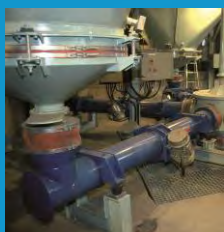


FIFTH EDITION



Techmatic

MEMBER OF TECHMATIC HOLDINGS



Dry Bulk Materials Handling Systems

www.techmatic.co.za

Expertise, Innovation, Experience

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Since the inception of the founding company Techmatic Industrials (Pty) Ltd. in 1986 our group has grown from strength to strength. The Johannesburg based sister company Techmatic Engineering (Pty) Ltd. was established in 2000. At the same time the manufacturing division Bulkomatic Solids Machinery (Pty) Ltd. was established in order to separate the manufacturing division from the projects division. In a move to align the companies with an international marketing strategy Techmatic Africa (Pty) Ltd. was established in 2016 to serve the local industry in South Africa. Techmatic Africa (Pty) Ltd. is 51% black owned and level 2 BEEE certified.

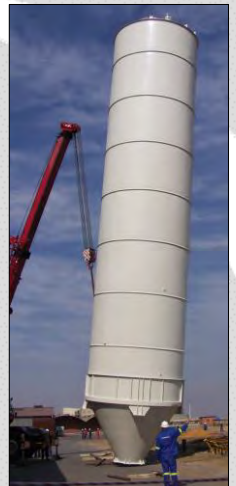
Our designs are based on over 32 years of hands-on practical field experience in bulk solids handling and reagent slurring. Problems experienced in the field are constantly fed back to the projects equipment manufacturing division. Design and processing methods are constantly updated and refined. In addition Techmatic is also very flexible to accommodate client needs and tackle problematic materials with innovative solutions.

Our Products

We design and install systems to convey, process, store and package a wide variety of Powders and Bulk Solids. Our systems incorporate both Pneumatic and Mechanical Conveyors and Powder slurring systems. If you are handling bulk solids in your factory you should be talking to us. We have products and systems to suit most applications from conveying and dust control to storage, processing and packing.

Our Experience

We have built many different systems for a wide variety of products such as Flour, Sugar, Graphite, Cement, Lead Oxide, Antimony, Calcium Carbonate, Lime, Wheat, Coal, Plastics and many others. Some of the largest companies in the world trust us with their systems time after time which is an indication of our commitment to service excellence.



Techmatic is a specialised supplier of Turnkey Systems for the processing and conveying of Bulk Powders and Granules including downstream slurring and mixing for Reagent, Flocculant, FGD & Lime plants.

Using the latest technology available, systems are designed to suit every individual clients needs ensuring the most cost effective solution. As Techmatic can design, manufacture and install both mechanical and pneumatic conveyors, the client is ensured to get the most cost effective and suitable system for their application. Some competitors will push their systems because they are only able to offer mechanical or pneumatic conveyors, not both. In this case the system offered may not be the ideal solution for the application.

We pride ourselves on our close association we have with our clients. We are able to offer highly customised solutions and equipment to address specific customer problems and requirements.

Whether it's lime, sugar or coal, we'll get your bulk materials moving...



A dedicated team of specialists and motivated individuals are responsible for the day to day running of the companies.



The Johannesburg team based in Kya Sand, Gauteng.



The Kwazulu-Natal team based in Pinetown.

In order to accommodate the growing production facility and to house additional team members Techmatic and its sister companies Bulkmatic Solids Machinery and Rotatech moved into the current premises in May 2007.

The 6300m² premises comprise of a covered area of 3000m² of which roughly 2500m² is factory area and 750m² offices on two floors. Two 5 ton overhead cranes with 6.4m under the hook cover the complete factory floor area and allow a maximum loading flexibility. Conveniently situated between the N14 and N1 highways, the factory is ideally positioned for accessibility and transport of larger pieces of equipment. A stand-by generator ensures that there is no business interruption during possible power failures.



Johannesburg: 1 Granite Drive, Kya Sands Business Park, Kya Sand Ext.48.



Durban: 15 Cowies Park, 3 Olivier Road, Pinetown

Our Johannesburg factory is equipped with a pneumatic conveying test rig. Positive pressure and vacuum lean phase conveying as well as dense phase conveying can be tested under full scale conditions. The rig is used to provide experience in conveying products that may prove difficult in certain circumstances. It also provides peace of mind for customers that would like a concept proven in a working environment.

The rig is also an intricate part of product development such as the pneumatic flap valve, the Vacuolader and the recently launched 3km long distance dense phase cement conveyor for mines.

