

CONTRINEX FOOD-GRADE INDUCTIVE SENSORS WITHSTAND HIGH-PRESSURE WASHDOWN CLEANING

Food-grade washdown inductive sensors from Swiss manufacturer Contrinex are completely compatible with the strict hygiene standards of the dairy industry, helping maximize plant utilization during round-the-clock production of milk-based foodstuffs. Rated to IP68/IP69K, Contrinex stainless-steel washdown sensors withstand both aggressive cleaning chemicals and high-pressure water jets, offering highly robust solutions for the harshest operating environments. Food-grade sensors are available with IO-Link, a standardized serial connection protocol, providing digital communication in washdown areas at no additional cost.

Cleanliness is everything in food-processing facilities, and nowhere more so than in the dairy industry. A single instance of contamination during production can necessitate the destruction of multiple batches of milk-based foodstuffs - or, if undetected, result in illness, disease or death among consumers of infected products. It's no surprise that for dairy-plant operators, maintaining

the strictest possible hygiene standards is an absolute must. Given the simultaneous need to maximize plant utilization, time-consuming cleaning methods are highly undesirable. To avoid lengthy unproductive intervals between batches, food-processing facilities commonly utilize clean-in-place (CIP) and high-pressure washdown systems. Production equipment for washdown areas must therefore withstand both aggressive cleaning

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chemicals and high-pressure water jets as a matter of course. This requirement extends to the sensors used throughout these areas.

The **Contrinex Washdown** range of food-grade inductive sensors addresses these needs perfectly. Devices from both the Series 600 Classics and Series 700 Full Inox families are certified

to operate continuously and reliably in harsh conditions. Rated to IP68/IP69K, they are pressure-resistant up to 80 bar, corrosion-resistant and ideal for use in food and beverage industries. Sensing the presence and detecting the position of equipment or materials at each stage requires sensors that are both accurate and responsive. Contrinex Washdown inductive sensors are up to the task in all respects. With a choice of one-piece M12-, M18- or M30-diameter AISI 316L / V4A stainless steel bodies and sensing faces (Full Inox family) or M12-diameter AISI 316L/V4A stainless-steel body and PPS (polyphenylene sulfide) FDA-approved sensing face (Classics family), these fully embeddable inductive sensors offer a highly robust solution for the harshest operating environment. Industry-standard PNP or NPN outputs with an integral M12 connector and IP69K-rated cable set ensure compatibility with existing factory systems.

Flow control during milk-product processing

Most milk products,

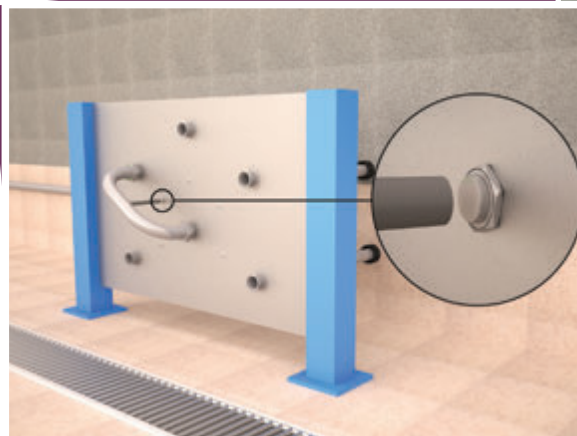
whether made from pasteurized or raw milk, undergo a number of common manufacturing operations during the early stages of production. Central to these are two aspects of process manufacture that require reliable, accurate flow-control systems: transportation and CIP. In each case, food-grade washdown inductive sensors ensure that the correct operating sequence is followed.

Process engineers use dedicated stainless-steel pipework to transport liquid ingredients from one operation to the next. Typically, fluid flow is managed using control valves fitted with electrical, hydraulic or pneumatic actuators. Depending on process requirements, two-way or multi-port valves, often rotary-shaft types, deliver raw milk from holding tanks to each process station in sequence,

maintaining specified flow rates and volumetric limits.

Classics Washdown sensors for position sensing

Sensing the position of a rotary-valve actuator is a routine task for Contrinex Classics Washdown inductive sensors. In this application, the PPS sensing faces are not required to withstand extremes of temperature or pressure, and the 2mm sensing distance of these M12-diameter devices is ideally suited to the application. These sensors interface directly with a range of industrial process controllers



and provide cost-effective confirmation of control-valve status around the clock. Once processing of each batch is completed and all process vessels are drained, closed-loop CIP cleaning is initiated. In many instances, plant managers rely on flow-transfer panels to ensure separation of CIP and process flows; a flow-transfer panel utilizes a multi-port manifold that provides a physical break between flow streams in accordance with good manufacturing practices (GMPs). Connection between ports

is effected manually by means of U-shaped jumper pipes with positional feedback from inductive sensors mounted on the panel.

