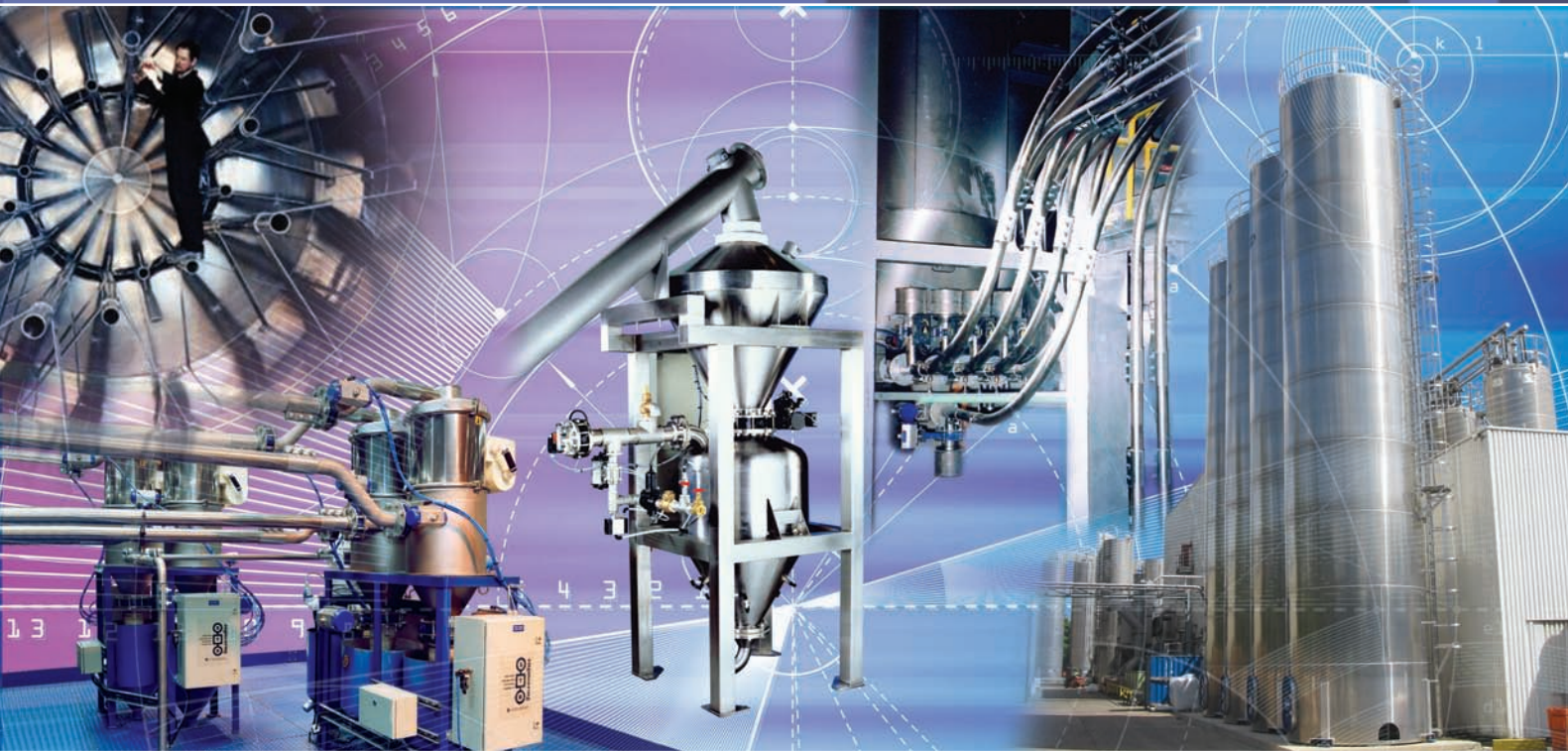
