ASTEC BAGHOUSES

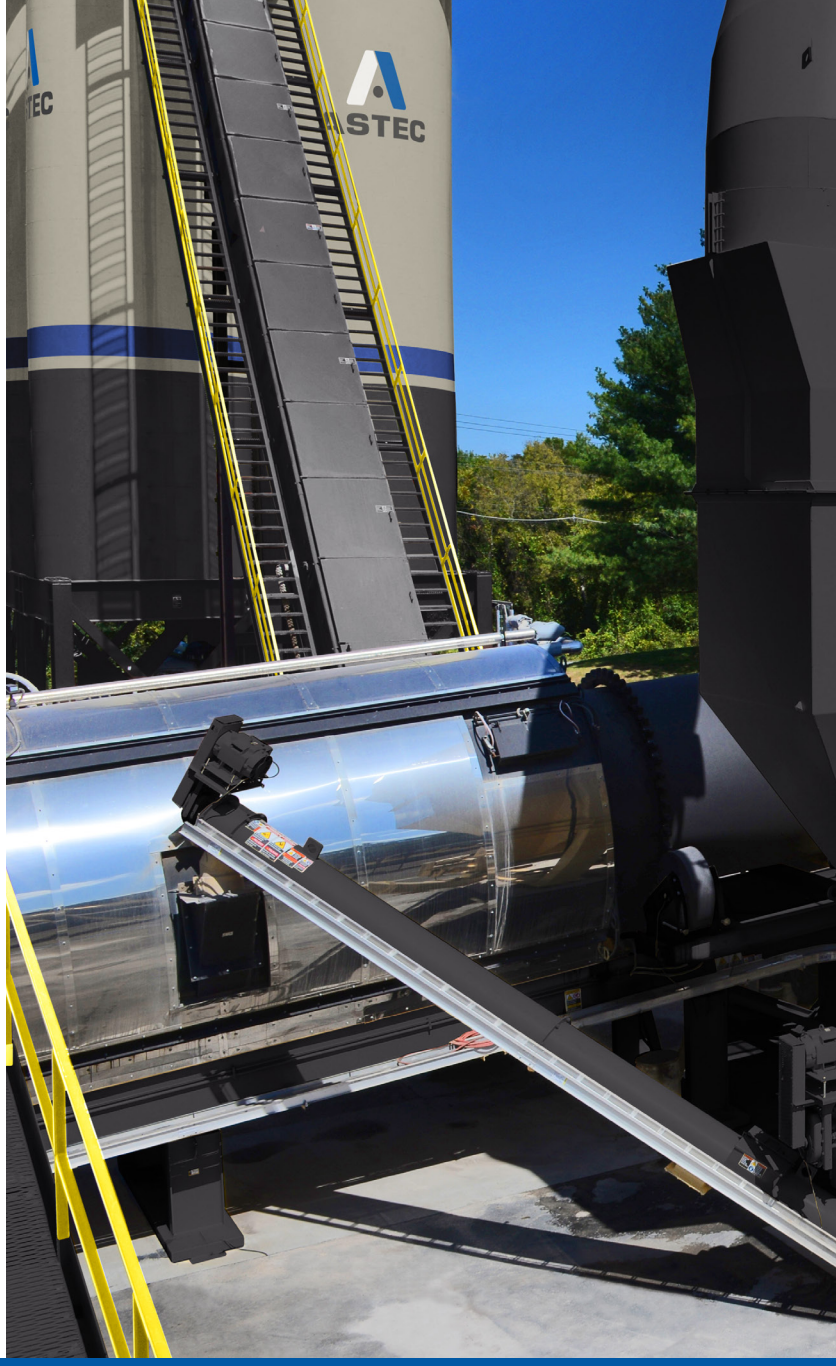
PULSE JET BAGHOUSE

ASTEC™

PULSE JET BAGHOUSE For Asphalt Mixing Plants

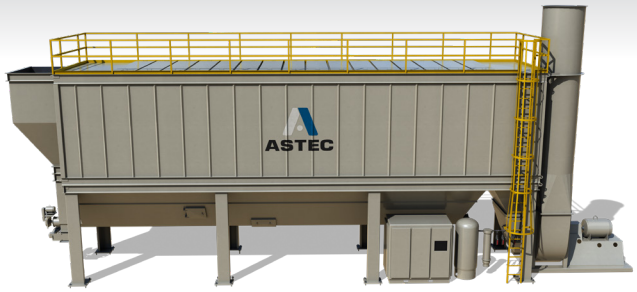
They remove particulates from the exhaust stream to efficiencies greater than 99.9%, and lower emissions to less than one quarter of EPA standards.