Full Inox Washdown sensors for presence sensing

Manual connection carries with it a greater risk of direct contact between assembled parts. Contrinex Full Inox Washdown sensors provide optimum resistance to mechanical shocks, while offering the option of extended sensing distances. Multiple M30-diameter devices, positioned at predetermined locations on each panel, sense the presence of a locating feature on each jumper pipe, confirming that the correct ports are interconnected before CIP cleaning is initiated. These units, with corrosion-resistant one-piece stainless-steel housings and a 20mm sensing distance, protect against impact damage and also withstand accidental contact with aggressive CIP cleaning solutions.

Full Inox Washdown sensors for positional control

The need for accurate position sensing doesn't end there. Downstream processing in soft-cheese production is equally dependent on

highly reliable washdown inductive sensors for effective control of day-to-day operations.

Curd-making is the fundamental process in cheese production. Typically, soft-cheese curd is made in large stainless-steel vats, where milk is mixed with a curdling agent and heated gently, resulting in the separation of curd from the whey. Automated knives cut the curd particles to the correct size, following which the vat is tipped to discharge firstly the whey, followed by the curd. Carefully controlled tipping is essential to prevent damage to the curd. The vat rotates slowly about a horizontally oriented support shaft. Washdown inductive sensors from the Full Inox family, mounted immediately adjacent to one side of the vat, detect the position of a cam on the shaft, confirming the degree of angular rotation at pre-set intervals. These M18-diameter one-piece stainless-steel devices, with a 10mm sensing distance, match the requirements perfectly.

Full Inox Washdown sensors for filling and packaging

Later, during filling and packaging operations, high-



volume soft-cheese production also relies heavily on position sensing. Sealed tubs of cheese are conveyed from filling stations in single lanes; pneumatic cylinders, mounted beside each conveyor, divert multiple tubs into packing areas in preparation for layering. In these situations, it is essential to control the position of the ram accurately; failure to synchronize cylinder extension with conveyor movement results in damage to products and, potentially, to equipment. Two M12-diameter washdown sensors from the Contrinex Full Inox family, embedded in the wall of each cylinder, sense the presence of the ram as it reaches the limits of its travel in each direction. These highly robust devices withstand pressures of up to 80 bar (1160 psi) and operate reliably and accurately while exposed to the working pressures inside the cylinder.

Sensors with IO-Link interface

Plant-wide communication is another common requirement for manufacturers. In November 2014, Contrinex announced the availability of IO-Link for all sensors incorporating its patented ASIC technology. IO-Link, a

standardized point-to-point serial connection protocol for sensors and actuators, is enabled on all PNP normally open devices at no additional cost, offering the advantages of digital communication in washdown areas without the need for special cabling. In dairy-food production, processes run continuously, with remote diagnostics eliminating almost every need for manual intervention. Interrogating an IO-Link-enabled device returns its manufacturer ID and product ID, allowing systems integrators to determine remotely that the right sensor is in the correct location. Contrinex IO-Link washdown sensors additionally feature an on-demand self-test function that confirms error-free operation at all times. Systems designers also have the capability to modify the output signal. Delaying the switching pulse accommodates any travel time between a sensor and its corresponding actuation point, while stretching the pulse ensures that slave devices with lengthy response times trigger reliably, even at high throughput rates. Finally, each sensor provides an output-status check derived from its factory calibration data. If the output signal

from a sensor falls outside a range that corresponds to a sensing distance between 80% and 100% of its nominal value, an alarm flag is triggered, highlighting the need for investigation. For process engineers with demanding deadlines, peace-of-mind is a valuable benefit.

Contrinex sensors for food industry

Contrinex Classics and Full Inox Washdown sensors provide a robust, cost-effective and hygienic solution for manufacturers of foods, beverages and pharmaceuticals, whether on a local or multi-national basis. Contrinex provides technical and commercial support via an extensive international distribution network, ensuring that every customer has access to expert product knowledge and directly relevant applications experience. Stainless-steel construction and the no-cost option of the industry-standard IO-Link protocol ensures that best-in-class performance is coupled with ultimate reliability in even the most demanding circumstances. 