**Our test work provides
you with peace of mind...**



Test configuration for pneumatic conveying of 20mm diamond tailings pebbles using the double pneumatic flap valve as an airlock

In addition to pneumatic conveyors, Techmatic is also able to offer the full spectrum of mechanical conveyors including screw conveyors, bucket elevators, chain conveyors, belt conveyors and vibratory feeders. These are selected according to customer application and a big factor in the selection is the capital cost of the system as well as life cycle and maintenance costs. 90% of the equipment is designed and manufactured in-house.



Any issues on site (for example first hand feedback during commissioning and maintenance on issues such as component accessibility) are addressed immediately by the design office and where required modifications can be made without having to deal with sub-suppliers and invalidating guarantees. Any positive modifications are carried over to the standard equipment as an ongoing drive to improve maintainability and durability of the equipment.

Often a combination of mechanical and pneumatic conveyors are used as a process solution



In addition to mechanical conveyors Techmatic is able to offer the full spectrum of pneumatic conveyors that use air or inert gas to transport material down a pipeline. The type of conveyor is selected on the basis of suitability for an application as well as cost-effectiveness both in initial capital layout and running costs.

The conveyors include positive pressure and vacuum conveyors running in lean phase mode as well as positive pressure dense phase conveyors. Lean phase systems (low material to air ratios, conveying pressures below 60kPa) are generally cost effective for lower feed rates and shorter distances (<15 t/hr and up to 150m distance) whereas dense phase conveyors (high material to air ratios, conveying pressures up to 6 bar) become cost effective at higher feed rates and longer distances (> 15 t/hr and distances greater than 150m).



Where poisonous material is to be conveyed lean phase vacuum conveying ensures that there is no material leakage to atmosphere in the event of bend or pipe wear. Potentially explosive, flammable or hygroscopic materials can be conveyed in closed loop systems running on Nitrogen instead of air as the carrier gas.



Do you need a hassle free, flexible solution to move your baghouse dust to a central storage silo – we have the solution!

We can collect material from multiple outlets on your baghouse, ESP or baghouse cyclones and pneumatically convey it to a central point. Cleanly and efficiently with a flexible pipeline routing and space saving installation. Eighteen years ago the founding members of the company put their heads together to find a solution to the problem of airlock abrasion, pipe blockages and pipeline overloading on existing baghouse pneumatic conveyors.

The requirements: An airlock feed system that ensures a positive seal at all times. A feed system that can accommodate large numbers of infeed points without losing valuable conveying air through those infeed points. The system must be maintainable without downtime. The system must accommodate and be able to recover from material backlogs in the baghouse hoppers. This last point is crucial as the system needs to be designed around the 0.2% of the time that the baghouse is not running under normal conditions i.e. the hoppers are full of material due to possible conveyor downtime or larger volumes of material dropping off the bags at any given time.

The result was the development of the pneumatic double flap valve with rotary actuators as the main component in the airlock mechanism.

The flap valve functions like the double security doors in banks. The top flap opens to allow material to flow through into an intermediate chamber and then closes. Only then does the bottom flap open to release the material into the conveying pipeline. The flat rubber moulded lining of the flap ensures that a positive seal is achieved against the feed and outlet chute. Air leakage is kept to a minimum and only consists of the pressurised air volume between the two flaps. No continuous air leakage – no sandblasting type abrasion wear.

A further advantage is that the flaps are replaceable with the unit installed. The flap replacement kits can be kept on the shelf with no machining required before installation. Rotary actuators are used on the flap valves for superior life cycle expectancy compared to the traditional linear cylinders.

The initial capital outlay of the double pneumatic flap valve system is higher than with a system