The baghouse exhaust fan provides the draft needed to evacuate gases from the drum, including steam, products of combustion, and air (leakage and unused combustion). The control system regulates airflow through the system by regulating fan speed when there is a VFD, or opening and closing the exhaust fan damper.



BAGHOUSE
Facility Style

Whether you need the quick setup and mobility of a portable plant, the flexibility and operating capacity of a stationary, or something in-between — Astec baghouses can be configured for any of the three Astec plant styles.



STATIONARY

Stationary asphalt mixing plants provide a high degree of flexibility for customized layouts and special features. The stationary baghouse is supplied with steel legs to grade. The legs are anchored to your prepared concrete foundations.

Astec baghouses deliver superior performance and efficiency, while helping your plant meet the most stringent clean air standards.

RELOCATABLE

Modular construction and built-in steel foundations eliminate the need for concrete foundations, making setup of the relocatable baghouse fast and easy. Relocatable baghouses are delivered on steel plate foundations. At the site, the top weldment bolts to the hopper section.

PORTABLE

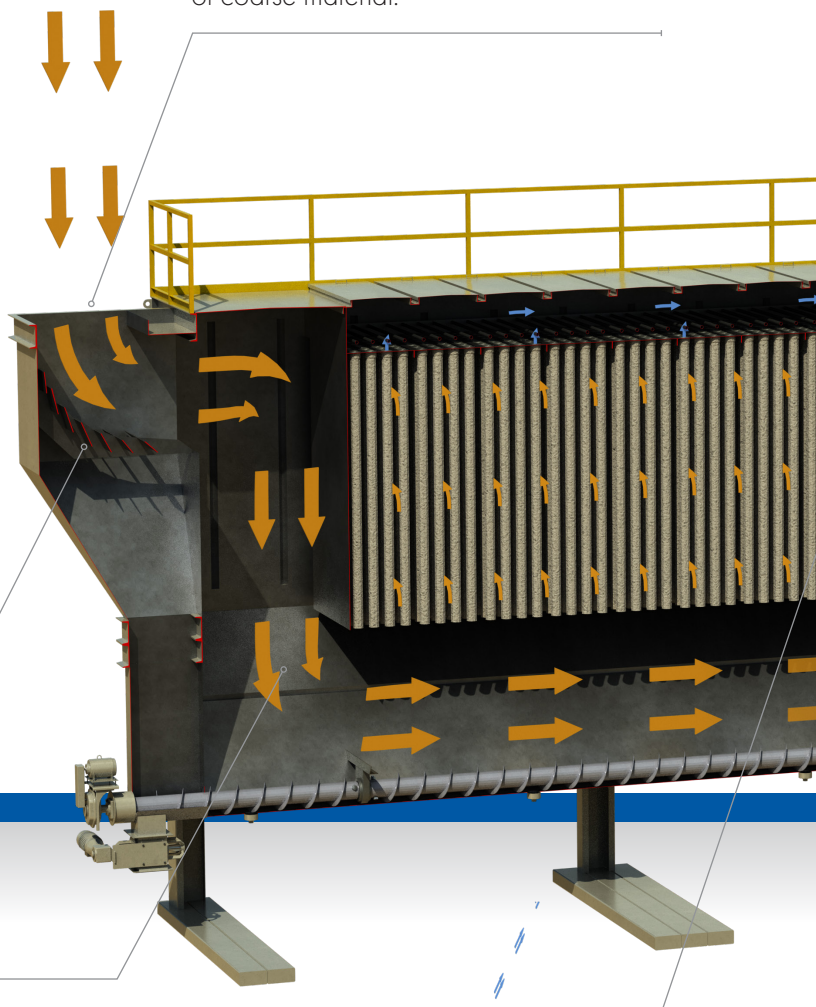
The Astec portable baghouse is designed as an integral component of the Six Pack® portable hot mix facility. Built-in running gear, high-rise air bag suspension and optional retractable plate foundations eliminate setup hassles. Portable baghouses are available in a range of capacities.

Complete Astec Pulse Jet Baghouse System

The complet baghouse system consists of a primary dust collector, an enclosed fabric filter structure (baghouse), and a draft package which includes the fan, variable frequency drive and ductwork.

