

Gentle emptying of powder tankers

Gericke of Switzerland has successfully designed a pneumatic conveying system for discharging delicate powders and granulates from road tankers, and has also introduced a similar system for unloading product from dry bulk container liners. Several other recent pneumatic conveying developments are also itemised.

Retention of powder characteristics such as bulk density and particle size is important in many processes and requires the use of low speed dense phase pneumatic conveying systems. The purpose of such a system is clear: high value-added base powders or granules should not be destroyed during transport, since breakdown of the particle size can reduce the performance of the plant and can also generate an explosion risk or change process parameters.

Gentle conveying is a typical requirement in the food industry and the detergent manufacturing industry. Whereas pneumatic conveying systems within process plants can be easily designed for gentle conveying often less focus is given to unloading bulk tankers where due to the higher rates of discharge significant degradation of the product can occur.

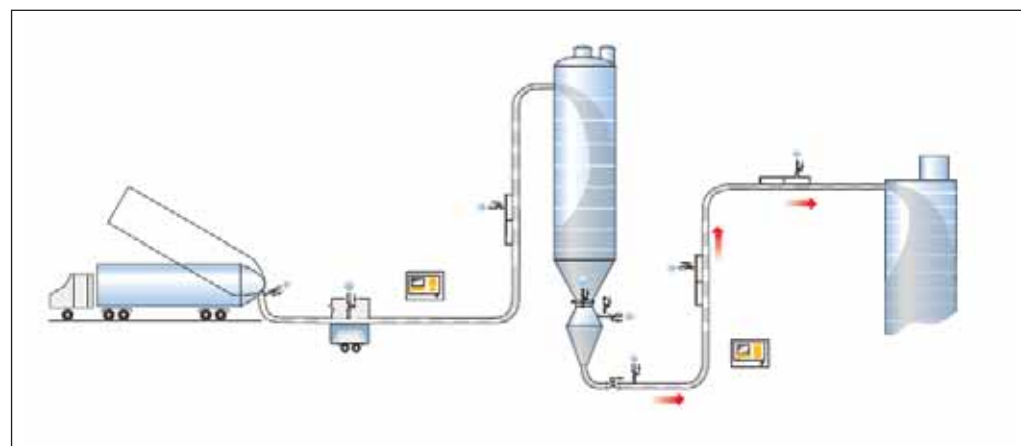
Gericke has developed a mobile conveying unit, which can be coupled between tanker, and silo, which allows the truck to be discharged with minimal attrition of the powder or granules, thereby preserving the quality of the raw material.

receiving hopper over a distance of 80m. A very important feature is the gentle conveying process designed to preserve the integrity of the product. The system has to run reliably in all weather conditions and the economic use of conveying air was an important factor for the positive energy balance of the factory.

The Gericke solution consists of a mobile unit that combines the pneumatic air manifold and the STP 51 controller to operate the conveying system. When the vehicle arrives, the mobile unit is moved to the truck and connected with the product outlet of the tanker and the silo pipeline. Pressurised air is applied to the manifold.

The difference from other systems lies in the advantages of the advanced Gericke Mobile PTA Pulseline® conveying technology. It allows a controlled discharge within specified limits of gas consumption and a low conveying velocity in the region of 5-8m/s.

Positive result and achievements



The schematic shows the bulk tanker with the mobile conveying unit Gericke Mobile PTA Pulseline®. Below the silo a dense phase conveying vessel transports the product to the receiving hopper.

Typical recently delivered case study

This relates to the detergent industry where there was a requirement to discharge Natriumperborat Tetrahydrat delivered by a 30 m³ bulk road tanker. Using a 21m pipeline the product is conveyed to a 12m high silo at a rate of 10m³/h. The product is then transported to the

As a result, the new discharge unit has reduced the amount of fine particles of Natriumperborat Tetrahydrat by more than 15%, compared with the old system. The investment has therefore



Gericke Mobile PTA Pulseline® mobile conveying unit for bulk materials.



Mobile bulk container emptying unit with Rotaval® rotary valve.



provided payback within a very short time.

The gentle pneumatic discharge and conveying from bulk vehicles has been applied to detergent ingredients, health products (coated enzymes), chemical base powder, quartz powder, dolomite powder, marble sand, sugar, salt, and many more products.

Other types of bulk truck unloading systems

The recent increased demand for use of containers fitted with dry bulk liners has motivated Gericke to innovate a mobile discharge unit that links to the outlet nozzle of the liner and allows reliable emptying of the container. This unit includes the pneumatic air manifold, the rotary valve to introduce the powder into the pipeline and venting of the liner.

Rotaval Ltd, a Gericke Group company specialising in design and manufacture of rotary valves, has developed a valve specifically for use with road powder tankers. The BSV is a lightweight purpose-built seal designed for chassis mounting on bulk road vehicles having an integral blower. The BSV is fitted with a hydraulic motor, which is powered by the vehicle's hydraulic system. The design provides a discharge range of products at around 20t/h. Gericke has been supplying pneumatic conveying systems for bulk materials for over 50 years.

www.gericke.net

Other recent pneumatic conveying developments

Valves can be cleaned without dismantling

Coperion Waeschle of Weingarten, Germany, recently introduced what is believed to be a world first: rotary and diverter valves with CIP (cleaning-in-place) capability which can now be wet cleaned in situ fully automatically. This patent-pending development allows operators of food-grade bulk handling systems to meet the most stringent hygiene standards with only negligible loss of available capacity.

www.coperion.com

Quayside pneumatic handling of Icelandic cement

In November Air-Tec system of Italy installed a high-capacity pneumatic conveying pipeline for handling cement at the Port of Akureyri, Iceland. The system, a TPA600 Full Pipeline with a capacity of 1700 litres, transfers the imported cement from a quayside bunker at a rate of 20t/h to three silos over a distance of 120m. Air-Tec system claims to have 2000 pneumatic conveying installations currently operational worldwide.

www.air-tec.it

Long-distance pneumatic conveying of dextrose

J-Tec Material Handling, based in Kapellen, Belgium, recently built a test rig which included a 1000m pipeline to demonstrate to a potential client that dextrose powder could be pneumatically conveyed over this distance cost-effectively and without damage to the product. This resulted in J-Tec being awarded a contract to supply a pneumatic conveying system to transfer dextrose powder over a distance of 750m.

www.j-tec.com

New modular Y-valve avoids air leakage

UK-based Vortex Valves Europe has introduced a new Wye Line Diverter of modular construction. There is no need to shut off the blower when operating the valve and, when compared with a flapper-type diverter, the Wye Line is said to lose on average almost 2000 times less air through leakage. This results in vastly increased process efficiency. Even the minimal maintenance requirement is performed with the valve in-line (see also p7 for further information and picture).

www.vortexvalves.com

