

# spiroflow



## Aeroflow® Aero Mechanical Conveyors

for dry bulk solids and ingredients

# Conveying Solutions

## FOR DRY BULK SOLIDS & INGREDIENTS

Spiroflow is internationally recognized as a leading name in the provision of conveying solutions for applications associated with dry bulk solids - whether in powder, granule, flake, pellet, lump or whatever form and whether in bulk quantities or as minor additives / ingredients.

The company was founded over 45 years ago with the Flexible Screw Conveyor as its cornerstone and with which the name Spiroflow has become synonymous.

We aim to offer our customers the best solution and we have never believed in the 'one size fits all' philosophy. Accordingly, as we have expanded our horizons, we have developed our range of conveying to meet the new challenges whether organically, by strategic acquisitions or through joint ventures. As a result, today, we offer the following types of conveyors:

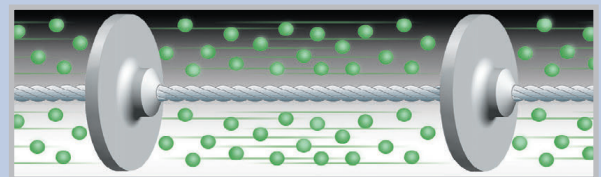
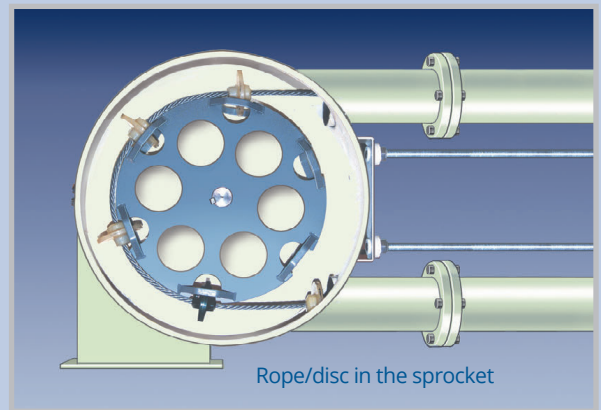
- Flexible Screw Conveyors
- Aero Mechanical Conveyors
- Tubular Cable & Chain Drag Conveyors
- Pneumatic Conveyors

For over 45 years, we have designed, engineered and continuously developed our line of equipment and systems to effectively handle the enormous diversity of products to be found within today's process industries. Time and again, in food, chemicals, consumer goods, a plastics, and minerals our proven experience has enabled us to provide solutions to meet every handling need. Our conveying systems are designed with a minimum of working parts for maximum reliability. They are simple to operate, easy to clean and maintain, and are dust-free in operation.

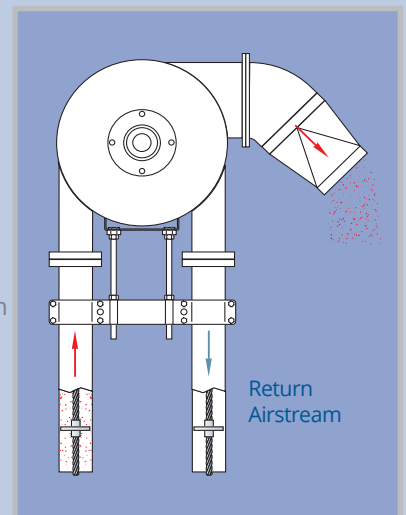
This brochure describes our range of Aeroflow Aero Mechanical Conveyors.

### Principle of Operation

Our Aeroflow aero mechanical conveyors are of a tubular design in which a continuous wire rope assembly with accurately spaced polyurethane discs move at high speed. At each end of the conveyor, the rope assembly runs around specially designed sprockets, one of which drives the rope assembly and the other tensions it. The drive assembly can be located at either the inlet or outlet of the conveyor depending on its length or to suit plant requirements.



The action of the rope and disc assembly travelling at high speed sets up an airstream running at the same velocity. As material is fed into the airstream it is fluidized and conveyed to the outlet where it is centrifugally ejected. High capacities are possible with low energy requirements and with minimal product degradation and separation.



## The Benefits

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### No dust collection system

Because no additional air is added to convey materials in an aero mechanical conveyor, there is no excess air at the outlet from which to filter entrained dust. Any entrained material that is not ejected at the outlet is simply carried round the enclosed system until it is.

### Low power consumption

The aero mechanical conveyor is one of the most efficient mechanical conveyors available and therefore keep power requirements and costs to a minimum.

