

The true cost of tackling hard water explains Bill Denyer of Envirogen

We all know the problems and associated expenses caused by hard water. The scale formed by calcium and magnesium ions coming out of solution clogs pipes, damages machinery, leaves residue on bottles and packaging and makes boilers inefficient.

Although water softening solutions can solve these problems, many breweries and beverage manufacturers are relying on outdated legacy systems. Systems that generate huge effluent streams accumulate unnecessary costs. Faced with pressure to decrease manufacturing overheads and minimise water use, do we understand the true cost of tackling hard water or the hidden savings that can be made?

Sending salt, water and money down the drain

Nearly the whole of England, with the exception of the North West, Devon and Cornwall, is burdened with hard water, with many areas facing calcium carbonate levels in excess of 300mg/l.

Ion exchange systems are very effective at softening water. Using sodium-saturated resin beds, they release these ions in exchange for calcium and magnesium. As sodium has a higher solubility, it remains in solution and doesn't form scale, even when heated.

Most breweries and distilleries have softening systems and, usually, those systems have been in operation for years. But what manufacturers are failing to notice is the steady cost that builds up behind these legacy systems. The problem lies in the technology. As the resins become saturated with calcium and magnesium ions, they need to be regenerated: flushed with water and refreshed with additional supplies of sodium. Legacy systems are pre-programmed with flushing volumes, using an overestimated amount of water to ensure complete regeneration of the beds and removal of the brine. This inefficient process also means overuse of salt.

The result: excessive and unnecessary water usage by as much as 80% and up to 50% more salt compared to some modern systems.

Monitor, react and save

Modern reactive ion exchange systems, such as EcoSave from

Envirogen, make use of the latest conductivity metering technology to shut off the rinsing process as soon as the brine has been discharged from the beds. This delivers huge water savings as the system only uses as much as is absolutely necessary.

The unique element to EcoSave is that it also uses a counter-current regeneration technique further decreasing both water usage and the salt needed to regenerate the beds.

It's easy to see how the new technology saves money and why these systems have such a short payback period, but they also address an important environmental concern by reducing incoming water supplies and reducing effluent volume sent to sewerage.

Water softening systems are often overlooked when it comes to making cost savings, but investing in the latest technology can make a huge difference, both financially and environmentally.



Bill Denyer is the Director of Food & Beverage at Envirogen. Trained in mechanical engineering, he has built a career in water solutions spanning over 20 years. Bill leads a large team of designers, project managers and engineers to build bespoke solutions specifically for food and beverage manufacturing customers.

For more information on saving money in your water softening process call the Envirogen team on 0800 316 2450 or email contactus@envirogengroup.com www.envirogengroup.com/food-beverage/