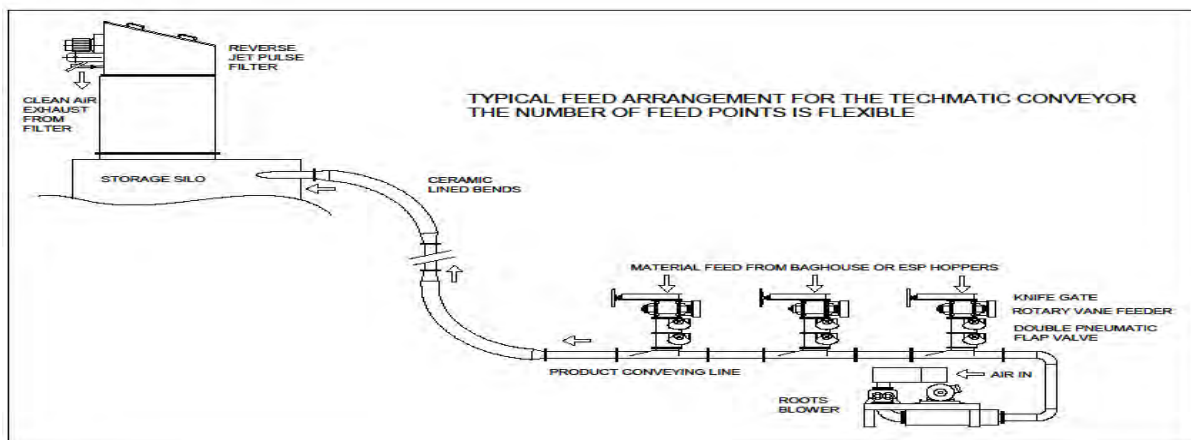
using rotary valves alone. But the operational savings are in terms of maintenance, reduced downtime and hassle-free operation are substantial. Flap valves cannot accommodate a head of material above the inlets. With a potential head of material above the feed arrangement (which may be present as result of a backlog due to plant stoppage and surges of material that are dislodged from the bags) a rotary vane feeder is used to meter material into the flap valve. Rotary vane feeder tip wear is no concern as the sealing against the conveying air pressure is accomplished by the flap valve. The rotary vane feeder serves as a metering device only. A special pipeline bend was developed to counter the bend wear problem that is traditionally associated with pneumatic conveyors. In-situ tests on conveying highly abrasive Sinter dust have shown the life expectancy of these bends to be more than 24 months.

Another advantage is that the system can also handle coarse material – a point well worth taking into consideration when looking at moving the coarse material from the baghouse cyclones to a central silo.

Currently the Techmatic baghouse dust conveyor is installed on plants such as Arcelor Mittal, Highveld Steel, Samancor, Richards Bay Minerals and Assmang Chrome.

Speak to us about your requirements and we can advise on the best and most cost effective solution.

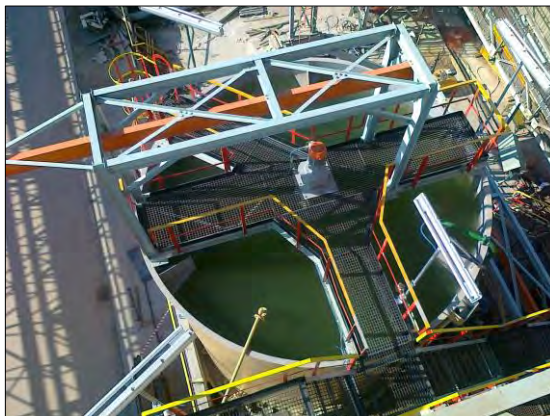
See Page 19 for examples of the Baghouse Dust Conveyor System.



Techmatic manufactures a range of lime slakers, hydrated lime dosing systems and lime injection systems to assist companies in their waste water treatment, acid neutralisation and flue gas de-sulphurisation. A new development on the slaker is the integrated scrubber unit that can cope with the steam and dust created when unslaked lime is dispensed and mixed in the closed tank lime slaker. The scrubber has an integral fan that keeps the tank under a light vacuum which prevents dust and steam from escaping through overflow pipe openings, manholes and the lime infeed point. The scrubber replaces the old chimney stack that vents to atmosphere used on some of the older slakers. The lime slakers are supplied with lime storage silos, feed equipment, pumps, ring-main and dosing points where required.



For municipal water treatment Techmatic supplies bulk storage silos for slaked lime and the transfer systems to convey the lime powder to day bins before dispensing the lime into slurry bowls where it is mixed with water at a controlled rate.



For direct flue gas treatment Techmatic supplies dry lime injection via lean phase pneumatic conveying. Slaked lime is notoriously difficult to convey in small amounts. Experience in this type of application has led to the development of superior dosing equipment and methods to overcome product caking, build up and deposits due to the conversion of slaked Lime to Calcium Carbonate when the lime reacts with atmospheric Carbon Dioxide in the conveying air.



Techmatic also manufactures a range of reagent plants including depressant, flocculant, sodium hydroxide, SMBS, magnesium oxide and cyanide slurring and dosing plants.

Each product has its own particular characteristics and chemical properties and the plants are designed to take these into account both in their dry state as well as in a dissolved or slurry form.

With flocculant the core process requirement is to wet the product well during the initial feeding of powder into the water, allow the product to fully hydrate and then handle the resultant fully hydrated product carefully in order so as not to damage the long polymer strings that are required for process effectiveness of the flocculant solution. Doing so minimises the use of the amount of flocculant from an operational cost point of view.

