

**turning water**  
**into profit**





## turning water into profit

The management of water resources and wastewater disposal is rarely a core competency for food and drinks producers. This is true even where water makes up a large proportion of the finished product.

Understandably, the focus is on the product itself and as long as water quality is maintained to a consistent standard then nobody worries too much about ways of improving water management.

Yet water has a cost. In the overall scheme of things, this might be relatively low for each unit used or flushed to drain. However, the chances are that you are still spending thousands – possibly tens of thousands – of pounds every year on raw water and wastewater disposal.

The challenge is converting those costs into business value – into bottom line profit.

## never say never

It's worth noting that even if you've looked in the past at ways of reducing your water costs then it might now be worth reconsidering. Times and technologies have moved on, and what was impractical or cost prohibitive a few years ago may now offer a viable means of adding value to your business.

Many suppliers of water and wastewater systems and services will be happy to carry out an on-site water audit. This is normally free of charge and without obligation, so if you don't have the in-house skills or resources to do this yourself it makes sense to call in an independent partner. One word of advice: try and choose a company that is not wedded to a particular technology or product, and that has experience in your sector, so as to get as balanced a set of recommendations as possible.

# practical steps

## reuse and recycle

There is a growing trend towards water reuse in the food and drinks sectors as a means of cost reduction. This is true even for relatively low volume users of water; in fact, wherever there is a need to protect production facilities against supply disruption, reduce operating costs or where there are sustainability policies in place.

With suitable purification or treatment, most wastewater streams can be reused for other duties, such as cleaning, cooling and boiler feed. In many instances, it is possible to make significant reductions in liquid waste disposal or to reach zero liquid waste discharge.

A key concern is ensuring water for reuse meets legal and quality requirements; in particular, it may need to be free from microbial contaminants, especially pathogens, salts and other organic and inorganic materials that might cause fouling, plugging or scaling of downstream systems.

Reuse or recycling systems vary, but typically use standard filtration and purification technologies, as well as more advanced systems such as Membrane Bioreactors (MBR). These can be used to recover large volumes of water for reuse in non-production applications such as cleaning. Alternatively, an MBR can be combined with Reverse Osmosis and possibly UV disinfection for direct water reuse.

## energy from waste

Anaerobic and aerobic digestion systems are becoming a popular option for many food and drinks producers, especially when faced with increasing wastewater disposal costs, when expanding or updating an existing facility, or as part of a CSR strategy.

The choice of system is generally determined by a number of factors, including cost and COD loading; around one tonne per day is normally the starting point at which to consider an anaerobic or aerobic system. In general, smaller operations tend to opt for simpler, less expensive aerobic systems, whereas large plants choose anaerobic digestion systems capable of producing high volumes of biogas that can be used as a power source elsewhere within the plant or sold at a profit to an energy company.

Although there is a capital cost, payback can often be relatively fast, especially if the plant is correctly optimised from day one. Bear in mind that for high rate systems operating in real time it can be difficult to achieve optimum output in terms of gas yields at all times, as changes or problems occurring in upstream production processes will impact directly on the efficiency with which the anaerobic digester operates. It is also important to take a holistic view of the wastewater system to ensure optimum efficiency; for example, by improving the operation of equipment treating the waste from an anaerobic digester, such as a DAF unit, it may be possible to reduce the energy consumption of the digester itself.

A further consideration is correct choice of technology for different applications, as this can have a considerable impact on long term operating costs. For example, a Granular Sludge UASB digester can be an extremely efficient tool for treating effluent from sugar refineries, a Contact Reactor is better suited to the treatment of complex food juices, while a Fluidised Bed is frequently specified to treat evaporation condensate and alcohols.

## optimisation and control

Although there's been considerable focus in recent years on reducing energy consumption with the introduction of technology such as variable speed drives there is still significant scope for further optimisation, especially with older systems.

For example, aeration blowers used on many plant systems are often run continuously at maximum capacity, regardless of demand.

By simply reviewing the requirements of the system against overall process demand it becomes possible either to reduce overall blower output or selectively take individual blowers temporarily off-line as demand changes.

