



PREVENTING PLUGS in food production

Consequences of chute blockages in the food industry include disrupted operations and significant losses in production, labor, and reputation. BinMaster's Flow Detect, which is a mass flow detector; as well as capacitance probes, rotaries, and vibrating probes, to monitor bulk material flow, or no flow conditions.

German Engineering Federation statistics say that 75% of respondents in the industry faced chute blockages, resulting in a costly average downtime of six hours at \$250,000 per incident. EHS Today underscores the link between manufacturing accidents and poorly-maintained machinery, urging the food production sector to adopt preventive measures through advanced chute detection technologies and meticulous design strategies.

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KEYWORDS

food processing industry, bulk material inventory, flow sensor, mass flow meter, monitor switch, level switch, prox switch

OBJECTIVE

Learn how BinMaster sensors can prevent chute blockage, slow flow, low flow and no flow conditions.

CONSIDER

Bulk ingredient monitoring prevents minutes, hours and even days of production stoppage.



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Detecting & preventing plugged chutes

Bulk foodstuffs backs up in a chute. Production stops. Maintenance can't clear. Time ticks. The company lost out in material loss, production, labor, late deliveries, and more. The story's real, and worst of all, reputation was damaged due to delays. Early alerts let operators clear chutes and remove partial plugs and quickly restart.

Blocked chutes can domino into big problems with damaged equipment, wasted material, stopped production, and even injury. [BinMaster sensors](#) alert operators early when chutes need attention. Relays trigger alerts so operators know there's a problem via an indication on a [point level alarm panel](#) or to a control room. Several technologies are available:

- [Flow Detect](#) uses a microwave Doppler effect to sense whether material is flowing or not.
- [Capacitance probes](#) detect the presence or absence of material.
- [Rotaries](#) and vibrating probes can be installed in y-pipes to sense blockages as well.

Chutes plug due to moisture, compaction, particle size, interlocking material, up-stream and down-stream equipment failure, buildup, foreign objects, and chute design.

The German Engineering Federation found that 75% of respondents experienced chute blockages. The average downtime was six hours translating to \$250,000 per incident.

EHS Today said that 25% workplace accidents in the manufacturing industry are related to blocked or poorly-maintained machinery, including chutes.

The problem can be tackled by prevention with better chute design and sensors to alert operators of a flow or no-flow condition.

"We're get a lot of calls about chute detection," said [Nathan Grube, BinMaster VP Central Region](#). "Companies are tightening processes. They forecast success, which they should. But that means they have less room for error." No one should accept hours of downtime because of something preventable.

Grube said chute detection complements good chute design to prevent damaged or wasted material. "Usually, we get a call after a plugged chute incident," Grube said. "It's just one of those times where they kind of mumble, 'I wish we would have done it sooner.'"

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-Nathan Grube,
VP Central Region

THE DOPPLER EFFECT

If material being monitored is not moving, the reflected signal will be the same frequency as the emitted signal and there will be no beat frequency produced. However, if the material is moving, the reflected signal will be shifted in frequency and a difference or beat frequency will be produced. This shift in frequency is called the Doppler effect. The presence or absence of this beat frequency is sensed by the [Flow Detect 2000](#) to detect a flow or no flow condition. This sensor will:

Prevent Cross Contamination | Avoid Product Waste | Stop Improper Batching