For SMBS and cyanide stringent safety requirements and operator ergonomics are taken into consideration. In addition mine specifications are adhered to and in some instances additional safety features make the Techmatic plants safe and operator friendly.

From the basic plant to semi automated or fully automated plants – the design can be customised to suit your budget



Plant designs include skid mounted plants as well as containerised plants.

Knowing the chemistry behind a process has allowed Techmatic to design smartly – converting plants such as MgO and Lime plants from what has traditionally been an eyesore on a plant to a clean working environment.

For these two products the key is to prevent atmospheric carbon dioxide from coming into contact with the slurry. Preventing this contact means that the slurry will not convert back to its original state which in the case of hydrated lime is Limestone. It is exactly these deposits that make these plant look unsightly.





CPC for Syrah Resources

Project: Flocculant makeup plant

Date: January 2017



MIP Process Technology for Tronox

Project: Flocculant storage and conveying to wetting head

Date: October 2012



Roymec for Ma'aden, Saudi Arabia

Project: Flocculant storage and feed system

Date: April 2014

Full Reagent packages to suit your budget.



RHI

Project: Conveying and crushing plant for refractory materials comprising bucket elevators, belt, screw and vibratory conveyors.

Date: October 2007 to February 2008



SPMP / Worley Parsons, Oman

Project: Pneumatic and mechanical conveying systems and silos for Antimony Processing plant.

Date: December 2016



Unilever Boksburg

Project: Custom designed PTB feed system for the washing powder manufacturing line including feed bin, twin feed screw, twin dosing screw and hopper.

Date: January 2006 & March 2005
(Two systems)

**Custom designed for
difficult products.**



Toyota

Project: HDPE pneumatic conveying system supplying raw material to bumper presses.

Date: June 2004

We are driven by your requirements.



Senmin International

Project: Bag unloading, milling and closed loop Nitrogen pneumatic conveying of Sodium Hydroxide pellets.

Date: September 2011



Davita Trading / Tiger Brands

Project: Stock powder manufacturing plant upgrade

Date: January 2014



Engelhard (SA)

Project: Pneumatic Vacuum Conveying and batching system for various powders including Alumina.

Date: April 2001



Nestlé

Project: Bulk Bagging Machines for Food Products

Date: March 2018

Engineered systems to reduce emissions.



Samancor Metalloys

Project: Furnace Dust bathing system to feed pelletising plant.

Date: September 2002



Randgold Kibali / DRA

Project: 40 t/hr Dense Phase
Pneumatic conveying and
storage silos of Cement for the
Backfill Plant

Date: April 2015 / July 2018



Masonite Africa

Project: Pneumatic and Mechanical
conveying of wood chips
including belt conveyors and
screw conveyors.

Date: March 2007

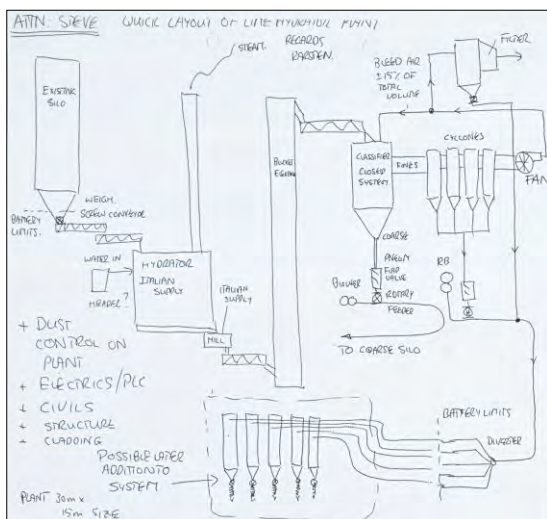


National Brands – Durban Tea

Project: Chain & Slat Conveyor, Dust
Control and various other
conveyors for the delicate
conveying and feeding of
Rooibos Tea.

Date: July 2000

**We do both Pneumatic
and Mechanical
Conveying – you will be
offered the right system.**



From concept



to completion

Lime Distributors

Project: Lime hydration plant. Includes screw conveyors, bucket elevators, dust control and crusher feed upgrade.

Date: October 2003



SAME Water

Project: Lime slaking and Limestone slurring plant for Acid Mine Water Drainage treatment at the Central Basin in Germiston

Date: January 2014



Illovo Sugar / Barloworld Logistics

Project: Custom designed bulk truck unloading, screening and conveying system for granulated sugar

Date: July 2012



IST Industrial / Highveld Steel

Project: Collection of baghouse dust from 36 outlets using scraper conveyors to bring material to the end of the baghouse and picking up with a pneumatic conveyor.

