptation and acceptance by staff. Newer water efficient fixtures should not be confused with older type water saving showers.

Capital cost for changing tapware is dependent on the selected tapware and associated modifications required to the plumbing, basins and minor building works. These costs could be expected to range from \$500 to \$1,600 per

fitting. A simple flow restriction device, is in the order of \$50, with an installed cost in the order of say \$100. Installation of a pressure limiting valves should also serve the entire facility to ensure 500kPa maximum pressure at all fixtures. Correctly adjusted existing back flow prevention valves may be able to provide this service at no cost.

Significant water savings are also available through the use of water efficient hospital appliances. Generally a front loading clothes washer uses half the water of a top loading machine. Newer dishwashers, utensil washers, sanitisers and the like may also offer reduced water consumption and selection of new or replacement equipment should include an evaluation energy and water use characteristics.

Analysis

A typical shower can use up to 20 litres/min while a AAA rated shower uses a maximum of 9 litres/min which can give a 50% saving in water and energy with similar comfort. Similarly a standard tap without an aerator (not fitted or missing) can use up to 20 litres/min. With an aerator this can be reduced to 9 litres/min for sinks and 7.5 litres/min for hand basins. In kitchen preparation and wash-up areas, overhead tripper spray hoses may be an effective alternative to a continuously running tap.

Up to a 50% change in hot water use could be expected in many facilities realising a 7.5% reduction in gas usage.

Conclusions

Water efficient tapware should be installed in all new facilities and in all areas being refurbished. They are suitable for :

- showers
- wash basins
- sinks

References and Sources for Further Information

- www.savewater.com.au
- www.wsaa.asn.au