



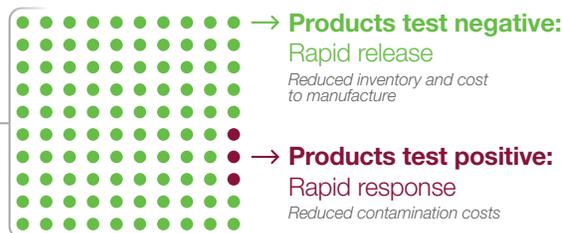
**Innovate System:
Faster Results, Lower Costs,
Improved Risk Mitigation**

Aseptic packaging is very well accepted in food and beverage applications. Worldwide, it is viewed as a safe, high-quality, cost-effective method for food processing. Other advantages include convenience in handling, including transport and storage with no need for cold chain handling.

While aseptic filling systems utilize ultra-high temperature (UHT) processing and maintain commercial sterility of long-life shelf stable products, contamination can still occur during manufacturing and production. To ensure product integrity, food manufacturers must test each product for sterility before release for sale.

Traditional methods for sterility testing involve direct and indirect test methods measuring the growth of microorganisms in products. While this process is relatively reliable, it is a manual process which is error prone and takes up to 15 days for results, using valuable resources and incubator space. Evaluating the presence of colonies on plates still takes the same amount of time. Other tests, such as pH measurements, also require follow-up tests to confirm microbial contamination (typically plate culture).

The problems with visual inspections are many; it requires carefully looking at many plates with no growth to ensure no small colonies are present. In addition, colony growth on a plate does not confirm what organism is present – further testing is required to identify and confirm the species. This can lead to a number of errors and can take additional days to complete.

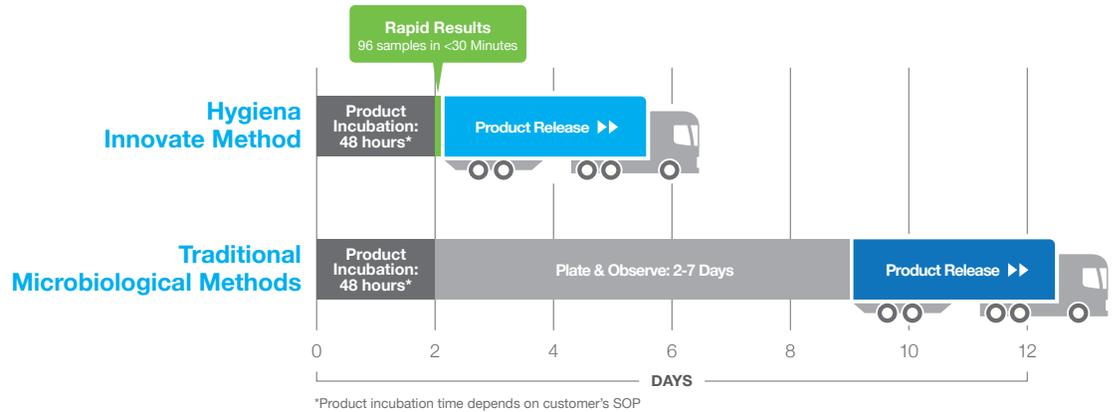


To reduce time to result and streamline laboratory testing, a rapid method is needed – this is where Hygiena’s Innovate System comes in. Results can be obtained in less than 30 minutes with the ability to run 96 samples (no secondary incubation needed as for

other growth-based methods, including plate counts, Solaris, GreenLight (Mocon), Tempo and other methods). In addition, the product matrix is diverse – from UHT milks and creams to sauces, soups and broths, juices and beverages.

This is possible due to a unique technology that eliminates somatic cell components (including non-microbial ATP) prior to detection of microbial ATP. In addition, the technology is suitable for a wide range of pH products due to its high buffering capacity.

Following product analysis (less than 30 minutes), a product report is generated for all samples tested, allowing rapid release of products testing negative. This allows for quickly reducing inventory as product can be shipped to market. Overall, it also decreases the manufacturing costs – as releasing product sooner, means more revenue sooner, and faster movement of more product through manufacturing – more volume released at the same or less cost.



While an initial investment is required to set-up the Innovate system, the cost view, from a quality control perspective, is almost equivalent to that required to run traditional testing methods when including labor costs, material costs, and time costs in the calculation.

Viewing these costs from an operations and finance perspective, the cost savings is quite clear. While QC costs are similar, the investment in finished goods and safety stock are significantly reduced along with the warehouse space costs. In addition, positive release of product helps prevent recall cost and protect the brand that adds significant benefit to the introduction of a rapid testing system such as Innovate.



To date, over 200 installations have been completed in over 65 countries. Data shows that in the first five years of implementation, average dairy industry customers have saved over \$500,000. In addition, the Innovate system has been validated on the widest range of products available for organisms including *Clostridium*, *Bacillus*, *Salmonella*, *E. coli*, *Saccharomyces*, and *Candida*. The system comes with world-class technical support and saves companies valuable time and money which can be invested in new product development and growth.