simple reliable laboratory test results with pure water

mark bosley, technical director, explains how the latest technology is making it possible for food & beverage laboratories to attain a constant supply of purified water simply and cost effectively

suez

simple reliable laboratory test results with pure water

Water is a vital element in a wide range of applications in the food and beverage industry, used both as a raw ingredient in the production of pre-packaged meals and drinks, and as a solvent in laboratory tests. In each case, to ensure the integrity of the products and the health and safety of consumers, it is essential that the water used is effectively purified.

In particular, with laboratory testing for product quality and shelf life, the reliability of test results depends heavily on the quality of the water used as a solvent, for example to dissolve dry foods. Any impurities in the water can potentially result in inaccurate conclusions being drawn and ultimately serious repercussions for food processing companies, with products being incorrectly labelled or even recalled.

Achieving a consistent supply of purified water cost effectively has commonly been a problem for businesses, with conventional methods of water purification, such as distillation, being largely inefficient, requiring enough energy to boil the water and re-condense the steam, and therefore proving costly.

By contrast, the latest generation of water purification technology is now offering a simpler, more flexible and cost effective solution, with tailor made solutions available to enable food processors to choose the most suitable system for each laboratory application. These solutions make it possible for companies to ensure that the characteristics of the water source can be standardised globally, contributing to a high level of consistency in test results.

One cost effective option for producing of purified water on demand is the use of deionisation or ion exchange cartridges, which are connected to a normal mains water supply via a tap or stopcock. The cartridges are easy to fit and use as they operate solely under water pressure, so no electrical supply is required. However, the limitation of these resin-only systems is that the resin is quickly exhausted if the demand for water is high. Because of this, in laboratory applications where larger volumes of water are required, specialised reverse osmosis (RO) systems are generally specified, and these can work for many years without intervention as long as the pre-treatment system is maintained.

Reverse osmosis is an effective purification process where a pre-treated water supply is fed under pressure into a module containing a semi-permeable membrane. The membrane removes a high proportion of impurities, including up to 98% of inorganic ions, together with virtually all colloids, micro-organisms, endotoxins and macromolecules, with feedwater passing through the membrane as a purified permeate, and impurities being removed in a residual concentrate stream that is run to drain.

RO systems are often supplied as self contained wall or bench mounted units, although they can be floor standing in larger versions; additionally, they can be configured as part of centralised ring main systems with multiple take-off points. In each case, the primary RO unit can be supplied with complementary technologies such as deionisation or the use of photo-oxidising ultraviolet light for secondary polishing and disinfection.

simple reliable laboratory test results with pure water

For centralised systems, pre-treatment using base-exchange softening and activated carbon filters can also be integrated.

For applications where higher purity water with enhanced microbial quality is required, the RO purified water undergoes additional processes, such as UV irradiation at 254nm and sub-micron filtration between 0.2 and 0.05 microns to remove deactivated bacteria and fine particles.

It is worth noting that in addition to testing, these purification methods are also increasingly specified for applications where water is used as a raw ingredient in processed foods.

Eliminating contaminants and toxins in these instances is important to achieve consistent flavours and ensure the health and safety of consumers.

This latest treatment and filtration technology, incorporating processes such as deionisation and reverse osmosis, is enabling food and beverage processors to achieve a consistent supply of pure water for testing foods simply and cost effectively. As a result, the risk of water contamination affecting tests is minimised, leading to considerably more reliable results.

Water is a vital element in a wide range of applications in the food and beverage industry, used both as a raw ingredient in the production of pre-packaged meals and drinks, and as a solvent in laboratory tests

Contact

Water Purification Systems

Email: mail.waterpurificationsystems.uk@suez.com

Web: www.suezwatertechnologies.com