### Total transfer

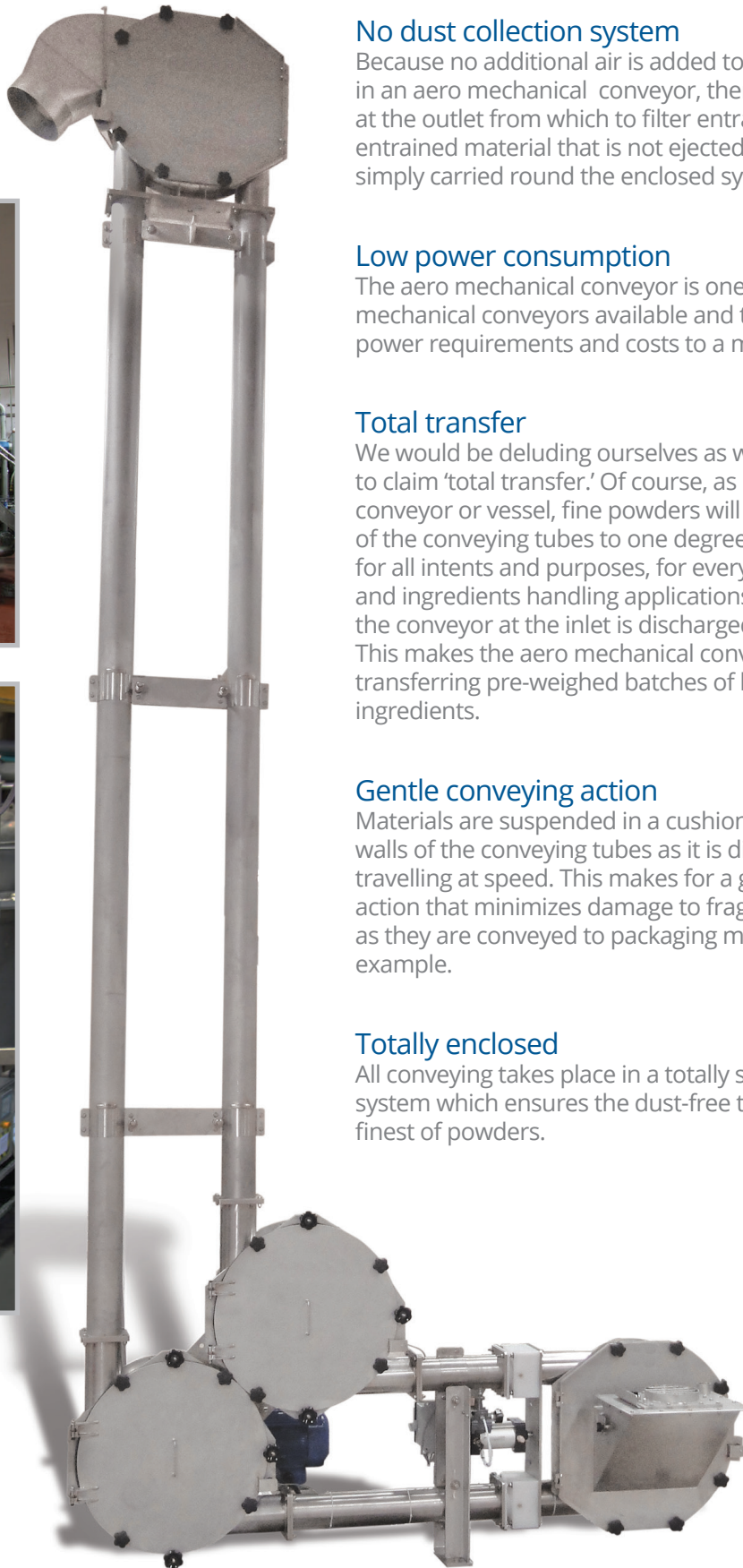
We would be deluding ourselves as well as our customers to claim 'total transfer.' Of course, as in any other conveyor or vessel, fine powders will adhere to the walls of the conveying tubes to one degree or another BUT, for all intents and purposes, for everyday bulk solids and ingredients handling applications; what is feed into the conveyor at the inlet is discharged at the outlet. This makes the aero mechanical conveyor ideal for transferring pre-weighed batches of bulk and/or minor ingredients.

### Gentle conveying action

Materials are suspended in a cushion of air that lines the walls of the conveying tubes as it is displaced by the discs travelling at speed. This makes for a gentle conveying action that minimizes damage to fragile finished products as they are conveyed to packaging machines, for example.

### Totally enclosed

All conveying takes place in a totally sealed tubular system which ensures the dust-free transfer of even the finest of powders.

