

# SOLIDS & BULK HANDLING



**Move it.  
Process it.  
Distribute it.  
Easy.**

**FPE launches SuperFlow.**  
See pages 8 & 9

# Bags of safety

## Bulk bag unloader upgrade improves safety and productivity at speciality chemicals company

ArrMaz Custom Chemicals produces speciality chemicals for the mining, water treatment, fertiliser, asphalt and construction industries at its 18,580 sq m manufacturing facility in Mulberry, FL. Since its beginning as a phosphate producer in 1967, the company has introduced numerous products and expanded its markets into 70 countries.

In addition to extensive quality control and customer service programs, the company has implemented a "Total Safety Culture" to protect its employees and the subtropical ecosystem of central Florida. In a number of ways ArrMaz goes beyond OSHA and environmental regulations in operating the majority of its open air manufacturing facility under a roof to provide safe working conditions while minimising storm water run-off.

### Adding bulk resin to an agitated tank

One ArrMaz product is a resin soap called Arr-Muls, used as an emulsifier in slow-setting asphalt and as an air-entrainment agent in masonry cements. The process uses heat and agitation to dissolve a solid resin into sodium hydroxide or potassium hydroxide to produce an aqueous soap solution.

To transfer the solid resin from kg sacks, ArrMaz originally installed a Flexicon, manual bag dump system comprising a hopper with a dust collector, and a 6.7 m flexible screw conveyor to discharge the resin into a 22,700 L tank. Each 9090kg batch of resin, represented 400 sacks that required lifting, slitting and dumping by the operator.

In 2008, it was decided to retro-fit a low-cost bulk bag unloader to the bag station and so minimise the manual handling requirement. This helped prevent potential injury and other

health hazards associated with the handling and disposal of bags and presented the further benefit of minimizing waste.

The Flexicon flexible screw conveyor was retained since it is not only well suited for use with a bulk bag discharging station but also has handled the resin effectively despite the material's tendency to interlock and degrade. The existing dust



Forklift operator positions bag lifting frame on top of the bulk bag unloader

collection exhaust system was also retained but moved from above to beside the hopper to allow positioning of bulk bag spouts directly above the hopper.

The new hardware consists of a four-post unloading frame, at the top of which is a cradle with wide receiving cups supporting a removable bulk bag lifting frame that is lifted and positioned using a forklift truck, allowing operators to connect full bags and disconnect empty bags at floor level.

A conventional iris valve located above the existing manual dumping hood prevents material flow from the bulk bag until the bag tie has been untied. It then allows controlled discharge of the bulk resin into the hopper which feeds the flexible screw conveyor.

The frame is also equipped with spring-loaded Pop-Top bag extension devices that raise the bag-lifting frame and elongate the bag as it loses weight, promoting the flow of material from the corners of the bag through the bag spout.

Simultaneously, pneumatically actuated Flow Flexer plates raise and lower opposite bottom sides of the bag into a "V" shape at timed intervals, loosening agglomerated material and directing it through the bag spout.

With the new system in place, ArrMaz Custom Chemicals began sourcing 99+ % of its resin in 1,000 kg bulk bags, which are discharged in their entirety and supplemented with manually dumped 22.7 kg sacks to achieve target batch weights of 9090 kg. The bulk bag unloading capability has cut resin loading time from about 60 minutes down to 15 and by retaining the original bag dump station system, accurate batch weights are achieved without investing in an automated weigh batching system. For more information contact Flexicon on tel: 01227 374710 or visit: [www.flexicon.co.uk](http://www.flexicon.co.uk)



Cradle at top of the bulk bag unloader supports the removable bulk bag lifting frame