pelletron
Discover Bulkmatology™
The Nature of Bulk Material Handling

PELLETRON DEDUSTER installed at major Antwerp Terminal

In the summer of 2000, Katoen Natie, purchased and installed a (400) ton per hour fines removal system in their showcase Antwerp, Belgium Terminal to provide polycarbonate pellet cleaning service for one of their many client producers of plastic resins.

Katoen Natie provides logistical storage and transport services at more than (?) facilities worldwide. In providing high quality logistical service, Katoen Natie has expanded to encompass a broader process capability for their client resin producers. More than (100) years of experience in logistics, has placed Katoen Natie well ahead of the competition. Lower costs, faster service, and responsiveness to their customer needs led Katoen Natie to install dedusting systems.

PROBLEM

High quality polycarbonate, destined to become precision optical products demands extreme cleanliness. Very fine particles are created during handling of the fragile resin, resulting in “fines” content as high as (500) parts per million, (by weight). The result is a drastic increase of scrap during the manufacturing process. When the User of resins examines the virgin polycarbonate, his threshold of acceptance requires fines content below (50) parts per million, otherwise the load is rejected. Often it costs the Producer more than $2.00 per kg to clean and recover rejected resins. Also, it is difficult to put a price on a negative reputation.

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In 1988, PELLETRON CORPORATION developed and patented a dedusting system for cleaning plastic pellets with dry air, enhanced by a magnetic flux field, which disrupts the static charge attraction. The linear kinetic anti-static gravity DeDuster™ has become world renowned for this process. Cleaning levels as low as 2 Parts per million for dust as small as 0.01 micron are readily obtained with the PELLETRON DeDuster.

SOLUTION

Remove fines, fluff and streamers. The difficulty is that plastic materials are very good insulators of static electricity, therefore attraction of the dust to the pellet are very strong. Washing the pellets with water does a good job, but creates even greater problems by saturating the pellet, and requiring expensive drying process before the pellet can be melted and injected into a mold.

HOW IT WORKS

Plastic pellets are fed into the inlet by gravity, with the stream split equally across the opposing decks. Pressurized air, (2” to 5” of w.c.) flows through the deck openings, stratifying the light dust particles to the top surface of the pellet flow. A magnetic flux field coil, located at the inlet and outlet, project a magnetic field over both primary and secondary decks. This disrupts the static attraction of the light dust particles, allowing them to be easily lifted out of the bed of pellets. The field is pulsing at (50) to (60) Hz, produced by alternating current. This ensures that the wide variation of attractive forces is matched. The pellets gently fall through the DeDuster™ on a cushion of air, to be discharged into receiving silos, or hoppers.

The dust-laden air is drawn out of the DeDuster™ and cleaned in a dust collector. The dust collector discharges the dust into sealed containers for reprocessing.

Since completing the installation and startup, Katoen Natie has had no complaints, and their client producer is elighted by the results. Often the client will ship a truckload of resin to the terminal; for special cleaning, for special customers with above average requirements.

THE INSTALLATION

The DeDuster™ is located above nine silos, and is fed by a dense phase truck unload pneumatic conveying system.

A cyclone separates the pellets, which are fed through an airlock into the DeDuster™.

The DeDuster discharges the pellets into a manual (9) way distributor, feeding each of the nine silos. The silos are supported above a mezzanine bag loading deck. The deck is equipped with openings for gravity loading bulk trucks at grade level below. Filling Trucks at very high flow rates will permit rapid movement of commercial traffic.

INSTALLATION WORK

A JOINT EFFORT OF Katoen Natie and J_Tec Jongerius Group located in Kappellan, Belgium, (PELLETRON's European Distributor) resulted in an excellent operation at minimum expense. News of the success of this installation has resulted in Katoen Natie offering this service to customers worldwide, including a recent installation in Thailand for polycarbonates.