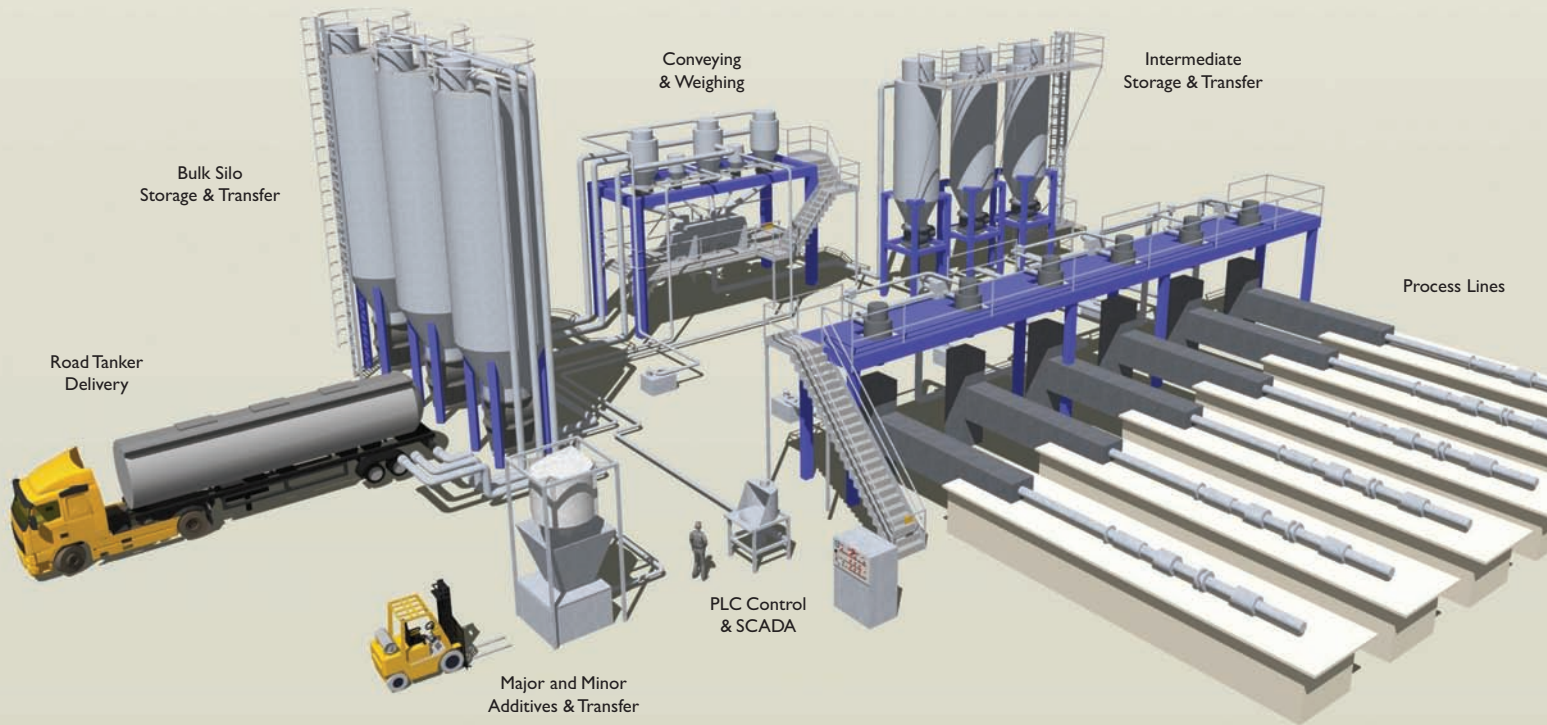


