

Trantec collaborate in cutting edge carbon capture research

Established for over 20 years, Trantec Solids Handling Limited is a leading supplier of Powder Dosing and Metering equipment to the worldwide Solids Handling industry. With considerable knowledge and expertise in the design and manufacture of Metering Feeders, Flexible Screw Conveyors, FIBC Dischargers, Powder Samplers and Replacement Parts, Trantec were selected by PMW Research to assist with their carbon capture project in conjunction with the University of Chester.

PMW Research, based in West Yorkshire, has recently been awarded a PhD studentship by the University of Chester's Eco-Innovation project. The scope of the doctoral project includes experimental work on a novel process that uses a moving bed of stainless steel pellets. The aim is to use the process to separate pure carbon dioxide from exhaust gases for use in other processes such as plastics manufacture.

A key part of the process is to transport the dense bed material from ground level to the top of the equipment, automatically. Paul Willson of PMW Research needed a supplier with the skills and knowledge to offer a conveyor suitable for the application. Speaking to Gareth Harrison at Trantec, Paul realised this company had the experience, technology and can-do attitude needed for the unusual application and it was suggested that a Flexible Screw Conveyor would be the most effective way of transporting the material.

Flexible Screw Conveyors offer efficient, low-cost transport of powders and dry bulk solids, conveying materials such as very fine powders, granules, flakes, pills and large pellets for the food, pharmaceutical, chemical, plastics and environmental industries. Whether the material is free-flowing or poor-flowing, Trantec produce Flexible Screw Conveyors for the most demanding applications, offering standard and tailor-made units, which can be seamlessly integrated into your existing process. With the choice of stationery and mobile units, in stainless steel or mild steel, we offer customized, interchangeable components including Spiral, UHMWPE Tube, Motors, Hoppers, Controllers, Sensors and more.

Before work could start, Gareth at Trantec needed to know more about the material properties and the equipment specifications. It is important to work with our customers to establish all requirements, to enable us to produce a cost-effective solution that works. Trantec's Flexible Screw Conveyor would need to transport 1.5mm stainless steel balls, normally used for shot peening, to a height of approximately 2 meters, in a highly controlled manor. To determine the optimum configuration, we requested samples of the material for testing.

The requirements

Material Specifications:

Material:	Stainless Steel Shot
Particle Size:	1.2-1.7mm in diameter
Bulk Density (Kg/Lt):	4.8-5.0
Moisture Content:	Nil
Oil/Fat Content:	Nil
Operational Temperature:	20 degrees C
Corrosive/Reactive:	No
Hazardous/Explosive:	No

Machinery Specifications:

Throughput:	Minimum 360kg/h
Angle of Repose:	45 degrees (estimated)
Storage Capacity:	N/A
IP Rating:	55
Contact Materials:	304 or 316 stainless steel, UHMWPE, GFPTFE
Non-Contact Parts:	304 stainless steel
Weld Finish:	Inside product contact: Welds as laid Outside: Welds as laid
Electricity Supply:	1Ph & neutral, clean interference free
Control:	Variable speed inverter input 240v AC single phase, turndown 6:1 in enclosure with speed adjustment knob and/or with isolated connection for external speed setting, matched to rating and voltage requirements of drive motor.

At Trantec, we have the facility to carry out tests for dosing, metering and conveying the most problematic materials. We put together a Flexible Screw Conveyor, identical to the model we had in mind for PMW Research and began the trials. The estimated throughput required was 360kg per hour, we began with a low speed to establish how the material would convey through the tube. We timed a series of runs at various speeds and we soon learned that the

material was very free-flowing and successfully achieved the throughput and accuracy required. We could now produce our Flexible Screw Conveyor, using our standard T4 Round Spiral and Tube.

Four weeks later the conveyor is being assembled into the rig structure at the University of Chester's Thornton Science Park.

Paul Wilson of PMW Research said, "*We're delighted with Trantec's support and looking forward to getting our experimental work under way, confident that the conveyor will do all we ask of it.*"