

Case Study - Sligo University Hospital

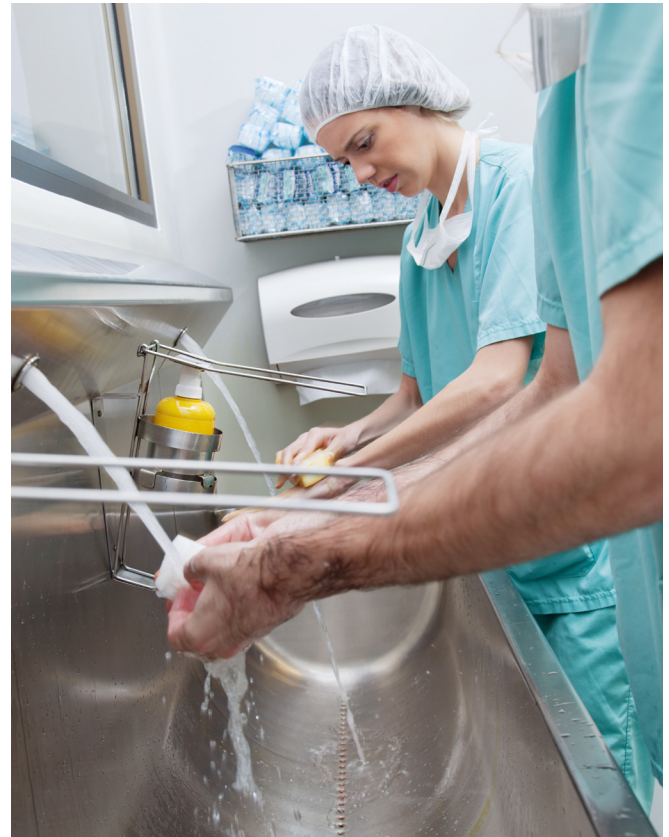
Tap Retrofit – saving water and energy all day, every day



Background

Hospitals are a unique environment, especially when it comes to water-related services – from showers, toilets and taps providing basic services to reverse osmosis providing sterilisation and dialysis services.

In terms of water efficiency, best practice flowrates for hand washing sinks are between 2 and 4 litres per minute. In a recent survey of taps at one national acute hospital it was found that only 30% of the hot and cold taps had flow rates under 10 litres per minute. So, this is an obvious area where water, and energy savings, can be made. Most Irish hospitals have been in the same location for many years, while continually expanding, so the water using fixtures and fittings usually vary in terms of the types used and water flow rates involved.



What was done

Sligo University Hospital, a large acute hospital with around 288 beds, initiated a tap retrofit project in 2017. Prior to this, there was a combination of Marwik basin and mixer taps in use. The flow rate of these, like in most hospitals, varied greatly and averaged at 12 and 16 litres per minute respectively, much higher than the best practice range of 2 to 4 litres per minute.

AFTER REVIEWING DIFFERENT TAP ALTERNATIVES, A COMBINATION OF RELIANCE PILLAR MIXER AND BASIN TAPS WERE CHOSEN FOR THE RETROFIT. THESE HAVE AN AVERAGE FLOW RATE OF 4 LITRES PER MINUTE.

The retrofit took place over a number of years and was finalised in 2022 by which time 470 taps had been changed. Tap retrofits take time and, as part of this process, it was important to ensure that all taps were set up consistently. Often, older high flowrate taps were adjusted using local isolation valves – this is one of the reasons that similar taps in adjoining rooms have different flow rates. Ideally, as in SUH, isolation valves should be fully open with the flow rate set by the actual tap.



Pillar mixer taps



Basin pillar taps

Case Study - Sligo University Hospital Water Sub Metering & Benchmarking



The Results

Getting specific data on tap water use is not possible as all taps will be used for different times. Based on estimates for average tap flowrates before and after, there is a saving of about 10 litres per minute per tap changed. Therefore, for each minute that all of the 470 taps are used, a water saving of 4,700 litres (4.3 m³) is made.

An assessment of the total water used in the hospital in 2017 and 2022 was carried out. While the hospital has changed somewhat in that time (some additional buildings now in use), and water use procedures also changed (e.g. more hand washing due to Covid), it was interesting to note that the annual water consumption had decreased by 5,000 m³. Based on recent analysis at other acute hospitals, it is estimated that of the total water used by all taps, 60% is related to hot water taps. Therefore, based on an annual saving of 5,000 m³, the following table outlines the estimated savings.



Total savings for Sligo University Hospital



Estimated water volume savings	5,000 m ³ /year
Estimated water charge cost savings	€15,000/year
Estimated energy savings from reduced water heating	€33,000/year
Total Cost Savings per year	€48,000/year



Carbon savings for water supply & waste water management	2 tonnes CO ₂ e
Carbon savings from the provision of hot water	58 tonnes CO ₂ e
Total Carbon Savings per year	60 tonnes CO₂e

Return on Investment

The cost per tap for retrofit was €380. Based on 470 taps the outlay for the taps (excluding installation costs) was €178,600. Based on an estimated annual saving of €48,000 the payback for this project was 3.7 years.