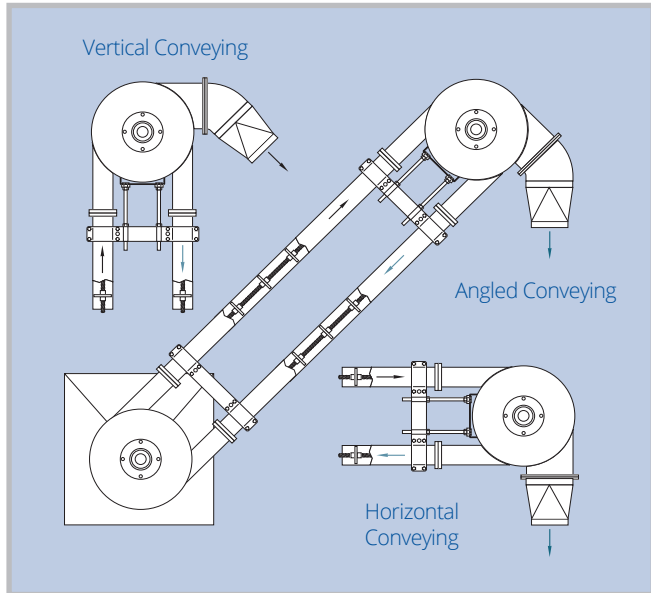




# More Benefits

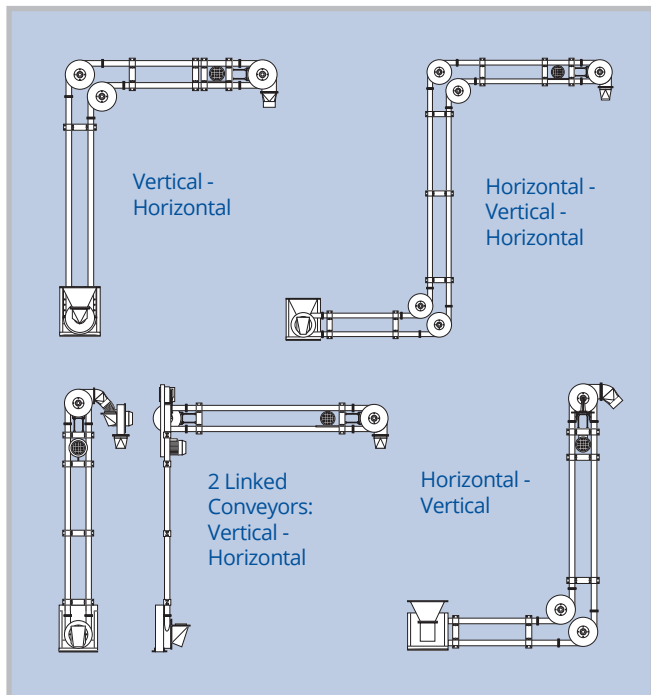
## Operates at any angle

One of the most significant features of the aero mechanical conveying concept is its ability to convey materials between 0° and 90° without any loss of capacity.



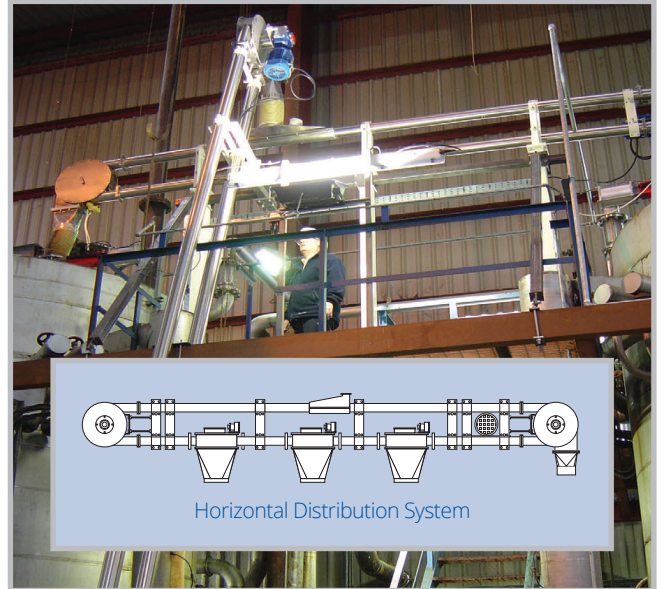
## Goes around corners

Aero mechanical conveyors can be supplied in a variety of configurations enabling them to transfer materials vertically and horizontally within the same unit.



## Multiple inlets & outlets

The concept lends itself to multiple outlets so that one conveyor can deliver material to a series of silos for example. Multiple inlets are possible too provided they are operated one at a time.



