

Why choose a dense phase pneumatic transport system to transport abrasive materials?

The case of new and regenerated sand

BACKGROUND

An Italian industrial group, world leader in the steel sector - NTE Process' customer since 1998 - producing cast iron and aluminium components, turned to us to transport different types of new and regenerated sand to storage silos at various distances over 130 meters.

CHALLENGE

New or regenerated sand needs to be transported with a "no purge" system. Too fine sand makes operation difficult with forming machines and increases the use of resins which are an expensive component in foundry processes.

The material is packed in big bags and a ceiling hoist lifts the bags in their position or from storage silos in which space was limited.

Furthermore, also with the usage of pneumatic transport, the hoppers were very close to the ceiling and this situation prevented the installation of filters.

ACTION

The system provided by NTE Process exploits the "No Purge" dense phase technology with Air Assist®. Each propeller directly under the hopper or loading silos.

NTE Process designed this system to operate using the Non-Purge transport concept. The product is loaded by gravity inside the propeller.

With this technology, the line is kept constantly full of product, and the same is slowly transported in



COMPACT FILTER M323



AIRPAD M391



TRANSPORTER UNIT M201

controlled "slugs" to its final destination.

When the engine reaches the maximum level, the fill and bleed valves close, air is introduced into the engine and the transport cycle can begin. When the minimum level in the engine is reached, the vent valves open in sequence, allowing the controlled depressurization of the system to zero pressure (controlled by a pressure switch on the engine), the filling valve reopens and the engine is filled for the next cycle. Furthermore, in the event of an accidental stop of transport, with the tube full of product, the plant is able to restart. The management of the equipment is controlled by our electrical panel with PLC.

ADVANTAGES & RESULTS

- This system allows excellent control of the speed of the product, reducing the operating pressures and the consumption of transport air.
- It significantly reduces the wear of the pipes and in particular of the curves, due to the transport of abrasive materials.
- The loaded and transported product maintains its granulometric and quality characteristics
- With this system, the final washing of each transport cycle is eliminated and the pipes are kept constantly full of product. The cleaning cycle is performed only at the end of the shift / campaign.

CONCLUSIONS

In general, abrasive materials cause wear, which increases with the speed of a pneumatic conveying system. This is why to adequately transport this type of material it is necessary to reduce the transport speed to a minimum. This process is typically carried out using pneumatic transport in the dense phase. In this field, turning to a supplier who has experience with a specific type of material is essential. At our Innovation Center it is possible to carry out tests on a 1:1 scale to touch the advantages of these solutions and obtain reliable data on the advantages deriving from each process.



DENSE PHASE TECHNOLOGY WITH AIR ASSIST[®]

ABOUT NTE PROCESS

NTE Process is the Single Source Provider of process solutions for the industry ranging from pneumatic conveying in dense phase to mixing, but also liquid injection, drying, atomization and in-line formulation, up to packaging.

The headquarters is in Gorgonzola, while in Pessano con Bornago there are both the second headquarters which includes the Workshop and NTE Scientific Hub, where a team of specialized engineers deals with R&D and carries out full scale and scientific tests.

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