

imagine...

Only one moving part...

Lower maintenance...

Dust explosion risk minimized...

Simultaneous precise
volumetric flow control...

Elevate vertically or at an angle...

Large range of materials handled...

Easy to clean...

Variable delivery rates...

Add heating or cooling...

Tiny footprint...

One elevator feeding multiple processes...

Replacing bucket elevators...

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Award Winning Innovative Dust Explosion Prevention Achieve Dust - Free

Dust expert says Olds Elevator, DSH can help avoid explosions



"I see the Olds Elevator replacing lots of bucket elevators," commented Associate Professor Peter Wypych, Centre for Bulk Solids and Particulate Technologies, University of Wollongong.

One of the foremost Australian experts on dust control, Professor Peter Wypych of the University of Wollongong, was enthusiastic in his endorsement of the Olds Elevator and Dust Suppression Hopper (DSH) at the recent Dust Explosions 2007 conference.



The Dust Suppression Hopper in action.



Installation of an Olds Elevator.

In the lead-up to Wypych's session, conference delegates, mainly comprising senior executives from the grains, food and agriculture sectors, had heard repeatedly of the dangers in bulk handling plants of secondary explosions arising from migrant dust accumulated over a long period of time.

A frequently referenced example was the devastating explosion at the Bestcare pet food factory in Gunnedah in January 2003 which leveled the factory and a good many buildings in a one kilometre radius. There, a propane leak occasioned a small primary explosion, with years of built-up dust contributing to the secondary, and far larger, dust explosion.

One speaker, Tony Vierboom, director, Nova Protection Systems, explained that a small layer of dust (of just 0.4mm of dust on each square metre of floor space) can be enough to produce a "very large and devastating explosion".

In his session on "latest developments in handling technology to increase plant safety" Professor Wypych discussed two new systems — both backed by small companies — which promise major reductions in fugitive dust emissions.

The Olds Elevator was developed by Australian engineer Peter Olds when he needed to elevate sand for metal casting five metres above his foundry floor. In a flash of inspiration, Olds reversed the normal screw conveyor to create a device — the Olds Elevator — in which the outer casing rotates around a static inner screw.

The Olds Elevator minimizes particle damage and dust and hence, according to Professor Wypych has "much less chance of explosion propagation."

According to Robert Olds, a director of the family firm backing

the Olds Elevator, the product is being distributed internationally via a "family" of distributors.

Professor Wypych commented that: "We're quite intrigued by this product at (the University of) Wollongong and we are going to apply some science, so we are building a test rig." He added, "I see the Olds Elevator replacing lots of bucket elevators."

The Dust Suppression Hopper was developed by DSH Systems' Trevor Schwass when he was asked by a fertiliser company for a solution to a plant plagued by dust. The facility was suffering to such an extent that men and machinery disappeared into the murk.

In response, and after several years of design, tinkering and fine-tuning, Trevor developed the Dust Suppression Hopper which continuously discharges product through free air as a solid column.

The system consists of a hopper with a central plug and uses mechanical means to control the clearance between the hopper and the plug. Material is conveyed into the top of the hopper and is contained until the weight forces the hopper to move away from the plug, releasing the material through the cavity between the plug and the hopper at the bottom of the device. The "head" of material maintained in the hopper squeezes the trapped air and allows it to disperse; the product then flows in parallel entry and exit.

Following Professor Wypych's presentation, and practical demonstration of a perspex section of an Olds Elevator, questions came thick and fast from the conference audience.

In the battle to reduce the incidence of dust explosions, the Olds Elevator and Dust Suppression Hopper will be two very useful tools in the armoury of bulk handling engineers and technicians. ■

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Technologies

Handling



"It's a new method that is more predictable, more reliable, more product friendly and less maintenance prone than conventional elevators. Quite simply, it will perform the duty that other screw elevators won't." said Lyn Bates.

Lyn Bates (above left), bulk materials handling expert, Ajax Equipment Ltd, England is pictured with the inventor Peter Olds.