## Mobile

Aeroflow Aero Mechanical Conveyors can readily be mounted on a wheeled frame complete with controls and an umbilical power connection. This makes it possible to use one conveyor to serve several processes or to remove it to a remote wash-down area, away from production, for cleaning. Where mobile units have to pass under low beams or doorways, or where they are to discharge at differing heights, optional height adjustment can be included too.



An AMC with a simple bag dump hopper for non-dusty materials.



An AMC with a bag dump hopper & integral dust hood.

A mobile AMC with height adjustment.



# Outstanding Performance

## Conveys difficult materials

Virtually all materials can be conveyed in an aero mechanical conveyor ranging from the finest of powders to granules, pellets, flakes and flocks. We have been particularly successful with titanium dioxide which is notoriously difficult.



## Maintains mixtures

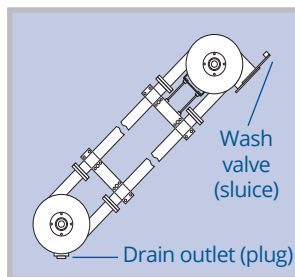
Given that product is metered into aero mechanical conveyors at a controlled rate, there are almost identical amounts in each pocket between the discs. The conveying action itself is gentle and therefore tends not to disturb mixtures. The combination of these two factors means that the integrity of mixtures is maintained during conveying.

## Cleaning

Because of the 'total' transfer capability of aero mechanical conveyors, for most applications, cleaning is not necessary. To avoid cross-contamination between colors or flavorings for example, simply purging with a sacrificial quantity of material is often enough. Safety interlocked cleaning/inspection hatches can be fitted to both the conveying tubes and the sprocket housings. However, aero mechanical conveyors fitted with suitable drain cocks can be washed through with water or another cleaning fluid - provided that they are allowed to run empty until thoroughly dried by the air circulating through them. This drying process can be speeded up by applying warm air.



Interlocked inspection hatch in sprocket housing.



## Typical throughputs

The table below shows estimated Aeroflow Aero Mechanical Conveyor rates in tonnes per hour based on continuously metered feed. When feeding from a bag dump station, the rate may reduce by 10% - 40% depending on the material flow characteristics.

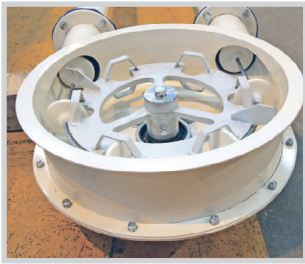
Product	Model		
	PC3	PC4	PC5
Barley	16	33	66
Carbon Black	6	12	24
Coffee Beans	6	12	24
Desiccated Coconut	3	6	12
Fiberglass	7	14	28
Flour	6	12	24
Gypsum	15	30	60
Iron Powder	10	20	40
Lime, Hydrated	5	10	20
Milk Powder	5	10	20
Oats	10	20	40
Polyethylene	12	24	48
PVC Pellets	10	20	40
PVC Powder	13	26	52
Sand	24	48	96
Sodium Carbonate	9	18	36
Sugar, Granulated	20	40	80
Tea	6	12	24
Titanium Dioxide	5	10	20
Wheat	33	66	132
Zinc Oxide	6	12	24

Model	PC3	PC4	PC5
Tube size (OD)	3"	4"	5"
	75mm	100mm	125mm
Particle size (max.)	3/8"	5/8"	5/8"
	10mm	15mm	15mm
Conveyor length	50'	50'	50'
max. vertical	15m	15m	15m
	Horizontal	60'	60'
Cornered	20m	20m	20m
	40'	40'	40'
Rope speed	12m	12m	12m
	750 fpm	1,000 fpm	1,200 fpm
	228 mpm	305 mpm	365 mpm

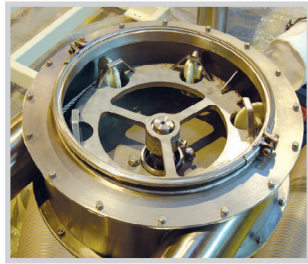


# Construction

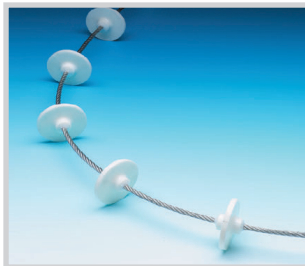
Construction can be of epoxy painted carbon steel or a grade of stainless steel to suit the application. Conveying ropes are either of carbon or stainless steel with discs of food grade polyurethane.



