

Making dust a thing of the past



Fallout from bulk loading dry goods is now a thing of the past with the development of DSH Systems Ltd (dust suppression hopper) which fertilizer companies in New Zealand, Australia, North and South America and South Africa have embraced to control their dust and provide a cleaner and safer work environment.

The hopper is the brainchild of New Zealand engineer Trevor Schwass of DSH Systems Ltd and was originally developed for a local New Zealand fertilizer plant to suppress the dust generated by its bulk loading system.

The award-winning dust-free loading spout ingeniously contains the dust within the product stream when discharging dry bulk materials. Thus, it cleverly avoids the need for the more complicated retractable or telescopic loading spouts that are more commonly used in today's truck loading and out-loading applications.

Extensive research proves the Dust Suppression Hopper works well on many different dry, free-flowing granular products.

Since the first hopper was developed for Ravensdown Fertiliser in NZ, DSH Systems have commenced exporting to other international fertiliser companies and bulk loading companies.

Grant Allen, technical manager of Impact Fertilisers P/L, Australia reports. "Each year, Impact Fertilisers loads 120,000 tonnes of single superphosphate for bulk shipment and around 200,000

tonnes for truck and container movements. This process generated localized dust resulting in environmental complaints for the wider community and OH & S issues. In order to meet the safety and environmental values of the business the problem had to be resolved whilst continuing to operate at commercially competitive load rates.

An innovative solution was found in the form of DSH Systems Ltd (dust-suppression hoppers). Installation and use of these loading spouts at 12 locations around Australia has resulted in significant reduction of fugitive dust emissions. This has directly resulted in a significant improvement to the working environment and dropped environmental complaints due to dust from loading operations to zero.

All of this has been achieved with zero impact on the speed of the loading operation and in some instances resulted in an increased loading rate. The new system has been embraced by all parties and now constitutes standard practice. This project exemplifies sustainability by delivering sound environmental and economic outcomes through the introduction of innovative ideas."

Ravensdown Fertiliser, one of New Zealand's leading fertilizer companies, has 49 hoppers in 35 stores throughout New Zealand. Ravensdown's lower North Island project manager Hugh Eaglesome is thrilled with the hopper, which has limited dust fallout, improved visibility and provides the perfect pour.



“We use the dust-suppression hopper on our load-out points; truck and rail and also the dress belt into store, a drop of about 14 metres.

“The hoppers have been a great success in cutting down the dust problem and make visibility a lot easier and provide a perfect pour when loading.

“Not only are we happy, but truck drivers and transport companies are thrilled as there’s less debris over their trucks,” Eaglesome says.

He endorses the hopper and says it could easily be adapted for other bulk loading purposes.

Trevor Schwass, technical director, says the system is now also successfully used for a variety of dry, granular, free-running products including fertilizers, stock foods, wheat, barley, sugar, sand and lime.

“As clients demand unique solutions, we endeavour to develop the system for transferring specific products. The development of larger hoppers means we can now service clients with larger loading rates and also handle barge and ship loading.”

Lisa Brickey of Mosaic Crop Nutrition, Savage, Minnesota, USA reports:

“We bought our first DSH hopper in 2007 and now have four more installed. The DSH System allowed us better control over our dust. The system requires no air, hydraulics or electricity. There is no waste dust stream to handle and our load out rate was not impacted at all. We had our first spout up and running in 30 minutes!

“I had my doubts when I first saw the before and after photos, but the system really does work that well! We love it!”



HOW DOES THE HOPPER WORK?

A small degree of natural agitation as the hopper is filled helps exclude air from the material being transferred. At the point of loading or transferral, the DSH System concentrates the discharge of dry goods as a tight solid column through free air into any target repository including trucks, rail cars, ships, storage containers, bags or stockpiles. Loading can be continuous without plant interruption.

DSH Systems produces seven hopper sizes manufactured from polyethylene, steel and stainless steel to cover most applications. Due to international demand, the company is constantly researching and developing systems to enable the efficient transfer of a wider range of products.

ACADEMIC TESTIMONIAL HIGHLIGHTS BENEFITS

Academic interest from international universities and consultants continues to expand upon the research and science behind this revolutionary system.

Associate Professor Peter Wypych, Centre for Bulk Solids and Particulate Technologies, University of Woollongong, Australia states: “The DSH Systems Ltd dust-suppression hopper can achieve major reductions in fugitive dust emissions and also dust explosion hazards. It will be a very useful tool for many bulk handling engineers and technicians”.

DSH Systems exhibited at Powtech in Nuremberg in April 2010 with the intention of increasing its distribution network into the northern hemisphere. Distributors have now been appointed in the UK and Ireland and the Benelux region and discussions are ongoing with other interested companies. **DCi**