Vegetable Preparation Foam Control

UNPREDICTABLE FOAM IN VEGETABLE WASH PROCESSES

Foam generation is a persistent challenge in food processing, particularly during vegetable washing and preparation prior to freezing. Excessive foam can disrupt production, cause costly product loss, and require time-intensive cleaning.

In vegetable washing systems, foam formation varies significantly depending on product type, water conditions, and operating parameters. Carrots, green beans, brassicas, and peas each produce different foam profiles, making consistent control challenging.

The generally accepted solution is to add anti-foaming agents to the washing system in order to keep foam at bay. However, such methods often rely on timer-based dosing, which wastes expensive additives when foam is not present, and fails to combat sudden foam surges when they occur.

Foam surge in vegetable processing

MEASURING THE PRESENCE OF FOAM IN REAL-TIME

Employing sensors to detect rising foam levels can help automate the addition of anti-foam agents. However, effective and reliable detection of foam relies upon the use of the right technology. Sensors deployed in many facilities for foam measurement utilize technologies designed for liquid level measurement.

Foam is essentially **1% liquid/99% air**, so when 'adapted' for foam measurement, such sensors tend to be inherently unreliable as they are operating at the very limit of their capability. Level measured using ultrasound or radar can "miss" the foam layer and instead, lock on to the liquid level, particularly when the generated foam is very light. Vison systems utilizing cameras struggle to maintain accurate foam level measurements because of the uneven nature of a foam layer. Process contact probes are adversely affected by sensitivity limits and fouling on their active surfaces, leading to false positives (and continuous anti-foam chemical addition).

Foam under Control using SureSense

THE CHALLENGES OF FOAM IN VEGETABLE PROCESSING

The key challenges faced in these processes are therefore:

- **Unpredictable foam surges** leading to overflows and production downtime.
- **Inefficient dosing methods**, such as timer-based anti-foam addition, wasting chemicals when foam is not present and failing to increase addition when foam surges occur.
- **Sensor limitations** caused by sensitivity and the effects of fouling rendering them unreliable.

For food processors, these issues translate into high operational costs, wasted product, and increased cleaning requirements. A more precise and responsive foam control strategy is essential.

"Controlling foam is a major concern for us, especially for products such as peas and carrots. Incorporating reliable sensors provides highly efficient foam control under wide ranging conditions and minimizes our use of expensive anti-foaming agents."

THE SOLUTION – SURESENSE FOAM DETECTORS WITH AUTOMATED DOSING CONTROL

SureSense foam control systems provide **direct, accurate, and reliable foam level measurement** without being affected by product build-up. Unlike probes and sensors designed for liquid level measurement, SureSense sensors were developed specifically for foam measurement from fundamental research into foam behavior. They have the unique ability to reliably detect foam presence, track foam layer thickness, and detect foam-liquid interfaces.

Key advantages of SureSense systems:

- **Real-time foam monitoring** for immediate control response.
- **Reduced chemical consumption** by dosing only when foam is present.
- **Response to foam surges** using multi stage sensors.
- **Long-term reliability** with sensors unaffected by fouling.

In vegetable washing and preparation, foam presents a significant challenge. Washing flumes for products such as peas, carrots, and brassicas generate unpredictable foam volumes depending on crop type, washing conditions, and process parameters. Excessive foam leads to product loss, reduced washing efficiency, and costly downtime caused by overflows and cleanup operations. Traditional timer-based dosing systems waste expensive anti-foaming agents and fail to respond quickly enough to sudden foam surges, making them unreliable for consistent process control.

SureSense foam detection and control provides a robust, proven solution to these problems. By delivering precise real-time data, the system ensures that anti-foam agents are applied only when necessary and at the correct dosage. This reduces chemical costs, improves wash water management, and safeguards throughput during vegetable preparation. With reliable foam control, processors can maintain consistent production, improve hygiene, and minimize waste - making SureSense the most effective and efficient answer to foam challenges in fresh produce processing.

SureSense Foam Detection and Control Systems:

- **Purpose-built foam measurement** – developed specifically to detect foam and foam-liquid interfaces, not adapted from standard level sensors.
- **Real-time monitoring** – provides continuous, accurate feedback on foam behaviour for reliable process control.
- **Immune to build-up** – sensor performance is not degraded by product deposits or fouling.
- **Automated dosing integration** – directly controls anti-foam dosing systems, reducing chemical usage and waste.
- **Multi-channel capability** – supports multiple sensors and control points from a single panel.
- **Robust and hygienic design** – stainless steel construction and sanitary installation options for food and biotech applications.
- **Proven reliability** – field-tested in demanding industries including food processing, fermentation, and wastewater treatment.

GET IN TOUCH

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