Carbon steel construction

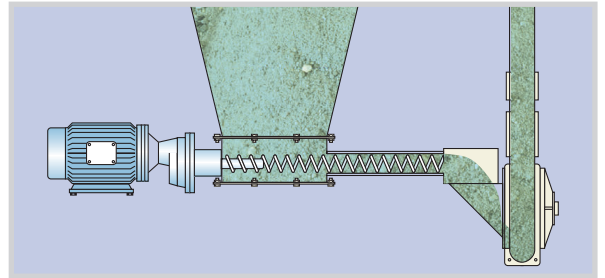


Stainless steel construction



Standard disc material is USDA accepted polyurethane

We are well versed in the ATEX/DSEAR and NEMA regulations relating to the risks of machinery and electrical equipment operating in potentially explosive atmospheres. We have the capabilities to design and manufacture both machines and control panels to comply.



When space is tight, a screw conveyor can be used to deliver material to the inlet chute of an aero mechanical conveyor.



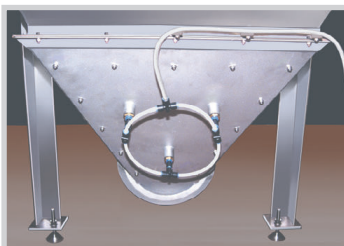
Many aero mechanical conveyors are fed from bulk bags. Spiroflow is well placed to supply appropriate Bulk Bag Dischargers to suit.

# Accessories

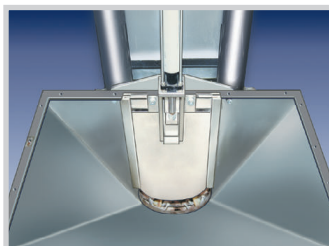


Optional bag compactor ▲

◀ Optional hood for dusty materials



Inlet chute with aeration device



Pneumatic baffle provides control of flow into conveyor (free flowing materials only)

As with all conveyor systems, routine maintenance reduces wear and breakdowns. Two patented options are now available for 'Spiroflow' Aero Mechanical Conveyors to ensure smooth and trouble-free operation. Extensive trials have shown that rope life can be increased by up to 40% by the use of these devices. Choice of device depends on length of conveyor, usage and type of product being conveyed.



Dynamic Automatic Rope Tensioner

- Rope tension monitor - alerts user to need for rope tensioning
- Automatic monitoring & tensioning device



# Applications

Consistent performance and operational reliability have endeared aero mechanical conveyors to a broad cross-section of industries. From the seemingly simple task of transferring food ingredients from warehouse to processing, or the conveying of abrasive and corrosive chemicals to a reactor; aero mechanical conveyors (AMCs) are well equipped to handle most materials with ease.



An around the corner Aero Mechanical Conveyor feeds chemicals to a mixing vessel.



Inclined & horizontal AMCs feed additives to either of two (2) tanks.



An AMC elevates material from a transition hopper fed by two bulk bag dischargers via spiral conveyors.



An AMC transfers flavored coffee powder from a blender up to a packing machine.



This AMC is designed for handling titanium dioxide. The aero mechanical conveyor is the only effective method of handling this type of product.



Two (2) AMCs deliver tin oxide from process to packaging.



An AMC with multiple inlets delivers cement, sand, ash & recycled glass to a second unit that lifts them up into a mixer.



A bulk bag discharger & an AMC load a road tanker truck.

# Powder Handling Systems



## Design

We have an experienced team of mechanical and electrical engineers with a vast collective knowledge of solids handling, geared to handle your project quickly and efficiently, whether you need a single conveyor or a complete powder handling system.

## Testing

Our fully equipped test facilities, which are at your disposal, assesses performance of our machinery on your particular material. On-site trials can also be arranged if preferred.



## Manufacturing

We actively encourage customers to visit our modern manufacturing facilities in the US or UK at any time. Here, we are able to process orders efficiently and to our high standards. Our systems and procedures have ISO 9001:2000 Accreditation.



## After Sales

At Spiroflow, we firmly believe that after sales service forms an integral part of the product. Over 70% of our business comes from existing customers, whom we work with as partners from the moment of placing an order and throughout the equipment's operational life.

### Other equipment in the Spiroflow Product Line:

- Flexible Screw Conveyors
- Tubular Cable Drag Conveyors
- Tubular Chain Drag Conveyors
- Vacuum Conveyors
- Bulk Bag Fillers
- Bulk Bag Dischargers
- Bag, Drum & IBC Emptiers
- Ingredients Handling Systems
- Batch & Continuous Weighing Systems
- Silo & Hopper Discharge Aids
- Continuous Mixing Systems
- Bin Activators



Flexible Screw Conveyors



Tubular Drag Conveyors



Vacuum Conveyors



Bulk Bag Fillers



Bulk Bag Dischargers

Contact us today to discuss your applications



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