Digitalisation in processing to improve efficiency

Food processing facilities must take measures to protect against contamination of food, surfaces and packaging by maintaining clean and sanitised equipment and food contact surfaces. With the trend towards integrated systems and utilisation of new software technologies, food manufacturers are looking for ways to reliably measure, collect, analyse, and store data for trending and traceability. They want data visibility at the enterprise level to enable collaboration among all production personnel and the laboratory.

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Traditional tests have many limitations in our new data driven world such as subjectivity, long incubation/assay times, and paper-based data trails. In addition, these methods have the indirect effects of increasing inventory costs, storage facility requirements and often miss critical issues until after product is released, running the risk of recalls and damaging the brand.

Rapid data-driven methods

To overcome these limitations and reduce costs, food facilities need rapid, data-driven methods to assess the cleanliness of the plant environment – a direct reflection of the effectiveness of the facility's cleaning programmes. These methods must also be validated to ensure sensitivity and specificity of detection and quantification.

One of the most common and easiest ways to do this is through adenosine triphosphate (ATP) monitoring. Detection of ATP is an indicator that food, bacteria, or other organisms are present and that the cleaning process was not able to remove this contamination.

One excellent option for ATP monitoring is Hygiena's EnSURE Touch monitoring system. Similar to a smart phone, EnSURE Touch has the ability to collect data from multiple locations in a facility and wirelessly sync the data with a cloud-based software, SureTrend Cloud, for storage and analysis. A number of compatible test devices can be used with EnSURE Touch to measure ATP on surfaces, in water, or to detect the possible presence of allergens/proteins. The monitoring system is AOAC-RI approved and validated for detection of very low levels of ATP. The most common test device, UltraSnap, is used for sampling surfaces.

SuperSnap is the most sensitive test device, perfect for meeting the highest hygiene standards in the food and beverage industry. By incorporating these into a food safety programme, risks and issues are recognised quickly, allowing for effective corrective actions in real time.

When paired with our data analysis software, SureTrend, you can track test results, identify problem areas by looking at data trending, generate reports and maintain records for regulatory compliance.

In addition, the software, based in the cloud, allows for integration of multiple facilities into one platform, allowing HACCP coordinators to create test plans and standardise test locations.

Another need for rapid ATP monitoring is found in the finished product/inventory area. Rather than using traditional tests to rule out any contamination, there are benefits to utilising a rapid method to confirm the quality of the final product.

In addition to shortening time to results, rapid screening helps food facilities decrease working capital requirement as product hold times are much shorter and this allows for earlier notification in the event of a contamination.

One rapid way to quickly analyse finished product is by using the Innovate system to measure ATP levels. The Innovate system is an automated luminometer for high throughput screening of multiple product samples, allowing simultaneous testing of 96 different samples in a single microtiter plate every 30 minutes.

Subsequent assays can be prepared while the system is in use to keep high-volume operations running smoothly. In addition, since many food and beverage samples contain high levels of non-microbial ATP, the Innovate system utilises the Hygiena RapiScreen Dairy reagents which contain a proprietary ATP-depleting reagent (ATX). ATX is capable of isolating and depleting free and somatic ATP commonly found in these sample types, before testing for the presence of micro-organisms.

The Innovate system also offers intuitive Innovate software which provides automated data capture and archiving within the system for later access. It provides on screen support and a colour-coded graphical user interface for quickly visualising any contaminated or questionable sample as either red or yellow, rather than green (ATP below threshold level). The software allows for robust administrator capabilities so results can be accessed by a central or remote location. In addition, an integrated database allows users to store, sort, and query results data and export to common applications and Laboratory Information Management Systems (LIMS).

Streamline your workflow

No matter the type of food, it is essential to ensure food safety and quality at all levels and in all areas involved in the manufacturing process.

Incorporating ATP monitoring as part of an environmental monitoring programme makes perfect sense. The tools mentioned here will allow food processing facilities and food manufacturers to have digital tools at their disposal for automated data collection, analysis, trending and storage, including randomisation of test points. In addition, retrieval of data is instantaneous, eliminating the need for spreadsheets, binders, and manual sifting through data. Modernising processes will help streamline workflow, save costs, simplify data retrieval during audits, recalls and standardising cleaning; it will allow food facilities to integrate testing into a comprehensive, digital, food safety plan. ∎