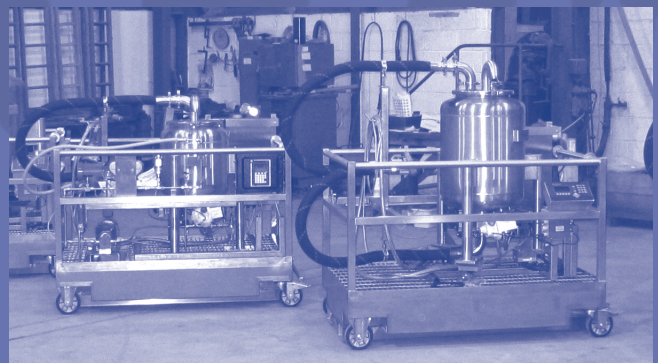
Bulk Materials Storage & Conveying



Pneumatic Conveying and Handling Systems for
the Food, Plastics & Chemical Industries



A TYPICAL STB BULK MATERIALS HANDLING SYSTEM



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Welcome to STB Engineering

ABOUT US:

STB Engineering was founded in Stroud in 1969, pioneering the development of Dense Phase conveying technology and silo manufacture. The company soon established itself as the UK's leading Bulk Materials Handling and Pneumatic Conveying Specialists.

STB is supplier of choice to some of the major Blue Chip PLC Companies in the Plastics, Food, Chemical, Mineral and Pharmaceutical industries.

We are an ISO 9001 Quality Assured Company and are proud to have been awarded Supplier of the Year by a well known blue chip company.



WHAT WE DO:

STB offer a total end to end in house solution giving you one point of contact and a system tailored to suit your specific application.

- 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

OUR PEOPLE:

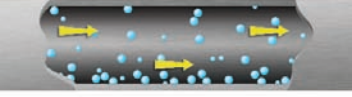

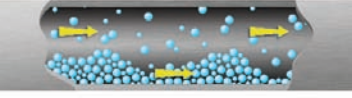

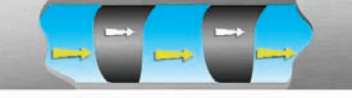





Our engineers have many years experience and a thorough understanding of our customers' process needs and objectives.

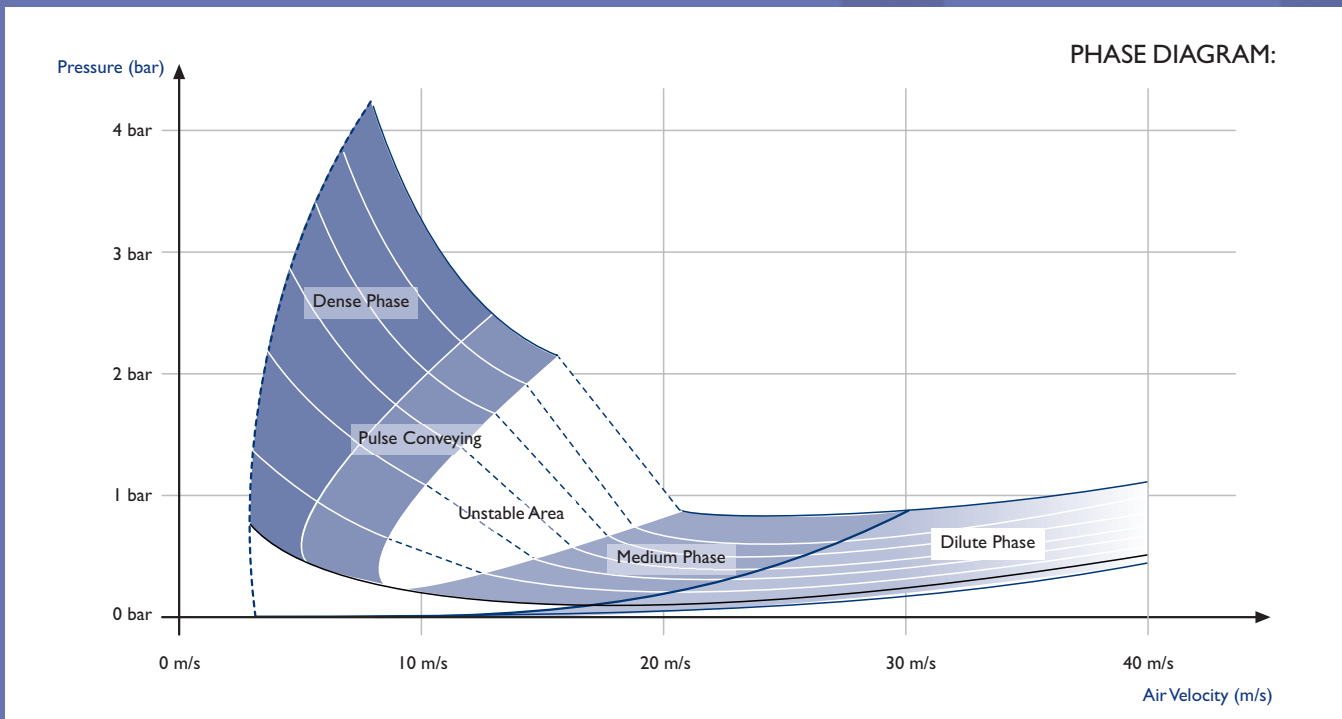
We have a programme of continuous product development and improvement which has kept us at the forefront of the bulk materials handling industry for 40 years.

