

Understanding your water footprint

The food and beverage sector is a major consumer of water. This paper helps you understand how to reduce consumption and control costs.



Your water requirements

Water is used in the production of many types of food and drink. Typically it is a primary ingredient or raw material and is also used in considerable volumes for process and laboratory applications.

A significant quantity of 'virtual water' is required for many products. Just one cup of coffee, for example, requires 140 litres (37 gallons) of water to produce, in growing, processing and shipping the beans.

Other process applications for water include refrigeration, cleaning of equipment, freezing, steam production, sealing, canning and bottling; cleaning of equipment (CIP and SIP) and food product washing and rinsing alone can account for up to 70 per cent of water usage for many producers.

Sourcing water

Water is generally drawn from aquifers and boreholes or, more commonly, from mains supplies. In each case, however, the composition of raw water can vary considerably from region to region and from source to source. Raw water from untreated sources often contains high levels of dissolved minerals and particulate matter, while water from mains supplies will have been treated with chemicals to make it safe for drinking.

In some instances the natural characteristics of a local supply can give a product its unique flavour or colour, while in other cases, especially for larger producers with multiple sites, it is essential to ensure a consistent brand appearance regardless of water source.

Whatever the nature of the product it is almost always the case that source water needs purification or treatment to create a safe, homogenised material of known quality and consistency.

Water challenges

The long term availability of fresh water is of major concern worldwide. In regions where water is naturally limited by climate or geography it is widely acknowledged that resources must be protected as population levels increase and climatic conditions change. Even in countries such as the UK, where we have an abundance of water, the pressures are growing in line with rising population and, shorter term, the demand from food and beverage processors to increase production capacity. This can be problematic for many producers as they are constrained by abstraction limits or, if abstraction is not an issue, by discharge consents, which can hamper the disposal of wastewater.

With the food and beverage sector being such a major consumer of water, the UK Government has worked with producers to develop initiatives to reduce water consumption by 20 per cent by 2020. Previously known as the Federation House Commitment, and now administered by various trade bodies, this has been an important and successful step in helping producers control costs and well as reducing water usage at a time when production and thus consumption has been rising.

AT PEAK LEVELS OF PRODUCTION, THE SECTOR CAN
USE UP TO **25,000 LITRES**
OF WATER PER HOUR

THE SECTOR ACCOUNTS FOR **36%** OF THE TOTAL
WATER USED IN ALL FORMS OF MANUFACTURING



Reducing usage and minimising waste

Water purification technology has been used for many years for the treatment of raw water upstream of process operations and cleansing of wastewater prior to discharge. Although it is often possible to improve the efficiency of existing systems, to reduce energy consumption, maintenance and operating costs, and to enhance output quality and volume, there is generally only so much that can be achieved cost-effectively.

As a result, there is growing interest in the potential for water reuse, where water that would otherwise be sent to waste is recycled for duties such as process and boiler feed or wash-down. In many applications there is often considerable potential for water reuse using conventional methods of purification such as reverse osmosis. These can frequently produce output water for reuse that has a higher quality than that from the mains supply, but at a lower cost per cubic metre.

With disposal costs rising and producers being subject to increasingly stringent environmental controls, advanced treatment processes need to be considered for a far wider range of purification and treatment tasks than has previously been the case.

Optimising facilities

The majority of food and beverage producers will have onsite water management and recycling systems. All too often, however, these are not being utilised to their maximum capability or are run inefficiently.

In many respects this is understandable as the management and operation of water and wastewater treatment assets, although crucial, is rarely a core skill – or indeed core business – for most process and manufacturing companies; instead their focus is quite rightly on the quality, volume and delivery of the products that they produce.

The first step to improvement is to gain a thorough understanding of the overall water and wastewater cycle. Typically, this will be through a water, wastewater and energy audit carried out jointly with a prospective partner and your management team.

Four reasons you need a water audit

- 1 Only by knowing how much water your plant uses, and where, can the production water cycle be truly optimised.
- 2 This approach can also identify opportunities to minimise water and energy consumption.
- 3 It will also highlight areas for plant optimisation, including replacement of older, less efficient systems, or better utilisation of resources.
- 4 It will tell you how you can reduce operating costs.

To find out how you can take advantage of a free water audit click [HERE](#) or call us at +44 (0)1844217141.

A COMPANY WITH AN ANNUAL TURNOVER OF
£2 MILLION WILL SPEND AN ESTIMATED **£20,000**
- **£40,000** PER YEAR ON WATER

250-200 MILLION CUBIC METRES
PER ANNUM ARE CONSUMED BY THE SECTOR