DUST COLLECTOR

Gas stream exits the drum mixer or dryer through the duct and enters primary dust collector (inertial separator) for removal of coarse material.



INERTIAL SEPARATOR

Inertial separators depend on rapid changes in both gas stream velocity and flow direction to remove coarse particles from the air stream. Using advanced modeling technologies and practical in-field experience, Astec engineers have been able to precisely set the internal baffles for optimal efficiency.

ENTRY CHAMBER

From the primary dust collector the gas stream moves into the baghouse entry chamber. The gas stream slows and disperses under the bags in the baghouse.

CLEAN AIR PLENUM

Negative pressure in the clean air plenum above pulls the dust-laden air through the filter bags. The fine dust collects on the outside of the bags.

EXHAUST STACK

The cleaned gas stream travels through the plenum, passes through the fan, and exits the baghouse through the exhaust stack.

CLEANING BURSTS

Periodically, bursts of compressed air are injected into the tops of two rows of bags. Dust breaks free and falls into the hopper(s) to be removed by screw conveyor(s).

The collected dust is then able to be returned to the mix as needed.

FANS MAINTAIN STABLE AIRFLOW

The Astec exhaust fan is designed for a wide range of operating conditions and is capable of operating at high differential pressures. The fan's backward-curved blade runs quieter and uses less power than other fan designs. The drives can be configured to be driven either by belts and sheaves or direct coupling. Optional stack silencers are also available.

The Benefits of a Variable Frequency Drive

The Variable Frequency Drive (VFD) on the baghouse fan minimizes electrical power consumption and reduces the number of mechanical parts necessary for optimum plant performance. VFD works by only running the fan at the speed necessary to induce the ideal balance of flow through the plant equipment at a given tonnage rate. With a VFD, the fan duct no longer needs a mechanical damper – so the pressure losses from the damper are eliminated.

Expensive electricity consumption is minimized in two unique ways. First, electrical energy is saved since the fan is only run at a speed necessary for a given production rate. In contrast, a fan/damper arrangement runs full-speed at all times. For example, at 80% capacity a fan with a VFD only uses 50% of the electrical energy of a fan with a damper -- savings increase to 75% running at 50% capacity. Second, a VFD-equipped baghouse fan avoids expensive electrical demand charges. A fan/damper arrangement quickly brings the fan to full speed. This creates a very short high energy demand. With a VFD, the fan is able to start spinning very slowly using a small amount of energy.

BAGHOUSE
Dust Particles

Coarse and fine dust are collected separately. The coarse dust is collected by a primary collector and then returned to the mix 100% of the time. The fine dust is collected by the baghouse and may all be returned to the mix, or it can be wasted, metered into the mix, or stored in a fines silo with the addition of a VFD airlock.