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.



Pneumatic Conveying Regimes

GRAPHICAL VIEW	CONVEYING METHOD	SPEED (M/S)	CONVEYING PRESSURE
 	<p>Dilute / Lean Phase: For most products in powder, flake or granular form. Particles are fully suspended in the air stream. Positive pressure - blowing system, negative pressure - vacuum system.</p>	18 - 35 m/s	Pressure System up to 1 bar. Vacuum System up to 0.5 bar.
 	<p>Medium Phase / Low Velocity: For most products in powder, flake or granular form. Particles are partially suspended in the air stream with a bed of moving material.</p>	8 - 18 m/s	Pressure System up to 1 bar. Vacuum System up to 0.5 bar.
 	<p>Pulse Phase: For cohesive powders. Plugs of material fill the entire cross section of pipe, an air knife injection system breaks up the plugs and reduces the risk of complete pipe plugging.</p>	4 - 10 m/s	Pressure System up to 4 bar.
 	<p>Pulse / Dune Flow: For regular granular products. Product flows in a pulse or wave. The air stream is precisely controlled using an intelligent PLC monitoring system.</p>	4 - 15 m/s	Pressure System up to 2 bar.
 	<p>Dense Phase: For fluidizable powders and fine granules. Conveying with high product to gas ratio. Takes advantage of the fluidisation and air retention of certain materials.</p>	4 - 10 m/s	Pressure System up to 4 bar.



Conveying : Dilute Phase

BLOWING SYSTEMS:

The simple positive pressure or 'Blowing' system is the most elementary of all the pneumatic conveying systems with the product being totally suspended in the air stream. These systems generally comprise a blower or fan delivering air into the pipeline, a feed device to entrain the product into the conveying air and a filter or air separator to remove the product from the air at the receiving hopper.

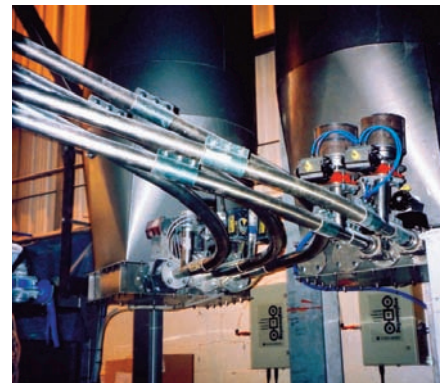
- Conveying pressures up to 1.0 barg.
- Low product / air ratio, generally up to 15:1.
- Conveying velocities 18 to 35 m/s.
- Complex systems conveying to multiple delivery points possible using diverter valves.
- Closed loop conveying and low velocity conveying systems.



VACUUM SYSTEMS:

Negative pressure or vacuum transfer systems generally comprise similar equipment to the positive pressure system. Vacuum systems have an advantage that any system leakage is inward, so the escape of dust into the atmosphere is much reduced.

- Conveying pressures to -0.5 barg.
- Low product / air ratio, generally up to 15:1.
- Particularly suitable for conveying from multiple sources to a single point.



Conveying : Medium Phase



Medium Phase conveying is where the air volume / air velocity is reduced and the concentration of the product to air is increased.

The particles stream moves towards its saltation velocity - the point at which particles begin to drop out of the air stream and start to form a moving bed of material in the base of the conveying pipe.

Air velocity can be controlled via an intelligent speed control system controlling the blower output. Most of the particles travel in suspension at low velocity above the moving bed of material.



- Conveying pressures up to 1.0 barg.
- Medium product / air ratio, generally 15-30:1.
- Suitable for fragile or friable materials.
- Conveying velocities 8-18 m/s.

