

Dairy Applications

Specific Technical Advantages of Plastech Leak Detectors

PLASTECH
CONTROL SYSTEMS



General Overview

By optimizing our leak detectors for the Dairy industry, we have achieved an industry standard status. 90% of our leak detectors are used for testing Dairy bottles. For example, they are fitted, as standard, by the world's largest Dairy bottle blow molding machine manufacturer.

Plastech leak detectors are specifically designed for Dairy container applications. Dairy bottles tend to be characterized by lightweight and thin wall sections. This can result in poor leak detector performance unless these factors are compensated for in the leak detector design. (This applies equally to mass-flow and pressure decay leak detector styles.)

Specific technical enhancements for Dairy Bottles include:

- High-speed self-tuning pressurization system allows fast pressurization of lightweight bottles, without errors caused by bottle "ballooning". The system automatically adapts to both long- and short-term changes in bottle characteristics.
- Multi-head leak detectors fitted with up to 16 channels of leak detection cope with the high line speeds prevalent in the Dairy industry.
- Auto tuning leak detection threshold compensates for variations in container stretch characteristics.

These additional features are of some benefit for all types of container, but come into their own with blow molded dairy containers. Most manufacturers of general purpose leak detectors can and do ignore them, since they are not specifically addressing the dairy market.

Technical Details

There are certain characteristics of dairy bottles that make them more difficult to leak test than other types. Most of these characteristics stem from the high volume of production. They tend to be relatively thin walled and hence deform easily under internal or external pressure.

Accurate Pressurization

During the initial pressurization that occurs at the start of a leak test, a dairy bottle will expand slightly, like a balloon. This means that extra air must be injected to fill up the extra volume, compared to what would be needed if the bottle were rigid. At typical leak test pressures, it turns out that most of the air injected goes into "ballooning" the bottle, rather than directly contributing to the test pressure.

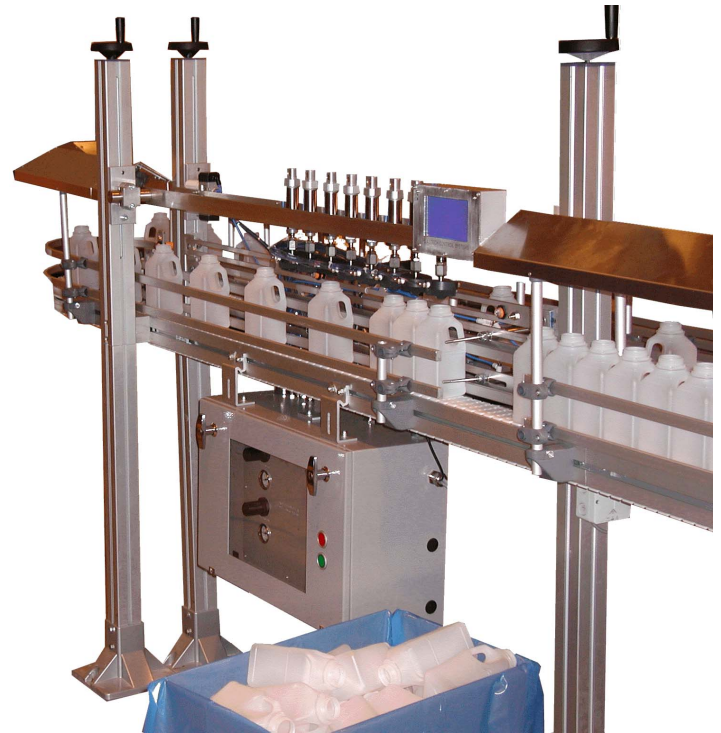
This can be partially overcome by increasing the flow rate during pressurization, and we do use relatively high flow rate pneumatics to achieve this. The problem is that typically the strength of the bottles will vary over time, due to temperature and other process variations. If this is not taken into account, the pressurization will not be consistent. This in turn leads to variations in the pressure decay, which can mask the effects of a leak. Plastech use a proprietary technique to track the "ballooning" variation and always pressurize the bottle to the correct initial value in the minimum possible time. This makes the rest of the test more consistent.

Accurate Leak Detection

If the bottle has a leak, the "ballooning" effect works in reverse. The pressure drop that would occur due to the leak is reduced, due to the bottle contracting slightly. The effect works to stabilize the pressure, making it much harder to detect the leak. This can be partially overcome by using more accurate pressure measurements, and indeed this is what we do. However, as with the pressurization example above, the problem is that the bottle strength varies over time. This can lead to long-term variations in the pressure profile, limiting the accuracy of the test. Plastech use a self-tuning algorithm to average out such variations.

This results in the most accurate test possible, without rejecting bottles unnecessarily.

Dairy Bottle Leak Tester Models

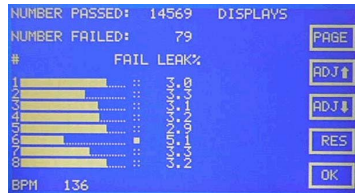


8-Head Leak Detector, 140 Bottles per Minute

LT5 Inline Leak Detector

The LT5 leak detector is an in-line, bottle leak detection system capable of testing from 1 to 16 bottles at a time, with throughput to 240 bottles per minute depending on the number of test channels fitted.

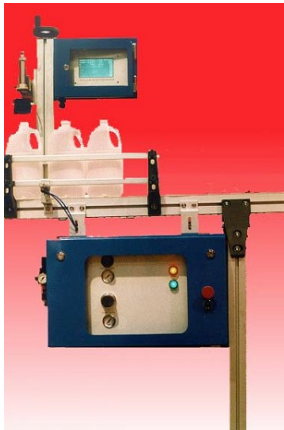
The LT5 is designed for 100% leak testing of blow molding machine output. Options available include are now available to allow this system to perform a variety of important additional bottle operations.



T1-1 Touchscreen Controller - Available across product range

LT1 Inline Leak Detector

The LT1 leak detector is an in-line, bottle leak detection system capable of testing from 1 to 4 bottles at a time, with throughput to 100 bottles per minute depending on the number of test channels fitted.



LT5-1 Single Head Leak Detector, with Touchscreen.

The LT1 and LT5 features include:

- User friendly, intuitive operation.
- Extremely flexible design.
- Extra features and customisations now easily integrated into existing systems
- All settings are grouped together on a Settings page for easy inspection and modification.
- All input/output states are displayed together on a Diagnostics page for quick fault finding.
- Simple 4-core cable connection to control panel avoids complex and messy connectors.
- Setting changes can be locked out if required.

LT2 Trimmer Mount Leak Detector

We designed the LT2 model specifically to be mounted on a "Uniloy" style indexing deflash trimmer. While there were other leak testers on the market for this function, we identified a need for an updated, reliable modern design dedicated to this high volume application. Previous designs suffered from poor accuracy due to limited available cycle time,

or even required fitting a separate leak detector for each test head. Our unique design integrates the electronics for up to four leak detection channels and all trimmer control system interfacing onto a single circuit board.



LT2 Series Trimmer Mount Leak Detector - 3 Channel Version Shown

Machine manufacturers and end users alike enthusiastically adopted the LT2; it is now a de-facto industry standard and our best selling model.

Leak Detection Equipment, Collating Tables, Conveyor Systems, Spin Trimmers, Control Systems, Bottle Handling, Bottle Quality Control, Customised OEM Models, Installation, Service & Support, Electronics Design

For further details on any of the above, contact the office, our representatives or visit www.plastech-controls.com where you can obtain complete online sales literature, user manuals and technical documentation.