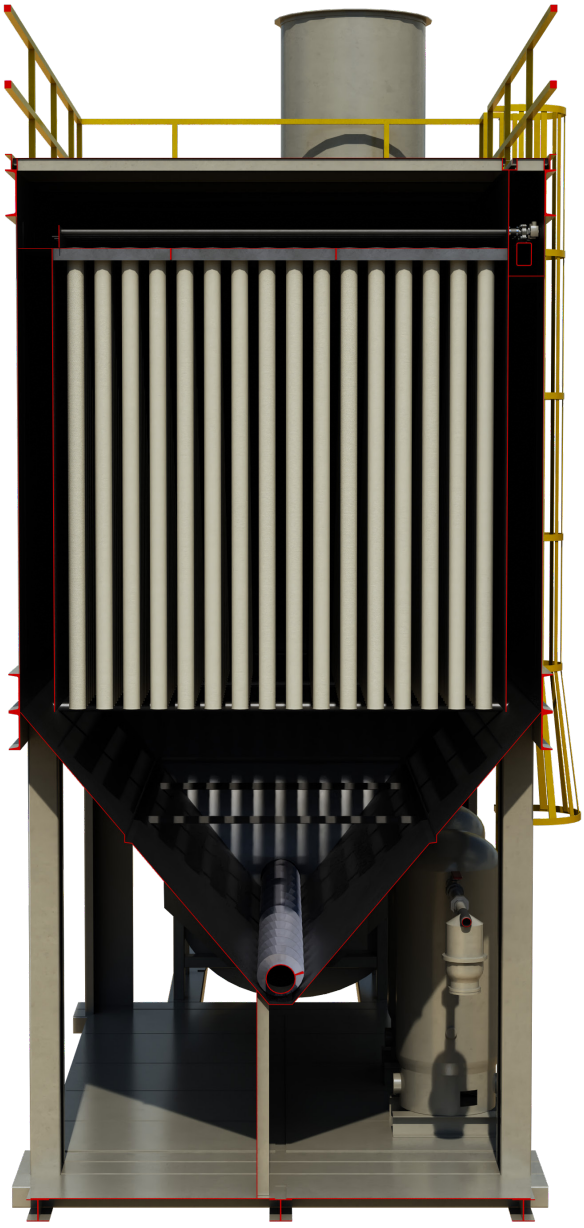
SCREW CONVEYOR

Fine particles collect in the bottom of the baghouse and are removed from the baghouse by the screw conveyor. These fine particles may be returned to the mix, stored or wasted.

PARTICLES by size

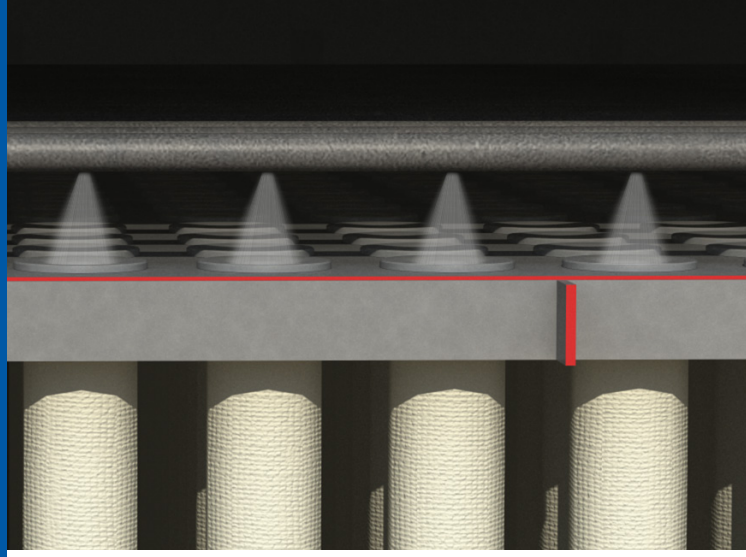
Astec primary collectors capture coarse dust as air flows into the baghouse. Generally, the dust gathered in the primary collector is in the 30, 50, 80 mesh range.

Since very few coarse particles enter the baghouse, it can collect small fines very efficiently. Coarse particles entering the baghouse would cause the dust cake to be very porous, making it harder to collect very fine particles. A dense dust cake of fine particles has a higher collection efficiency. Removal of coarse fines in the primary collector also reduces wear on the bags.



REMOVAL OF FINE PARTICLES

The gas stream exits the primary dust collector and moves into the baghouse entry chamber. The gas stream slows down and passes under the wall that protects the bags. Negative pressure in the clean air plenum pulls the gas stream up through the filter bags. Fine particles entrained in the gas stream collect on the outside of the bags. The cleaned gas stream travels through the plenum and exits the baghouse through the exhaust stack.



PULSE JET CLEANING

The Astec pulse jet baghouse works in a continuous cleaning process. The pulse jet bags never stop filtering because the bags do not need to be taken offline for cleaning. To clean the bags, air exits a venturi which concentrates a burst of air. The resulting air wave pops the bags away from the cage. This movement of the bag dislodges the dust cake, allowing it to fall into the hopper.

RETURN FINES TO THE MIX

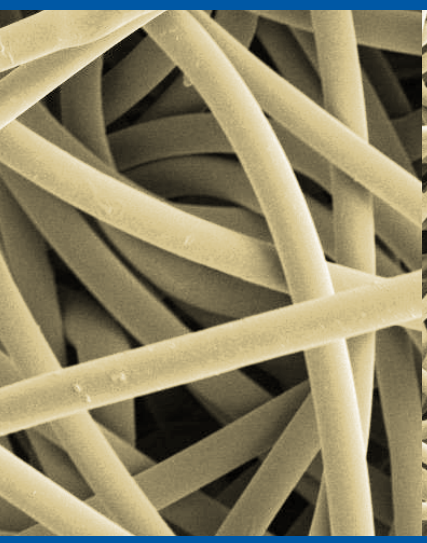
With an optional variable speed air lock, you can choose what percentage, if any, of fine baghouse dust you want to mix with the coarse dust to be returned to the mix. An optional blower or screw conveyor can be installed to divert baghouse dust to storage or disposal. Rotation sensors on all dust handling conveyors signal the operator in the event of a stoppage.