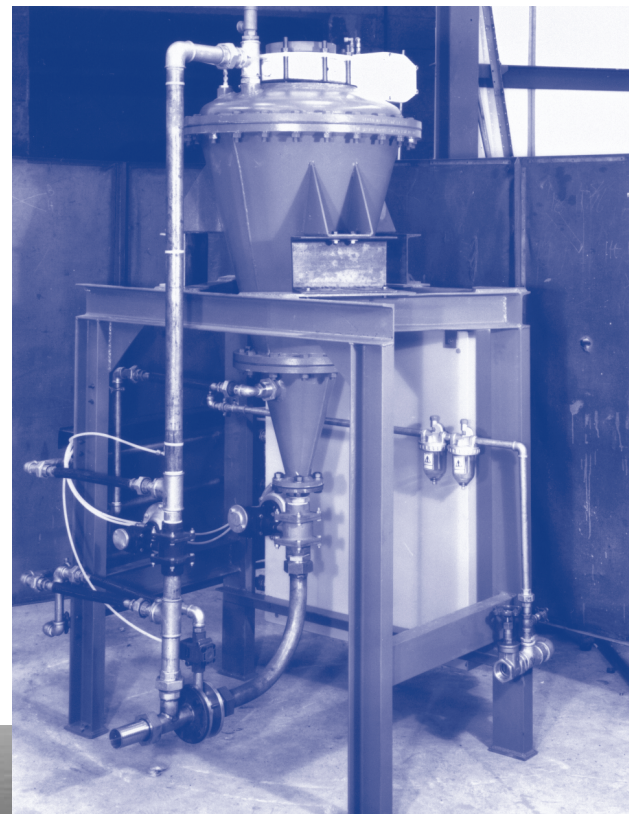
Conveying : Pulse Phase

The pulse pump was developed as an efficient solution to the problems of pneumatically conveying cohesive powders.

The pulse pump separates the product into discrete 'plugs' of powder and air in the pipeline. It does this by using an air knife system, enabling the product to be easily transported, with the product sliding through the pipeline rather than particles being fully suspended in the air stream.

The pulse pump enables the following gains to be made:

- High product / air ratios of up to 500:1.
- Smaller pipelines can be used.
- Low conveying velocities.
- Reduced pipeline wear.
- Reduced product degradation.
- Low air volumes, reducing receiving vessel air filter size.
- Low air consumption, hence reduced operating costs.
- Conveying rates up to 10 tonne/hr
- System can be arranged for continuous operation.



Conveying : Pulse Flow

Pulse Flow or Dune Flow conveying is used to convey regular granular products that need to be handled gently.

Transfer rates up to 20 tonne/hr can be achieved and conveying velocities as low as 4m/s.

Product flows in a pulse or wave over a moving bed of materials. The air stream is precisely controlled using an intelligent PLC control system that monitors the product flow path, conveying air velocity & pressure and carefully regulates the system to maintain the pulse flow condition.

- Conveying pressures up to 2.0 barg.
- Product / air ratio 20-100:1.
- Suitable for fragile or friable materials.
- Conveying velocities 4-15 m/s.



Conveying : Dense Phase

The dense phase pump is a batching system designed to pneumatically convey free-flowing powders in a fluidised state.

The vessel is charged with product and fluidising air is introduced through a porous membrane. On opening the discharge valve, fluidised product enters the pipeline and is transported to the receiving vessel, with the product sliding through the pipeline rather than particles being fully suspended in the air stream.



The dense phase pump enables the following gains to be made:

- Product / air ratios of up to 150:1 can be achieved.
- Smaller pipelines can be used.
- Lower conveying velocities.
- Reduction in pipeline wear.
- Reduction in product degradation.
- Conveying rates up to 10 tonne/hr.
- System can be arranged for continuous operation.

Products : Storage Silos & Discharge Systems



STB can provide creative solutions for bulk materials storage, feed and discharge problems.

Systems include:

- Silos, process vessels, hoppers and bins in carbon steel, stainless steel and aluminium.
- Discharge devices engineered to suit the product and applications.
- Feeding and conveying systems including: screw conveyors, belt and bucket conveyors, rope and disc, air slide conveyors, vibratory conveyors and feeders.

Our design and build expertise combined with high quality of finish has led to our customers coming back to us time and time again.