Australian Bulk Handling Awards 2006 Dual Winner of The Innovative Technology Award

(pictured) Trevor Schwass of DSH Systems



Australian Bulk Handling Awards 2006 Dual Winner of The Innovative Technology Award

(pictured) Robert Olds of Olds Elevator



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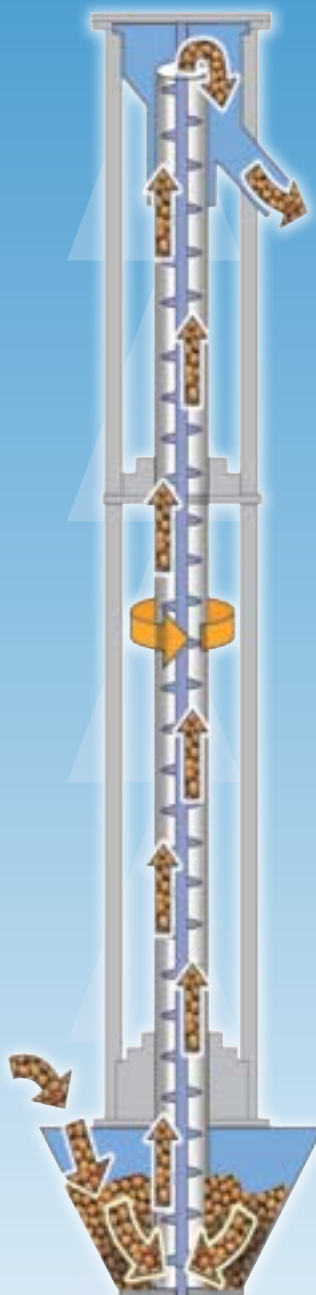
Dust explosion risk minimised...



Only one moving part...



Simultaneous, precise volumetric flow control...



Enquiries about manufacturing this new technology under license are welcome

Olds Elevator Design and Operating Characteristics

The basic principle of the Olds Elevator is very simple, however it is a whole new science.

The new vertical elevator design has only one moving part in contact with the bulk material, a tubular casing with attached in-feed scoops that rotates around a static screw. Generous clearance is provided between the static screw and casing. This clearance is an important design feature that prevents damage to the bulk material, casing wear and metal-on-metal contact. The elevator is self-feeding at a controlled rate as it rotates. Bulk material in the feed hopper typically covers the in-feed scoops. Friction against the inner wall of the casing rotates the material and causes product resting on the screw flight to be driven gently up the inclined face of the screw.

The full-bore flow of material avoids back-flow or "leakage" of material through the annular clearance, and hence improves "transport" (operational) efficiency. This also helps to stabilise the central position of the screw to inhibit casing contact, and contrasts dramatically with the dynamic "leakage" that takes place in a conventional screw elevator that offers little resistance to the whirling potential of the rotating screw. Transport efficiency is increased further by the lower slip between the particles and screw flight surface (i.e. compared with a conventional vertical screw conveyor).

Provides inherent protection against dust explosions

Due to its full-bore mode of flow, the Olds Elevator also provides an inherent explosion barrier or choke that will prevent explosions or deflagrations propagating to other parts of the plant. It also avoids the high-risk ignition sources that can occur inside conventional elevators, especially bucket elevators

Smooth and precise delivery rates

The in-feed scoops provide a positive, controlled input of material that is volumetrically proportional to casing speed. Hence, the machine can be used as a feed-rate controller, whereas other elevators work as conveyors only and generally need to be fed by another piece of equipment that has to be matched with the loading of the elevator. Furthermore, the Olds Elevator can be operated over an extremely wide range of rotational speeds and hence, turn-down ratios. Also, the flow of material through and from the Olds Elevator is always smooth and steady, without the pulsations experienced with conventional screw conveyors and bucket elevators. This steady mode of flow is gentle to the product and hence, minimises particle damage and dust generation (even when handling fragile particles).

Hygienic and easy to clean

The bottom bearing and shaft seal (necessary in a conventional screw elevator) are eliminated. Bearings are not in close proximity with the agitated product. Dust and valuable plant space are minimised. At all points, bearings are totally external to the product flow and accessible for maintenance, if required. With no seals or bearings at the discharge, the elevator is well suited to handling difficult hot, abrasive or corrosive bulk materials.

The invention is finding wide applications including the Food and Agricultural industries, Clean Coal Industry, Nuclear Power Industry, Mining, Military, and diverse processing industries.

Olds are building a worldwide "family" of licensees for this emerging technology with superior levels of safety and efficiency.

Enquiries about manufacturing this new technology under license are welcome.

For more information please visit

www.oldselevator.com

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