BAGHOUSE
Bag Material

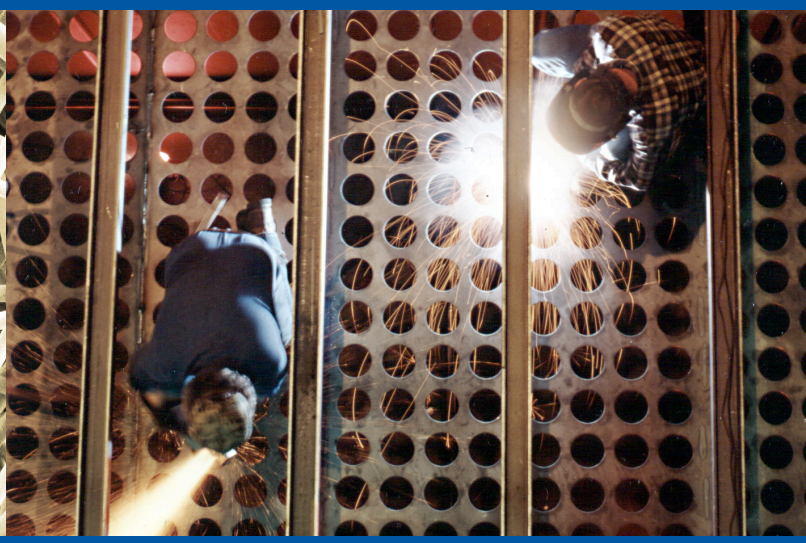
Thanks to a proprietary material, bags used in Astec baghouses do a more reliable job. Astec felt is made of 2-denier virgin aramid fiber with high density needling. All Astec felts are also singed for superior dust cake release. The bag material is specially made for Astec, with a guaranteed minimum density per square inch of 14 ounces.* Manufacturers using bags of lesser quality may claim an average density of 14 ounces, but their bags can be thinner than that average in spots, which leads to less reliable filtering and faster bag wear.
The density of Astec bags is never less than 14 ounces.

Astec offers micro-denier bags in addition to standard denier bags. Micro-denier bags are made of the same type aramid fibers except they are smaller in diameter than the 2-denier and can form an even tighter configuration to improve filtration of microscopic particulates for areas with high particulate emission restrictions.

***14 ounces is the standard minimum density for relocatable and stationary ASTEC baghouses.**
16 ounces is the standard minimum density for a portable ASTEC baghouse.



The micro-denier aramid felt fiber is available for compliance with tight particulate restrictions.



The tube sheet separates the dirty and clean air plenums. The dirty air must pass through the bags.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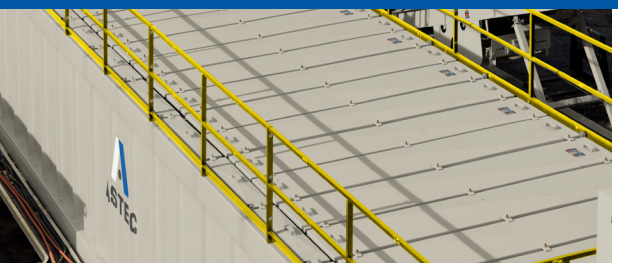
BAGHOUSE
Additional Features

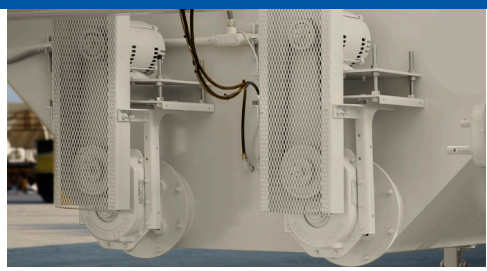
The extra features you get with Astec make a real difference because they reduce maintenance and operating concerns and improve efficiency.

Duct transition wear surfaces and duct elbows are made of formable AR (abrasion resistant steel). Stiffeners strengthen baghouse walls and prevent flexing. Astec baghouses resist corrosion thanks to epoxy-coating on the inner surfaces of the baghouse and primary dust collector, and plenum access doors fabricated of stainless steel. Exhaust fan, motors and drives ship pre-assembled. All bags, blow pipes, manifolds, valves and solenoids are installed at the factory, saving you considerable time at setup.

ACCESS DOORS

Key parts of the baghouse are simple to access and service.