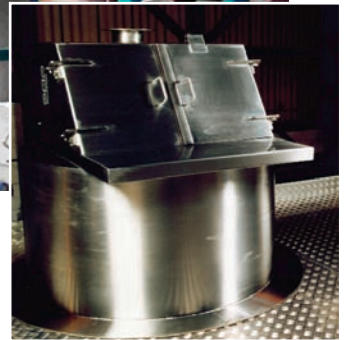
Products : Bulk Materials Weighing & Feeding



STB's wealth of experience in providing weighing and feeding systems ensures the correct system is installed to achieve the most cost effective and technically assured results.

- Volumetric feeders and dosing screws.
- Silo weigh systems.
- Process weigh hoppers and batch weighing.
- Loss in weight systems, gravimetric feeders.
- Automated weigh and feed control.
- Mechanical handling and conveying systems.

Products : Big Bag Handling & Sack Handling



FIBC - BIG BAG HANDLING:

STB have designed a technically advanced range of big bag discharge and filling systems. Each system provides a means of safe handling 1 tonne big bags with dust free discharge and filling.

Big Bag Discharge Systems

- Various discharge aid systems to suit products.
- Bag loading by fork truck, beam hoist or column hoist lifting
- Weighing systems

Big Bag Filling Systems

- Adjustable height frames
- Inflation grip / bellows or manual clamp to hold the spout
- Vibrating table for product compaction
- PLC weighing systems

SACK HANDLING:

Our range of sack tipping stations provide a safe, dust free method of manually emptying bags and sacks containing powders and granules.

Systems typically include:

- Dust extraction using reverse jet dust filters with fan - this provides a through draught of air, ensuring any dust from the sack is drawn up into the sack tip unit and away from the operator's face.
- Level probes for contents control and impact vibrators, aeration and stirrers for clean discharge.
- Dosing and feeding devices.
- Weighing systems and controllers.



Industries : Food



The food industry is constantly demanding higher levels of hygiene and efficiency. Our solutions provide high quality bulk handling systems that meet or exceed our customers specifications and expectations.

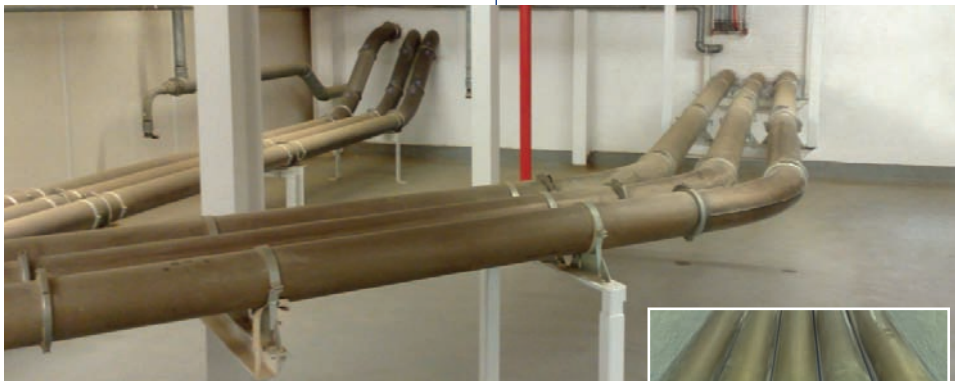
Our experience encompasses many types of food, including:

- Rice, wheat, maize, soya and grain.
- Flake, bran and pellets.
- Rusk, bread and cereals.
- Flour, gluten and starch.
- Sugar, salt and additives.
- Powder, custard, milk, whey, potato, etc.
- Animal and pet food products.

Left: Feeding and weighing system for a major bakery company manufacturing cakes and pastries. The system is designed to discharge into mixing bowls with high accuracy, with the benefit of eliminating manual handling of sacks.



Above: Silo installation including cooler for chilling of rusk for well known brand of sausage manufacturer.



Above & Right: Solution for handling of wet flake by Teflon coating of pneumatic conveying pipework and components.



Above: Low velocity conveying system for the gentle handling of tea blending system.



Industries : Plastics



For plastics and bulk polymer industries we offer expertise in system solutions for handling many types of polymer, both granular and powder, as well as many additives - for example we have installed over 70 PVC mixing plants and our pneumatic conveying systems feed hundreds of extruders and moulding machines.

Our systems are designed to offer cost reduction and greater safety of operation. Solutions are fully compliant with the requirements of the industry.

