Rosemount CT4215 Packaging Leak Detection System

Technology Capabilities

1. What are the main benefits of the Rosemount CT4215 Packaging Leak Detection System over others on the market?

The Rosemount CT4215 delivers:

- Higher reliability than offline random testing because it offers automated, in-line package leak detection and 100% product verification in real time without pack deformation.
- Real-time rejection of leaky packs without interfering with the production line.
- Measurement of up to 200 packs per minute—20 times faster than other inline seal testers.
- High sensitivity using patented QCL technology that detects leaks down to 0.2 mm (0.008 in.).
- Smaller footprint and lower lifetime maintenance costs enable more flexibility and cost savings than batch testing.
- Process control optimization: The system's inline and real-time measurements prevent ongoing production of faulty product, minimizing rework and scrap in the case of a systemic filing or sealing issue. Should consecutive leaky packs be identified, or a percentage fail threshold is triggered, the system can be programmed to go into an alarm or line stop state, identifying an out-of-control event.

2. Where can the Rosemount CT4215 system be implemented on the production line? (i.e., on sealer, before metal detector, after metal detector, after case packer)

- The system should be placed after the sealer and ideally after the metal detector/check weigh system, if possible. The location of the system is relatively flexible. However, the principle of the system is that it tests each package for a leak of CO_2 and therefore it is important to ensure that the ambient environment around the system does not have a high variation of CO_2 levels.

- Depending on the equipment used in the MAP filling process, there can be a relatively high level of stray CO_2 found directly after the sealing process. Emerson can conduct a site survey to assess ambient CO_2 levels and provide guidance on the optimal location for the system. Emerson also provides an optional environmental enclosure solution that can be implemented where required, should the CO_2 levels be variable.

3. What verification and validation methods are available or recommended to confirm the accuracy of the Rosemount CT4215?

The Rosemount CT4215 is a solid state QCL laser analyzer. It is factory calibrated and doesn't require field calibration. A simple validation procedure can be adopted by end users where required. For example, a daily check where the operator can use a needle to create a leak in a challenge pack to make sure that the system is rejecting the faulty pack.

4. What food/beverage product types has the Rosemount CT4215 system been demonstrated with?

The Rosemount CT4215 has successfully been used in many types of applications, including:

- **Products:** Meat, dairy, vegetables, bread, pasta, drinks, and more.
- **Packaging type:** Trays, pouches, bags, kegs, cans, bottles, and more.

Different package types may require different sample/sensing and handling systems and therefore each pack type is assessed to identify the optimal solution for the application.

5. Where is the performance data stored?

The Rosemount CT4215 system can store production statistics, including the number of packs processed and the number of rejects detected. This can also be transferred from the HMI display screen onto a USB stick for analysis elsewhere.

6. What data analytics and visualization tools are offered with the Rosemount CT4215?

The Rosemount CT4215 offers an HMI LCD touch screen for routine operations and maintenance, a PLC touch screen for

setting rejection timing, and a traffic light to indicate the system health status.

7. What performance guarantees do you offer with the Rosemount CT4215?

The Rosemount CT4215 can detect 0.2 mm/0.008-inch leaks at line speeds of up to 200 packs per minute in an optimized application environment. Application/customer specification varies. For each application, a combination of key variables is assessed—CO_2 percentage in the MAP mix, package type, production environmental conditions, line speed, etc., to determine and guarantee the leak rate threshold for that application and per the customer's specification.

8. Can the Rosemount CT4215 be used for other quality control applications?

The Rosemount CT4215 is designed for detecting and rejecting leaky packs in real time for quality control applications. Should consecutive leaky packs be identified, or a percentage of fail threshold is triggered, the system has alarm/line stop capabilities, allowing operators to identify sealing or filling process flaws and resolve them quickly to avoid systematic packaging quality problems.

Packaging Compatibility

9. What are the compatible flexible packaging formats?
Pouches and bags.

10. What are the compatible rigid packaging formats?
Trays, kegs, cans, bottles and casks.

Implementation

11. Are there any yearly maintenance/service fees?
Emerson has trained local service teams located in every world area. Customers can work with Emerson's local service teams for quotes/contracts for different types of maintenance services.

12. Are there any additional fees/soft costs outside of the base cost of the system and installation?
Emerson's world area sales organizations provide quotation per the customer's request. A typical system will include the leak detection system equipment, installation and start-up service. But each quote scope can be customized per each specific customer's request. All fees/cost will be listed on each quote.

13. What form/fill lines has the Rosemount CT4215 been implemented with? Any form/fill lines not compatible with the system?
The Rosemount CT4215 operates independently of the MAP fill equipment and in a similar way to other quality inspection devices, such as metal detectors, etc.

14. What is the maintenance and cleaning protocol for the Rosemount CT4215 that are performed by the operator?
The Rosemount CT4215 is designed to run unattended. To ensure optimal performance, we recommend the following simple maintenance checks to be performed by the operators:

Daily:
- Visually inspect the leak detector, cabling, pipework and sample head where fitted for signs of damage.
- Visually check the HMI display for any system alerts logged.
- Confirm the enclosure doors are shut and locked.

Weekly including the daily checks:
- Clean down the outside of the leak detector with a soft damp cloth. Under no circumstance should any other cleaning materials or methods be used on the outside of the unit.
- Visually inspect the sample gas inlet filter. Only if required, clean or replace.

As required:
- Clean the cell mirrors.
- Purge the analysis cell.
- Validation: Run a leak test by creating a leak in a challenge pack using a needle. Run the pack through the system to make sure the system is detecting the leak and rejecting the pack.

15. What maintenance/service programs are offered by Emerson?
Emerson has trained local service teams located in every world area. Customers can work with Emerson's local service teams for quotes/contracts for different types of maintenance services.

16. Do you offer testing/method development/feasibility study support in-house?
Emerson have developed a range of sensing/sampling solutions designed to address multiple product and application challenges and supports testing of products/applications to demonstrate optimal performance. In the case where a solution requires customization or product development, Emerson would review it on a case-by- case basis to understand the technical feasibility of success, combined with project costs and timelines.

17. What regulatory/industry certifications does the Rosemount CT4215 hold?
The Rosemount CT4215 is a general-purpose analyzer

for indoor use in non-hazardous areas. The analyzer has approval in conformance with the following:

Europe:

- Declaration of Conformity CE

North America:

- Safety Certificate per IEC 61010-1
- Laser Safety Certificate per IEC 60825-1
- UL, cUL marking

Other Countries

- CB Certificate

18. Do you offer trial runs for testing the Rosemount CT4215? If so, please describe this process.

Yes. Emerson offers two types of trials: offline or inline field trial per the customer's needs. Offline trial would be used where Emerson's system is located within the customer's facility to enable testing packs straight from the production line. Inline testing would involve physically installing a system into the customer's production line and would require more consideration since it involves full integration.

Resources

Web page

Emerson.com/RosemountCT4215

Video

How the Rosemount CT4215 Works

Brochure

Rosemount CT4215 Packaging Leak Detection System

Articles

How High-Speed Laser Detection Ensures Seal Integrity of Modified Atmosphere Packaging

Control Food & Beverage Package Leaks Using Quantum Cascade Laser (QCL) Detection Technology

Emerson.com/RosemountGasAnalysis

Linkedin.com/company/Emerson-Automation-Solutions
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00821-0100-4245 Rev AA

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