

The Bulk Powder Handling Industry is known to be problematic and therefore requires safe, reliable, durable equipment. At Trantec, our most recent challenge was to design, manufacture and supply a FIBC (Flexible Intermediate Bulk Container) or 'Big Bag' Discharger for a new client who use combustion as part of their industrial process.

Industrial processing is an important part of economic development however, it can have a negative effect on the environment. Industrial combustion releases harmful gases, such as carbon dioxide and sulphur dioxide into the atmosphere, polluting soil, air and water. This process can cause health issues, climate change and much more. However, by implementing new systems into this process, emissions from industry can be significantly reduced, which is why our client came to Trantec.

As part of their project, our client wanted to introduce Dry Flue Gas Scrubbing into their process, to reduce the carbon emissions. Dry Scrubbing is an extremely effective way of neutralising acid gases from combustion sources by adding an alkaline material, such as lime or sodium bicarbonate into the gas flow. A safe, efficient way of introducing the alkaline material into this process is by using equipment such as a FIBC Discharger.



### The Challenge

Our challenge was to design, manufacture and supply the FIBC Discharger with metering feeder seamlessly integrated into the process system. Modular in design, our FIBC Discharger would deliver high accuracy, environmentally friendly dosing of Sodium Bicarbonate, whilst maintaining complete safety.

Trantec, based in Clayton-le-Moors in Lancashire, have over 20 years of experience supplying equipment for the Materials Handling Industry, producing custom-made powder handling solutions to industries world-wide. Rapidly expanding over two decades, Trantec grew from a small, family-run business into one of the UK's leading manufacturers of metering, dosing, and filling equipment, supplying industries such as food, pharmaceutical, chemical, plastics and environmental. We were therefore well placed to assist our new client with their project.

### The Specifications

Modular in design, our FIBC discharger would ensure complete discharge of the FIBCs (Big Bags) under controlled, dust free conditions. Configurations are determined by product flow properties and application specifications, it was therefore important that we worked closely with our client during the design process to establish what the material and the machinery specifications were.

The material (Sodium Bicarbonate) - an estimated bulk density of 600-800 kg/m<sup>3</sup>. The angle of repose was estimated at 45 degrees with an operational temperature of 25 degrees C. There was no moisture or fat/oil content and it was not hazardous or corrosive.

The machinery requirements – an estimated throughput of 2 kgs/hr with accuracies of +/- 3%/hr. The storage capacity of the metering feeder was

estimated to be 10 litres with an IP rating of 55. The contact and non-contact materials were to be made from mild steel, painted with inside welds as laid.

### The Solution

#### **The FIBC Discharger would consist of –**

Support Dish with Floor Mounted Frame  
Lifting Frame designed, and proof load tested to 1000 Kgs SWL, complete with FLT channels, painted yellow.  
Tensioning Support Side Frames with telescopic twin arms, spring loaded to urge the FIBC upwards, elongating it to aid product discharge.  
Neck Access Door, hinged with door peripheral seal and closure catch.  
Adaptor Chute and Feeder Extension Hopper.  
Silicone Membrane seal mounted in upper section of support dish to provide extra sealing capability.

#### **The integrated Metering Feeder would consist of –**

Product Containing Chamber, providing approximately 10 litres of storage capacity  
Auger Screw 25mm in diameter (driven by AC direct drive motor and gearbox).  
Product Agitator (driven by AC direct drive motor and gearbox).  
Removable Front Access Panel with feed tube approximately 100mm long from feeder to front panel.  
Replaceable Double Set Nitrile Shaft Seals



### The Benefits

Modular design can be seamlessly integrated into your existing system  
Cost Effective Solution to your Material Handling requirements  
Safe Handling of 'Big Bags'  
Environmentally Friendly (Dust Free)  
Easy and safe to use  
Low Maintenance  
Robust, Durable construction

For materials that are difficult to discharge from the big bag, an optional Discharge Aid can be fitted, for example pneumatic Massage, comprising of 2 off Pneumatic Rams mounted on side frames astride the FIBC to push the sides and break up the material, including a simple "blind" pneumatic control system to accept input from main plant PLC.

For applications requiring the delivery of materials for the food & pharmaceutical industries, an alternative construction of stainless steel 304 or 316 would be used for all contact parts, in compliance with all EC and FDA food contact regulations.

For further information, please contact Gareth Harrison on +44 (0)1282 777566, or email [sales@trantec.info](mailto:sales@trantec.info). You can also visit our website at [www.trantec.info](http://www.trantec.info).