STB offer recipe control PLC systems to enable complete automation of ingredient feeding systems including the weighing, feeding and transfer of multiple ingredients and transfer to mixers and process lines.

Systems can include:

- Blending, mixing and pulverising systems.
- Additives handling: TiO_2 , fillers, colours, blowing agents, stabilisers.
- Weighing: batch, loss of weight, continuous, gravimetric.
- Big bag and sack handling systems.
- Accurate dosing and feeding.
- Blending cones and anti-seg silos.





Industries : Chemicals, Minerals & Pharmaceuticals

CHEMICALS:

Some products can be hazardous and require special care and handling:

- Explosion hazards.
- Dust control.
- Environmental protection.
- Cross contamination control.

STB provide full ATEX compliant systems. We are proficient in dealing with dust control using primary and secondary filtration systems with intelligent monitoring for control and environmental protection.

MINERALS:

STB has extensive experience with mineral storage, handling and conveying systems including:

- Powder storage dosing and feeding.
- Slurry make up and mixing tanks.
- Lime, PAC, cement, coal, sand and ash handling.



PHARMACEUTICALS:

STB specialise in the design and implementation of systems according to validation norms and GMP/GAMP guidelines. Important issues are encompassed including FDA certification of materials, ease of cleaning, minimum production downtime and operational safety.



Project Management



TOTAL PEACE OF MIND:

STB has many years' experience of project managing major installations from concept through to commissioning.

MECHANICAL ENGINEERING:

Once an order is placed, we produce an integrated project timetable, liaising with all parties, including the customer, sub-contractor and suppliers. We then manage the implementation of the plan to ensure agreed deadlines and specifications are met, taking into account all the relevant norms ATEX, CDM, etc.

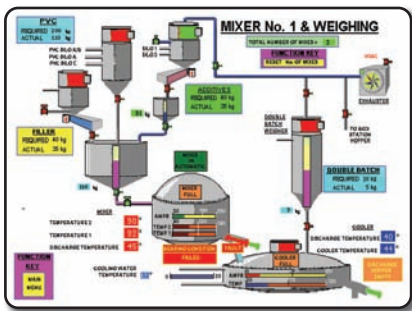
Structural engineering is carried out using AutoCAD, Solidworks, etc.

ELECTRICAL ENGINEERING:

One very important part of installation is the process control system. Our team of electrical engineers can provide total solutions to include:

- Electronic hardware.
- Software.
- PLC control.
- Operator interfaces & SCADA systems.
- Interfacing with plant control systems.

In many installations, minimising downtime of existing plant is paramount. STB has considerable expertise in this area, having installed many new systems within existing plants with zero production loss.



Technical Services



SERVICE, MAINTENANCE & BREAKDOWNS:

- It is STB's policy to offer fast responsive and effective support when it comes to breakdowns, service and maintenance.
- Our ability to respond quickly with effective support is highly valued and over the last 40 years has led to our existing customers returning to us with ongoing repeat business.
- We are firm believers that after sales support and service forms an integral part of the equipment we supply.

- Whatever your needs - mechanical, electrical, supply of parts or on site maintenance work - our service team is here to offer technical advice and swift response to your service calls.

PLANT UPGRADES:

We can carry out modifications to your plant to meet your changing operational requirements or to comply with new legislation. All work is carried out efficiently and effectively, with minimal disruption to your plant.