In some instances, it is actually possible to make blower units redundant. Either way, energy and maintenance costs can be reduced, while equipment life can potentially be extended.

Other simple measures include the use of flow meters, so you know exactly how much water is being used and where, and can therefore look at ways of reducing consumption, spring valves on hoses to eliminate spillages, and perhaps most fundamentally of all, fixing leaks. Obvious as it sounds, it's surprising how often considerable quantities of water are wasted due to leaking supply pipes – both over and below ground.

## permanent or temporary?

An option for sites where space is limited or where requirements are seasonal, might be to lease temporary mobile plant, as this can be an extremely efficient method of cost control.

This is normally pre-built within a standard 40 foot transport container, delivered to site ready for connection and operation. This solution can allow a business to produce high quality water quickly with no capital investment, meeting fluctuating demands or to fulfil short term capacity while existing plant is being refurbished or upgraded.

## balance sheet or P&L?

Any business decision is likely to have a cost associated with it. The critical question is where this cost is apportioned and whether it can be converted from what might be perceived as cost to an investment or, better still a profit.

Clearly, some measures – reducing energy consumption or stopping leaks – will generally be represented as cost savings. Others, however, such as installing new equipment that allow energy to be harvested can be considered an investment with a defined payback period; once this point is reached then the business is effectively generating a profit or return on its investment.

It's also worth considering how investments are made. For example, equipment leasing is now common practice as this moves the real cost from the balance sheet to the profit and loss account. Similarly, a number of specialised suppliers are now offering long term partnership arrangements where they take on responsibility for the operation, maintenance and management of water and wastewater assets. This effectively moves the risk and cost away from the food or drinks producer – indeed, more enlightened suppliers also offer agreements where their remuneration is partly based on the operational savings or process efficiencies they are able to deliver.

## reaching a decision

Ultimately, improving the profitability of your water and wastewater systems will be determined by payback: will the potential gains be worth the investment in time and effort?

Our advice is to start by looking at areas where a quick return can be achieved – for example, controlling leaks and optimising the operation of existing systems so that they use less energy or offer greater uptime.

These simple steps may be all that's required to add a significant percentage increase to your bottom line. But if you feel that there might be more that can be achieved then consider possible plant upgrades or the introduction of equipment for water reuse or waste stream reduction.

Whichever approach you choose we recommend partnering with an independent supplier, who has the knowledge, experience and resources to help you identify areas of possible savings and to guide you towards the most appropriate solutions.

## ten factors that can boost your profitability

1. Carry out a site-wide survey so that you have a detailed understanding of your water usage and can therefore identify possible areas for saving.
2. Partner with an experienced supplier who can identify savings, detect hidden losses as well as ring-fencing re-useable water streams.
3. Adapt the water quality and quantity to suit your plant - this can generate savings within your water cycle, especially around better use of energy.
4. Be aware of current over-specification, identify how capacity or complexity can be reduced, while accounting for future changes in demand.
5. Introduce innovative water recycling technologies that allow process water to be reclaimed and wastewater to be reused safely and sustainably.
6. Taking on board the specialised solutions can cut energy consumption.
7. Consider anaerobic digestion; it produces energy from effluent: typically, removing 1 ton of COD has the potential to produce around 3,500 KWh.
8. Eliminate the potential for potentially costly incidents by careful planning, risk analysis and effective communication between all operational staff.
9. Consider outsourcing the operation of your water and wastewater assets, allowing you to focus on your core business.
10. For short term needs, think about leasing mobile industrial water treatment unit.

## about SUEZ Treatment Solutions UK

We are part of the SUEZ organisation, which operates in over 70 countries worldwide, with more than 320,000 business customers, 92,000,000 private consumers and a generating capacity of 5,000 GWh of energy from waste.

In the UK, we provide a total solution for water purification, conditioning and wastewater treatment, backed by an extensive range of site services. These include operations and maintenance – we work with major food and drinks producers and run five of the UK's largest anaerobic digesters – site services, for installation, commissioning or repair of plant and utilities, plus independent fully accredited laboratory services.

If you would like to arrange a free water and wastewater audit then please contact our customer services team.