LESS MAINTENANCE TIME AND COST

Caged ladders lead to the top of the baghouse with handrails installed all around. Stainless steel plenum access doors let you easily reach bags. Snap-in bags are simple to change.

The dust screw on an Astec baghouse features a large screw shaft design with a reduced number of hanger bearings.

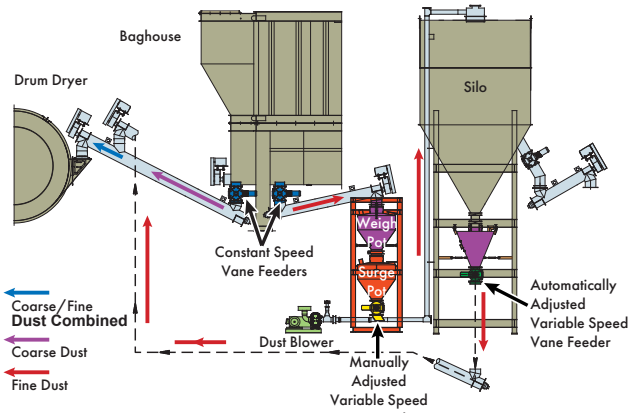
The hanger bearings on the hopper screws are lubricated, long-wearing and operate quietly. Screws and bearings are conveniently reached through ground-level access doors at each bearing.

Baghouses have clean-out plates at the bottom of the hopper. In the unlikely event of a blockage at the screw conveyor, these plates can be removed and dust can be evacuated manually.

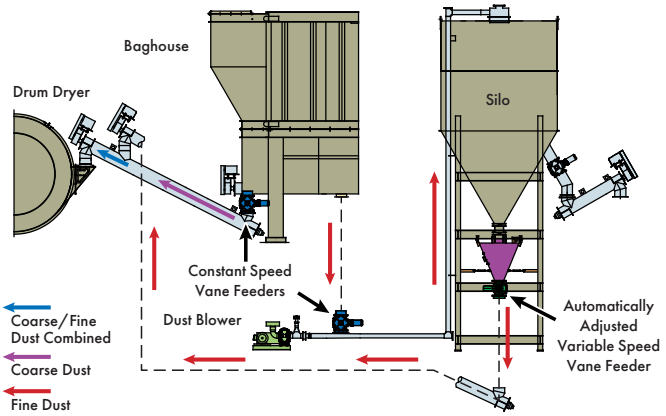
Choose Your Material Handling System

Select systems depending on your operating environment. The choices for controlling material flow out of the baghouse include a range of rotary air locks with dust blowers or dust transfer screws.

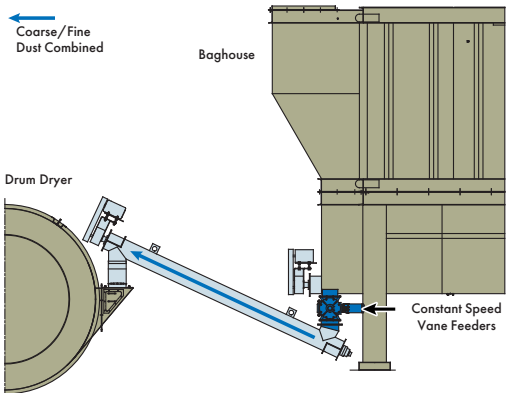
Total Control



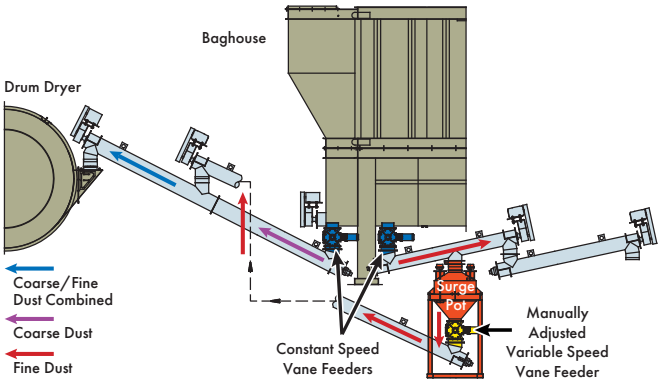
Split Return With Weigh Pot



Return All



Split Return With Surge Pot



DUST SILOS

Dust silos are available in sizes ranging from 350 to 900 barrels and equipped with Astec's mass-flow technology to assure precision metering.

Dust storage silo systems are either stationary or portable. Portable models have the option to include crane-erect or hydraulic self-erection packages and permanent or removable running gear.

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