STB Test House

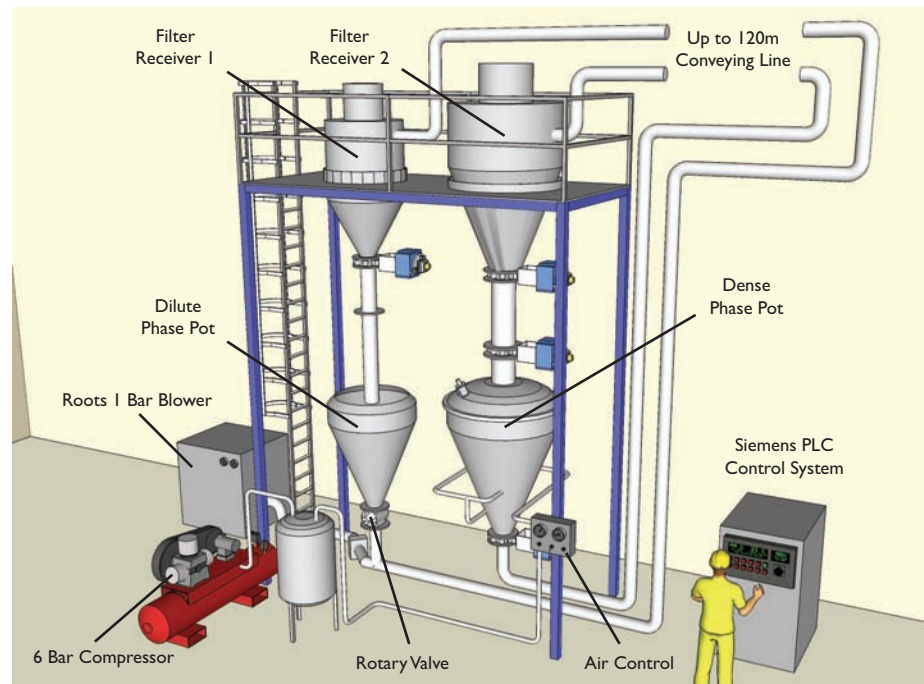
TESTING:

Our test facilities allow us to trial new materials under a wide variety of conditions. This enables us to optimise system design, utilising our experience in dense phase, pulse phase, dilute phase and vacuum systems to successfully handle even the most friable and delicate materials.

REASONS FOR TESTING:

We often find that materials, although similar in particle size and bulk density, will have differing conveying properties. We therefore test such materials thoroughly, in order to gain an understanding of what is the most effective and efficient means of handling and transporting the material.

STB TEST RIG



Such variables include:

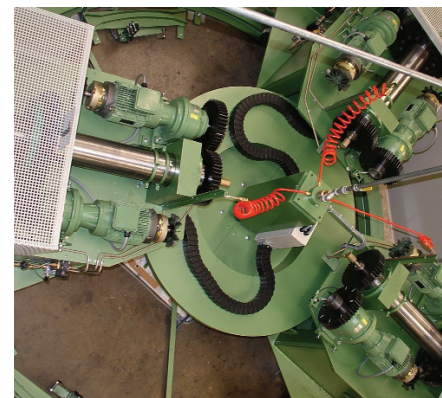
- Particle size and shape distribution
- Cohesiveness
- Moisture content
- Pipeline length - vertical or horizontal
- Pipe bend radius

Testing of materials will result in correctly determining:

- Pipeline diameter
- Vessel sizing
- Compressor size
- Filter size
- Conveying velocities

Alan Yorke : RotoMachiney

In 2006 STB Engineering Ltd acquired the business Alan Yorke – manufacturers of Roto Machinery. As a consequence, STB can now offer a complete turnkey solution to the Rotational Moulding Industry. This includes specialist materials handling systems for accurately dispensing weighed amounts of materials into the actual mould prior to it entering the oven, as well as the rotational moulding machine.



FOODS



PLASTICS



CHEMICALS & MINERALS



PHARMACEUTICALS



SERVING THE PROCESS INDUSTRIES:

This is a sample list of some of our customers, for a more comprehensive reference list please contact us.

- Advanced Elastomer
- AGRA Birwelco
- APV
- Batchelors
- Birds Eye
- Bowmans
- Bowater
- BP
- Brooke Bond
- Cadbury
- Caradon
- CEGB
- Coal Board
- Coca-Cola
- Courtaulds Engineering
- Dairy Crest
- Doeflex
- Dow Corning
- Eli Lilly
- GEA Niro
- GE Plastics
- GlaxoSmithKline
- Heinz
- Hepworth
- Huntsman Chemicals
- Hydro Polymers
- ICI
- Imerys
- Ineos
- Johnson & Johnson
- Kerry Ingredients
- Kingspan
- Kraft Jacob Suchard
- Lafarge
- Lyondell Basell
- Macfarlan Smith
- Marley
- Master Foods
- Matthew Hall
- Müller
- Nabisco
- Nestle
- Northern Foods
- Pilkington
- Polypipe
- Premier Foods
- Proctor & Gamble
- Prysmian
- RHM
- South West Water
- Tate & Lyle
- Unilever
- Weetabix
- Zeneca



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