

Cleaning Blast Grit, Ajo, AZ

In the hay day of copper mining and smelting, environmental laws and local codes were non-existent. At one of the most productive open pit mines, copper ore was smelted to produce high-grade copper in a grand scale. The pit had a complex of railroads and the Company had even constructed a town for the workers to reside in. As the ore quality diminished, and environmental laws strengthened, the cost of operations increased and productivity slowly faded, until the mine was closed in the late 60's, early 70's. The town became a retirement community, and the desert slowly reclaimed the land.

As a by product, it was discovered that the slag from the smelting operation had some very desirable characteristics, such as;

Product:

- **Crushed Slag:**
 - 115-lbs/cu ft, density
 - Size range, # 10 to less than, #200 US Mesh
- **Hardness:**
 - When crushed to approx. #50 mesh, it is an excellent surface blasting abrasive. The sharpness and durability provide long lasting reusable grit for high performance cleaning of metals.
- **Inert:**
 - Non-hazardous use in a variety of applications, such as roofing granules
- **Color:**
 - The deep black coloration was perfect for many pigment applications, with the special and undesirable characteristics of carbon black.

THE PROBLEM:

The fine dust seemed to be statically charged, which contaminated the coarse fraction, which was not accepted for blast grit applications, or the dust would foul the adhesive surfaces of roofing materials, resulting in poor adhesion of the granules. Screening dust smaller than 100 micron was difficult, and erosive shortening the operating life of the screening machinery.

PELETRON CORPORATION had the perfect answer for these problems, and conducted a series of tests in their lab to demonstrate the DeDuster™ performance.

SOLUTION:

The test criteria required that the DeDuster™ remove all dust below #100 US Mesh. The fractions were 24 to 30% of the product was less than #100 mesh. The objective was to reduce this to less than 4 or 5%. The test work was successful, and the decision to design the equipment was made. The flow rate of the grit was 15 to 20 tons per hour. The PELETRON P400 DeDuster™ was selected.

APPLICATION:

A belt conveyor to the DeDuster™ feed hopper conveyed grit from the crusher. The cleaned grit was then discharged to a screener, which separated the blast grit size from the roofing granule size, (#120 US Mesh). The separated granules were conveyed to silos for truck loading. A bagging operation was planned for the future.



One of the major concerns in the design was the abrasive nature of the grit. At 7 or 8 on the Mohs scale, (where diamond is rated at 10 and Talc is rated at 1); we knew that the equipment had to be tough for this job. The Engineers decided that lining the DeDuster™ with Alumina ceramic tiles would give us the best protection. The door material was our standard ¼" clear Acrylic sheet for start up, and then we would replace it with a stainless steel plate. The basic mechanical design allows this change with little or no revision.



The dusty air removed from the grit was transported by ductwork to a central BAGHOUSE and exhaust fan, provided by the Customer. The velocity was critical, so a fresh air inlet permitted easy adjustment to control the internal pressure of the DeDuster™.

Operation has been reliable over the years, and Customer satisfaction is good.