

Greening Our Hospitals: Water

Case study

Trolley wash water recycling

Overview

The Alfred Hospital, part of Alfred Health, secured funding from the Greening Our Hospitals: Water program to modify two trolley wash machines to reduce water, energy and chemical consumption. The machines are located in the decontamination areas of the Alfred Central Sterile Service and the Alfred Centre Processing Unit.

Summary

Detergent solution recycling tanks were retrofitted to the trolley wash machines to reclaim water from both the main wash and rinse cycles. The trolley wash machines are in constant use, running approximately 35 cycles per machine per day with each cycle consuming around 170 litres of 60° C hot water. The installation of the wash and final rinse water reclaim tanks have the ability to reuse 120 litres of water per cycle with the additional bonus of reducing chemical consumption and energy use.

How it works



Figure 1: Detergent solution saving tank

Detergent solution-saving tanks are used to store the acid or alkaline detergent solution at the end of a treatment cycle for use in up to twenty subsequent cycles before being discharged to the sewer.

Two 90-litre, stainless steel tanks operate with the wash and rinse cycles. They are equipped with control valves, detergent-concentration sensors and piping between the sump and the effluent drain tank. Approximately 120 litres of treatment solution is transferred from the sump to the new retention tank at the end of washing cycle. As the tank fills, around 30 litres of solution overflows from the retention tank into the effluent drain tank, where it will be cooled before gravity-draining into the waste line.

When the rinse cycle calls for detergent solution, the controller opens the valve and sends prepared, hot detergent solution to the sump. The sump-level sensor detects that the solution level is low and adds fresh hot water to the sump. At the same time, the chemical concentration sensor adds additional detergent to maintain proper dilution levels. When the cleaning phase times out, the solution is again sent to the saving tank.

Health service

Alfred Health – Alfred Hospital

Total investment

\$34,870

Date of completion

February 2010

Initial water saving estimate

1,872 kL per annum

Actual water savings

3,744 kL per annum

Estimated annual cost saving

\$12,200

Simple payback

2.85 years

Project design and installation

Getinge

Water cost

1.8375 \$/kL in 2011

1.02 \$/kL in 2007

Sewage disposal cost

1.5806 \$/kL in 2011 (90%)

1.00 \$/kL in 2007 (90%)

Initial projected dollars per kL saved

\$18.63

The improvements reduce cycle time to prepare the cleaning solution and reduce operating costs through water, energy and detergent savings. With the two tanks installed, one for main wash and one for final rinse, water saving of 120 litres per cycle is possible.



What worked well:

- manufacturer design and installation optional extra
- minimal disruption as the work was mostly performed in the trolley wash plant room.

What did not work well:

- no problems were encountered.

Figure 2: Trolley washer

Health service profile

Alfred Health is the main provider of health services to people living in the inner south-east suburbs of Melbourne and is also a major provider of specialist services to people across Victoria. The health service operates three outstanding facilities:

1. The Alfred is a major tertiary referral teaching hospital and provides a number of statewide services.
2. Caulfield Hospital is a provider of a range of specialty services in community services, rehabilitation, aged care, residential care and aged mental health.
3. Sandringham Hospital has a strong focus on meeting the health needs of the local community.

The Alfred Central Sterilising Service is a 24-hour operation that supports 16 operating rooms and two procedure rooms situated in two locations as well as wards and other departments. The Alfred Operating Suite consists of ten rooms and Alfred Centre has six operating rooms and two procedure rooms. At times support is also provided for three operating rooms at the Sandringham campus.

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