Date: July 2007

Conveying of baghouse dust brought into the 21st Century. Superior environmental solutions



Assmang Chrome Machadodorp

Project: Four pneumatic conveying lines with six inlets each installed on the furnaces 2 & 3 baghouse. The feed system utilises a double pneumatic flap valve specifically designed to accommodate multiple feed points and handle abrasive products.

Date: August 2009

Richards Bay Minerals

Project: Pneumatic conveying of baghouse dust from 4 outlets to a central silo.

Date: April 2007, April 2008, July 2009 and March 2010 (Four systems)



G&W Base Minerals

Project: Dense Phase pneumatic conveying to storage silos for packing plant expansion

Date: July 2009



AngloGold Ashanti – Noligwa Gold

Project: Lime slaker (9 t/hr) with three site erected silos designed to withstand a seismic loading of 0.2g

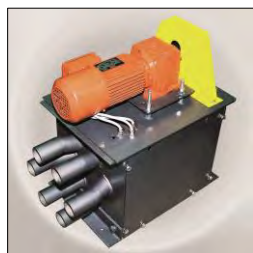
Date: August 2012

Engineered to International Standards

Senmin International

Project: Upgrade of the Guar processing plant including pneumatic conveying to four 290m³ storage silos

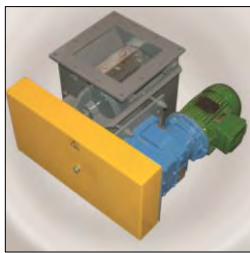
Date: August 2008



Rotary Diverter Valve



Clamshell Gate



Rotary Vane Feeder



Pneumatic Flap Valve



Motorised Flap Valve



Screw Conveyor



Flow Control Gate



Telescopic Loader



Diverter Valve



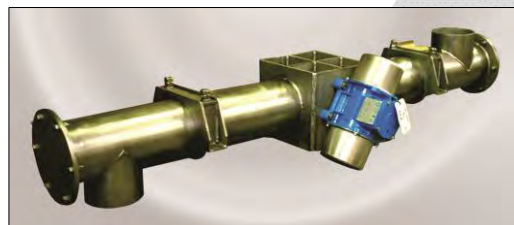
Paddle Mixer



Ribbon Blender



Dosing Screw



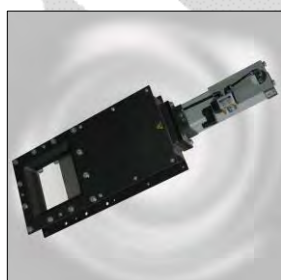
Vibratory Tube Feeder



Lump Breaker



Rotary Vane Feeder



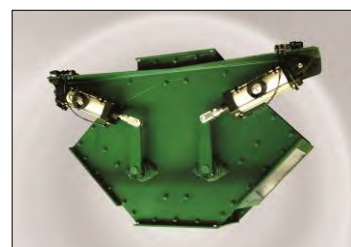
Pneumatic Knife Gate



Vibrating Bin Discharger



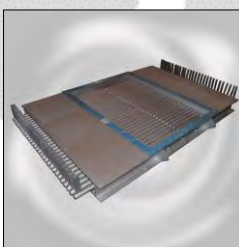
Storage Silos



Diverter Chute



Lump Sifter



Rod Gate



Elevating Screw



Knife Gate

Airslides
Bag Filters
Bag Dump Systems
Bag Filling
Belt Conveyors
Bin Activators
Blenders
Blending Screws
Bucket Elevators
Bulk Bag Filling
Bulk Bag Unloaders
Bulk Silos
Bulk Handling Systems
Chain Conveyors
Chip and Part Conveyors
Conveyors
Cyclones

Diverter Valves
Diverter Chutes
Dosing Screws
Double Flap Valves
Drum Separators
Dust Control Systems
Flap Valves
Grate Magnets
Knife Gates
Level Indicators
Lime Plants
Long Radius Bends
Lump Sifters
Lump Breakers
Magnets
Magnetic Separators

Paddle Mixers
Pan Conveyors
Pneumatic Conveyors
Pneumatic Knife Gates
Reverse Jet Pulse Filters
Reagent Plants
Ribbon Blenders
Rotary Vane Feeders
Samplers
Screen Separators
Screw Conveyors
Side Channel Blowers
Turnkey Projects
Vertical Screws
Vibratory Feeders
Wet Scrubbers

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Techmatic

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