Logistical challenge

Atchison Topeka is blown away by Flexicon’s performance

Behind the scenes of the food processing and manufacturing industry lay some less high profile names whose input is critical to many of the food manufacturers who, without their contribution to the supply chain, would find themselves hard-pressed to get product to market with an efficiency and quality they presently enjoy. Such is the effect of third party logistics companies such as Atchison Topeka (AT), major players in the business of food ingredient transportation and warehousing.

Atchison Topeka has been at the front line of food ingredient logistics, warehousing and quality assurance for more than 20 years. Numbered among its impressive client list are major blue chip companies who rely upon AT to receive raw materials in 1-tonne bulk bags on its behalf in order to deliver by road tankers to its manufacturing centres nationwide.

In 2008, AT re-engineered its business and saw the development of a brand new, state-of-the-art, centralised, single operational facility located in Droitwich, Worcestershire, eliminating the warehousing units spread around the UK. Critical to the development was the desire to achieve BRC (British Retail Consortium) certification to cover the three main disciplines – bulk tankers, warehousing and palletised distribution.

As part of that process AT turned to bulk solids handling specialists Flexicon (Europe) to commission a system to move substantial volumes of powder materials from bulk bags into bulk road tankers with speed and efficiency and in a food safe manner.

After due consultation and product performance assessment in Flexicon’s test laboratory in early 2009, a totally enclosed, positive pressure, dilute phase pneumatic conveying system was installed at the Droitwich facility. Such a system tickled all the boxes to contend with material characteristics, source and destination, conveying parameters, location and costs.

The system was constructed with all contact parts in Stainless Steel Type 304 with a food quality finish. It comprises a positive displacement pressure blower, Type BFC discharge frame, two hoppers – one to receive raw material for transfer into the process - the other to discharge returned dust waste, a filter receiver and control system. Various rotary airlocks, steel line sections, flow assist accessories and an electrical hoist with cruciform completed the plant.

With the aid of a fork lift truck a single operative now retrieves a 1-tonne FIBC (Flexible Intermediate Bulk Container) from storage and positions the bag adjacent to the bulk bag frame. The four bag loops are then attached to the four Z-Clips on the cruciform connected to a dedicated electrical hoist. This enables the bag to be raised and accurately placed within the frame. The bulk bag/hopper interface consists of a manual Spout-Lock clamp ring positioned above a pneumatically actuated Tele-Tube telescoping tube. Together, the devices enable an operator to make a quick, dust-tight connection between the bag spout and hopper, and to automatically elongate the bag as it empties to promote flow and evacuation.

By simple, push-button control the Tele-Tube telescoping tube raises the Spout-Lock clamp ring assembly allowing the bag spout to be pulled through the ring and connected. It then lowers and seals the clean side of the bag spout to the clean side of the telescoping tube and continues to lower until the bag spout is pulled taut. Once the bag spout is united the telescoping assembly exerts continual downward tension on the spout, elongating the bag as it empties into the receiving hopper. The high-integrity, dust-tight seal between bag spout and clamp ring allows full-open discharge from the bag with no risk of dust inhalation by the operative.

The materials for transfer have similar bulk densities (660kg/m³ & 640kg/m³) and are generally free/semi-free flowing with an angle of repose of 40-60 degrees. One powder however, is hygroscopic and has a tendency to bridge and cavitate. It
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