



Cement powder is unloaded with the T4 Bulk Bag Unloader, moved out of the hopper with Dual Flexible Screw Conveyors to a vertical Aero Mechanical Conveyor.



A vertical Aero Mechanical Conveyor moves cement powder from dual Flexible Screw Conveyors to a second Aero Mechanical Conveyor that extends through the building roof to an outdoor storage silo.

Customer Requirements

Access Security Products Ltd. is a leading manufacturer and supplier of burglary and fire resistant safes, vaults and physical security equipment. The company uses an expensive proprietary cement mixture in the walls of their safes and vaults rendering them almost impenetrable to thieves and fire.

The material is a fine powder, which arrives by container quite compacted, has very poor flow characteristics, bridges easily, is very abrasive and readily absorbs moisture. The cement is packaged in twenty 2,000lb/ 900kg single trip, single loop, lined bulk bags which must be emptied into a large outdoor storage silo.

Access Security had initially purchased a \$40,000/ £30,500 pneumatic conveying system from another supplier but the cement material accumulated within the conveying tube rendering the conveyor completely inoperable. After working with the vendor for some time without resolution, Access Security ultimately had no other choice but to scrap the equipment and find an alternative conveying solution.

SYSTEM REQUIREMENTS:

- Provide a completely closed robust system that could reliably convey their cement material without material build up and excessive wear on equipment.
- Accommodate bulk bag unloading inside the company's warehouse but convey the product through the roof, outside the building and into a large outdoor storage silo 40'/ 12m away.
- Operate reliably and consistently in temperature and weather extremes typical in the Ontario, Canada region.
- Provide a dust-free solution to minimize exposure to moisture in the environment and to provide a clean and safe work environment for employees.
- Successfully unload the 2,000lb/ 900kg single loop, lined, single trip bulk bags within 30 minutes or less.
- Incorporate appropriate discharge aids to encourage material flow: side massage, bottom massage and agitation.
- Offer proof that the recommended solution will work before purchase.

Materials Testing

Due to the characteristics of the particular cement mixture and the frustration the customer had previously experienced, Spiroflow experts recommended that it be tested in the company's test lab.

President Peter Gauthier commented, 'Having our cement powder thoroughly tested was a vital step in the process. It gave us confidence that Spiroflow's recommended solution would work as specified.' Additionally, Spiroflow has long guaranteed any powder handling solution tested in their lab. The company's performance guarantee also gave us piece of mind,' added Gauthier.



The Aero Mechanical Conveyor transfers material into an outdoor silo.

Spiroflow Solution

Spiroflow recommended their T4 Single Trip Bulk Bag Unloader, a combination with Flexible Screw and Aero Mechanical Conveyors, and a Control Panel.

- The T4 Bulk Bag Unloader has a pneumatic bag piercing knife to cut open the bottom of each single trip bulk bag.
- It has a dust evacuation frame supplied with a rubber dust seal membrane located inside the support dish for optimal dust control.
- The unloader was supplied with four-corner massage and vibration to encourage material flow.
- Additionally, ft to mm the pneumatic bag piercing knife serves to encourage material flow by breaking up compacted material in the bottom of the bulk bag.
- Dual Flexible Screw Conveyors, only 3ft /.9m in length and positioned at a 45° angle, are fitted to the bottom of the Bulk Bag Unloader.
- These conveyors utilize Proscrows to move the material out of the discharge hopper. Proscrows have a beveled profile ideal for conveying poor flowing material and their semi-rigid construction enables steep conveying angles without bends.
- The dual Flexible Screw Conveyors deliver the fine cement powder out of the bulk bag unloader into a vertical Aero Mechanical Conveyor which is 4in/ 100mm in diameter, 13'/ 4m long and positioned vertically.
- A second Aero Mechanical Conveyor, 40'/ 12m long and positioned at a 33° incline, moves the cement material from the vertical conveyor, through the roof, and outside the building into the outdoor storage silo.
- A NEMA 4 Certified Control Panel was provided and operates the entire system.

The Result

Once installed and commissioned, operators at Access Security report that the new powder handling system works beautifully. The system is reliable, operates just as promised and performs at twice the required rate - all without material build up. The closed system keeps the cement powder dry and contained resulting in minimal product waste and a clean, safe environment for employees.

Peter Gauthier reported, 'Spiroflow's equipment handles our cement powder quite well and actually empties each bulk bag in only 15 minutes. Our goal was to empty each 20 ton container in 10 hours and we have cut that time in half!'

How Can Spiroflow Help Your Business?

Contact us today to discuss your specific applications and needs.