

Plugged Chute Detection



Conveying bulk granular materials is common in Pulp and Paper, Coal Fired Power Plants, Agriculture, Food products, Aggregates, and Mining industries. Chutes used to convey these materials are prone to plugging resulting in down time and possible material overflow.

Measuring granular materials in a chute is an extreme environment for any sensing element. The material is often damp and can leave a thick coating on the chute wall and sensing element. Material can be abrasive and heavy, causing insertion type sensors to quickly wear, bend, or completely shear off. Frequently, insertion type sensors contribute to plugging by interfering with the free flow of material.

A reliable means of indicating when a chute is plugged allows operators to clear the blockage in a timely manner. A point level switch set to ignore free flowing material but alarm on a blockage will save considerable downtime and clean up.

Level Measurement Technologies

The following is an assessment of the most common point level technologies used for plugged chute detection.

Nuclear Gauges

Nuclear gauges have been used for plugged chute indication because they are a non-penetrating technology. A source is mounted on one side of the chute and a detector is mounted across from it at the point the plug detection is required.

Since they do not penetrate the chute wall it is assumed that they eliminate the problems associated with the difficult environment inside the chute. However, coatings on the inside of the chute wall will absorb the emitted radiation causing false high-level indications. Additionally, radioactive sources require periodic checks for radiation leaks and restrictions on source disposal are becoming an increasing problem. Factory trained service technicians are required for any service work on the radioactive sources. For these reasons, along with the regulatory requirements and paperwork associated with nuclear gauges, many facilities are looking for switches to replace their existing nuclear installations.

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Microwave

Microwave detectors are another non-contact technology used for plugged chute indication. This technology consists of an emitter and a receiver mounted on opposite sides of the chute at the point detection is required. Although microwave devices are non-contact, they do require a non-metallic "window" for mounting both the emitter and the receiver. Also, conductive coatings on the inside of the chute can attenuate the signal resulting in false high-level alarms.



RF Admittance – The Best Solution!

RF Admittance switches provide the best possible solution for plugged chute indication. There are no regulatory requirements or source disposal problems as with nuclear gauges. Drexelbrook's unique flush sensing element requires only one installation point and does not interfere with the free flow of material in the chute.

RF switches can be remote mounted to allow the electronic unit to be placed in a low vibration, convenient location. The Plugged Chute Detection product from Drexelbrook has driven shield circuitry which allows the sensor to ignore even heavy, sticky coatings left on the sensor. There are no moving parts to wear out or jam. The robust, industrial designed flush sensing element is abrasive resistant and mounts flush to the inside of the chute to eliminate damage.

Drexelbrook has installed thousands of plugged chute detectors in paper mills, mines, power plants, and grain conveyors over the past 40 years.

The Drexelbrook RF Admittance Plugged Chute Detector is clearly the most reliable and economical method of indicating plugged chutes.

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