newsletter

pelletron
Discover **Bulkmatology**®
The Nature of Bulk Material Handling

Bulkmatology® Solutions | September 2010

New Technology

The world's first combined Mobile DeDusting / Big Bag Loading Station supplied by Pelletron and Delaere

The challenge

The challenge was integration of a dust and streamer removal system on top of a Big Bag loading station within the extremely limited space under the silos. Furthermore, the unit had to be movable under each silo in the silo farm for cleaning various resins before packaging. The unique low height design of the XP-DeDuster® was the key element for transforming this project into reality. We can proudly say "a new technology was born".

Delaere big bag loading station with integrated Pelletron DeDuster®

The realization

For RP Compounds in Schkopau/Germany, Pelletron built a mobile 18t/h DeDuster®/ Big Bag station for filling of plastic pellets into big bags. The big bag station was built by Delaere/Belgium. The mobile unit is placed with a fork lift to the desired position under a silo, with the connection to the silo to be established by telescopic pipes. After positioning and connecting, the silo discharge valve will be opened and the combined dedusting/filling process starts.

After cleaning the material in the DeDuster®, the dust content in the cleaned product was measured by the customer multiple times, showing the remaining dust levels continuously below 30ppm. The excellent cleaning results are achieved through a combination of the air flow (patented wash air principle) and the patented magnetic field, which interrupts the electrostatic charges between pellet surface and dust. If angel hair is present, it will be removed by the DeDuster® as well. The DeDuster® can be cleaned easily with compressed air or water in order to avoid contamination when changing the product. For abrasive products, Pelletron offers a wear-resistant DeDuster® design.

The process selection

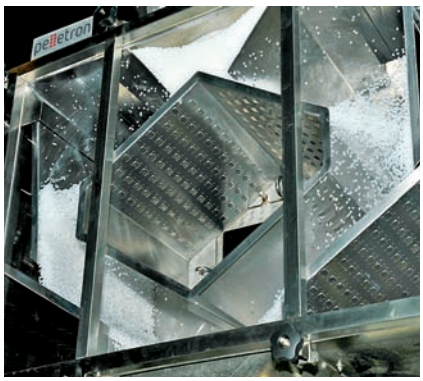
For this application, Pelletron selected a closed loop CCD (Compact Cyclonic De-Dusting) system in combination with a XP-series DeDuster®. The system is easy to operate and to maintain. The core element of the system, the DeDuster®, removes resin dust, streamers, metal dust, dirt, paper, and other contaminants. The contaminants are separated from the cleaning air in a high efficiency cyclone and are collected in a dust drum under the cyclone.

The full dust drum can be changed without interruption of the operation by closing a manual slide gate valve. The cleaning air will be returned to the DeDuster®, after passing through an inline filter.

Closed loop CCD (Compact Cyclonic DeDuster®) combined with big bag loading machine

The working principle of the system

The product to be cleaned is fed continuously into the DeDuster® by gravity, and an adjustable inlet deflector distributes the pellets proportionally to the wash decks. The DeDuster® operates with 3 cleaning areas – the upper wash zone, the Venturi zone and the lower wash zone. The patented wash decks are equipped with slots and holes, located and designed for an effective air wash of the product stream. A magnetic coil at the DeDuster® inlet generates a magnetic field, which interrupts the electrostatic charges for a short time to allow the separation of the dust from the surface of the pellets. In the Venturi zone, the air velocity can be regulated in order to effectively remove angel hair. The DeDuster® is equipped with a clear PC panel as standard (hardened glass on request), for easy observation of the dedusting process by the operator or a camera.



DeDuster® in operation

Why are dust and streamers bad?

Dust and streamers (angel hair) are unwanted contaminants in plastic pellets, which reduce the quality of the resins. These contaminants cause defects and increased scrap production in plastic end products, as well as interruptions of production and higher housekeeping costs in plastic processing plants. Plastic manufacturers and logistic companies are continuously looking for efficient and economical solutions to clean resins before packaging in rail cars, trucks, Oktabins, Big Bags or regular bags.

Removed dust and streamers (Angelhair)

Blurry surface caused by dust

Build-up on a screw caused by dust

New combination: Mobile DeDusting – Big Bag Loading station

Selection of a dedusting system

In order to obtain good product quality prior to loading, traditional elutriators installed on top of silos are not sufficient. The remaining dust after cleaning in an elutriator accumulates under silo roofs and walls, resulting in dust surges from time to time, which contaminate the entire bulk load. Furthermore, an elutriator is very difficult to clean in case of product changes, which can also cause contamination. Therefore, positioning the dedusting unit under the silo before packing is the best and most flexible solution.

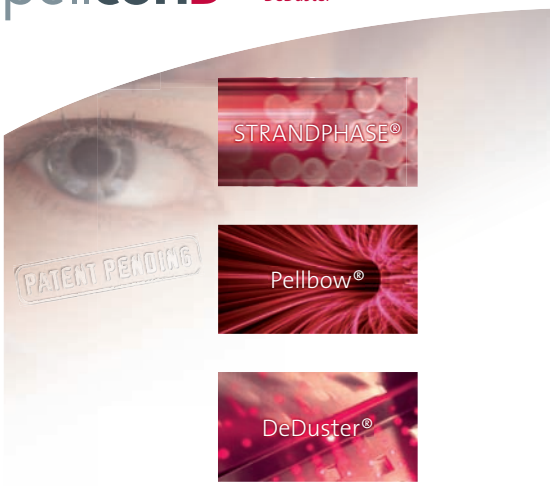
Some customers use costly Slow Motion Dense Phase Conveying Systems to minimize the generation of dust and streamers. This technology reduces streamers, but generates very fine, highly electrostatic charged dust, which sticks to the pellet surfaces and accumulates in silos as well. In order to get highest quality resins even after slow motion conveying systems, the use of a DeDuster® has become a requirement.

Pelletron specializes in providing these system improvements and upgrades for existing dilute and dense phase systems.

Designing a new system

For new systems, Pelletron recommends using STRANDPHASE® conveying technology in combination with Pellbows® and a DeDuster®, which has proven to be the best technical and most economical solution. We have given this new process a name: pell**con**3™. Please see our new system brochure "The New Thinking In Pneumatic Conveying" for more information.

pellcon3™ STRANDPHASE® Pellbow® DeDuster®



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