Lime and Soda Handling System

Case Study 21:
STB completed a Lime and soda handling system for a leading chemical technology company based in Essex.

The system was designed to maximise output at the company’s new site.
STB Engineering have over 40 years experience working with the major Lime Industries. Equipment includes: silos, conveying systems, receivers, weighing and feeding.

We provide complete turnkey solutions including design, manufacture and installation.

One of the large systems we have designed recently was for a leading chemical technology company in Essex, wanting to increase capacity. They had moved to a larger site and we designed, manufactured and installed a complete lime handling system for them.

This included a silo to store 40 tonnes of hydrated lime and a vacuum transfer conveying system feeding a loss in weight feeder, discharging to an extruder.

Conveying System
Rotary valve fitted with an expansion hopper and ‘no flow probe’ to feed the conveying system.

Receiver vessel fitted with reverse jet filter, high and low level probes and an automatic discharge valve.

A loss-in-weight feeder with extension hopper and flexible inlet connected to the receiver discharge valve.

A 5.5 kW exhauster unit complete with vacuum switch.

The silo is emptied using a vibratory bin activator operated when a “no flow probe” in the rotary valve expansion hopper below the bin activator outlet is uncovered and runs until probe is covered.

The rotary valve gives a controlled feed of product from the silo into the conveying line.

System Components:
Silo

- 40 tonne, carbon steel, painted silo
- complete with reverse jet filter, pressure switch, low, high and extra high level probes and ultrasonic continuous level transmitter
- Silo outlet isolation valve 200mm dia manually operated
- Tanker fill line with control valve: Bin activator 1.8m dia with vibratory motor
**Operational Sequence**

**Storage Silo**

Hydrated Lime is delivered by road tanker and the silo is loaded using the vehicle’s on board blower.

**Silo filling sequence:**

The tanker driver connects the tanker hose to the unicone connector on the fill line, and when ready the driver presses the start push-button.

Providing the emergency stop is healthy, the silo high level probe is uncovered, the silo pressure switch is healthy and the filter differential pressure switch is healthy, the fill line valve opens.

40 tonne silo leaving our factory in Stroud, Gloucestershire (above) and being craned into position on site (below).

The reverse jet filter starts when the fill line valve is proved to be open.

After a short time, the fill line valve closes and when proved closed stops the reverse jet filter after a pre-set run on time.

**Vacuum Conveying from Storage Silo to Lime Feeder**

The Lime is transferred from the silo to a receiver mounted above a loss in weight feeder using a negative pressure (vacuum) pneumatic conveying system.

The loss in weight feeder calls for a refill and the product discharges from the receiver to the feeder.

The receiver then calls to be topped up using the pneumatic conveying system.

When the high level probe on the receiver is reached the pneumatic transfer system shuts down on a run down sequence.

This system has now been operational for the last 2 years and has successfully fulfilled the client’s main aim of increasing capacity.

We put in two silo bases at the site and it is expected that as output increases further we shall be back for a secondary installation.

If you would like to discuss how STB could help you with planning a similar installation, or make changes to an existing system, please do not hesitate to contact us.
STB Engineering Ltd was founded in 1969, and had soon established itself as one of the UK’s leading Bulk Materials Handling and Pneumatic Conveying specialists.

STB’s success is the result of combining innovative and cost effective design concepts with the highest quality of engineering technology, all brought together by having the advantage of decades of in house engineering design and manufacturing experience.

We specialise in:
- Pneumatic conveying systems (dilute and dense phase)
- Weighing and feeding
- Storage and discharge
- Big bag and sack handling
- Control systems
- In house: project design and management, manufacture, installation and commissioning.

STB offer a total, end to end, in house solution for bulk materials handling, giving one point of contact and a system tailored to suit each specific application.

Using the latest Solidworks & AutoCAD design packages we manufacture our silos, vessels and conveyor systems in our purpose built factory in Stroud, Gloucestershire.

We are an ISO 9001 Quality Assured Company.

The people at STB are passionate about what they do and take great pride in their work. Our engineers have many years experience in solids handling and a thorough understanding of our customers’ process needs and objectives.

Our dedication and commitment to our customers is at the forefront of everything we do which is why our customers keep coming back to us.

“Engineers who do what they say they will do”