ConeValve™ by Tetra Pak
For automatic discharge and dosing of powder directly from big-bags and containers
Present situation

In any industry where you have to handle powder, bulk packaging seems to be the optimal solution to get rid of simple bags. Once you have decided to go for bulk, you still need to find the right solution to unload powder from flexible or rigid containers. The main worry is dust emission during unloading. How can you really make sure that your unloading stations and the handling operations are really dust-tight? Who knows, in the future you may have to use different packaging for your raw materials. Today, if you work with big-bags, you cannot switch to containers unless you change unloading stations. The solutions usually proposed for dosing powder from bulk packaging are frequently quite “heavy”: butterfly valves, dosing screws or rotary valves… All of these devices must be dismounted and cleaned, wasting a lot of time.

A new solution exists today: ConeValve by Tetra Pak.

For the first time, ConeValve technology permits fully automated, contained and dosed handling of bulk powders with common packagings and containers.

Universal compatibility

Containers with integrated or connected passive ConeValve
Two-component technology

With 2 components in place, bulk powders can be handled with unlimited flexibility.

One- or multi-way FIBC with one- or multi-way passive ConeValve: packaging costs can be reduced thanks to the re-use of the passive closure valves and the selective recycling and disposal of the packaging components.

Internal fluidization and integrated discharge aid: fluidization and mechanical activation of the bagged product INSIDE the bag during discharge. This fluidization system can use either compressed air or nitrogen, and has been proven to provide significant aid for discharging some of the most difficult products.

Metering and dosing feature: accurate batching/dosing is now achievable directly from an FIBC without the need for the addition of expensive equipment. The ConeValve can be “pulsed” and vibrated during discharge at varying rates, enabling it to transfer any amounts of product to achieve a high level of accuracy.

Closed installation and containment transfer: by combining the containment of cone-valve technology and the disposability and economy of the FIBC, the ConeValve system operates on a “closed transfer” process that is comparable to a split butterfly valve in terms of containment. This system eliminates the typical operator interaction with the bulk bag spout during all phases of discharging, while providing a very high level of containment.

Fully automatic handling: unlike conventional means of bulk bag discharging that involve a high level of operator interface with the bag, the spout and, ultimately, the product, the ConeValve virtually eliminates all operator/bag interaction. There are no spouts to untie (or cut), no tie boxes filled with product or manual valves to activate. Both the unsealing and sealing of a bulk bag with the ConeValve system is achieved with full containment at the push of a button.

Automatic docking: for the first time, the automatic and contained handling of all common bulk containers can be achieved via a universal active docking system.

Dust tight connection: once the dust tight connection between both components has been established, the active unit opens the passive closure valve to allow the contained and dosed transfer of the material from the container. After partial or total discharge of the content, the active unit recloses the passive valve tightly and the receptacle can be disconnected without any dust emission.

Fully automatic handling
FIBC with one-way or multi-way passive ConeValve

Integrate discharge aid
Internal fluidisation
Automatic docking
Dust and pressure tight connection
Metering and dosing feature
Containment transfer
Closed installation

Two-component technology

Automatic docking, discharging and dosing system with two components.
Two solutions to handle your raw materials: passive valve already integrated, or to be connected and reused

Solution 1: bulk packaging with an integrated passive valve

The most convenient way to handle powder is to use bulk packaging with an already integrated passive valve. For the first time, this technology permits automatic and contained handling of all common bulk packaging and receptacles via a universal, active docking unit. Empty Big Bag, container and drum with integrated ConeValve are re-usable several times and can be sent back to your raw material supplier. It's a win-win deal.

Solution 2: standard big-bags with a passive valve that has to be connected

If you have to use only standard big-bags, you can still get benefits from the ConeValve solution. The ConeValve technology is based on a reusable, passive closure valve, which can be easily and quickly connected to any standard packaging. Once this valve is connected, the packaging is ready to be connected to the active docking unit. After a dust-tight connection between both components has been established, the active unit opens the passive closure valve to permit contained and dosed transfer of the material from the container. After partial or total discharge of the contents, the active unit recloses the passive valve tightly and the receptacle can be disconnected without any dust emission.

Guerin Systems

Containers with integrated passive discharger valve

FINAL USER
Active ConeValve Functionality

For the first time, ConeValve technology allows for fully automated and contained handling of bulk powders with common forms of packaging and containers.

Fully automatic and contained bulk logistics

System Functionality

Docking
Automatic docking of packaging onto active ConeValve

Discharging
Active ConeValve opens the Big Bag with integrated passive valve for contained discharging & dosing

“Make everything as simple as possible, but not simpler.”
Albert Einstein

Filling System

The active and passive ConeValve systems can also be used for the automatic and contained filling of any type of rigid or flexible container. For that purpose, the active ConeValve unit is installed "upside-down" at the bottom of a process chute or on a process vessel outlet to perform the following operations:

- Automatic and dust-tight connection to any type of container equipped with a compatible passive ConeValve
- Controlled opening of the active and passive cone valves to allow product to transfer
- Optional nitrogen purging or air inflation of the connected flexible or rigid container
- Automatic reclosing of the active and passive valves with integrated air wash and optional dedusting feature
- Automatic disconnection of the active and passive valves with integrated air wash and optional dedusting feature

The ConeValve filling technology provides major benefits for the automation and containment of powder transfer operations by reducing operator involvement, exposure to dust, cleaning requirements, costs for quality guarantee etc., and by increasing production flexibility, reliability and efficiency.
Application: fully automated, flexible and contained recipe production.

Advantages
For the first time, common bulk packagings and containers can now be fully integrated into automatic and contained production processes, enabling considerable savings in building investment, process equipment, packaging material and standardization to be achieved.

Packaging costs can be reduced thanks to the reuse of passive closure valves and the selective recycling and disposal of packaging components.

Main advantages of the ConeValve technology:

Packaging Manufacturer
- New products and markets
- New applications
- Exclusive solutions
- Compatible with existing products

System Integrator
- New system solutions
- Simple standard technology
- Cheaper installations
- Lower technical risk
- Retrofittable to existing systems

Bulk Powder Enduser
Handling FIBCs, Drums, Containers
- Fully automatic
- Dust free
- Higher throughput
- Automatically reclosable
- Compatible with all forms of packaging

Process
- Containment
- Fully automatic operation
- Controlled flow rates
- Gravimetric feeding
- Internal fluidization
- Retrofittable to existing installations
- Quick ROI

Operator & Environment
- Health & safety standards
- Operator safety
- Environmental protection
- Selective recycling

Direct dosing of multiple ingredients
The huge advantage brought by the ConeValve, is that you are able to dose the requisite quantity of each component directly from the packaging, using a single active valve.

A weighing shuttle, consisting of a rigid or flexible container on load cells and featured with an active dosing ConeValve, moves under each packaging and automatically doses the right quantity from each Big Bag (or standard big-bags with a passive valve connected), according to the recipe. In a second step, this shuttle moves the container filled with a batch of powders, to the following step of the process (dry-mixing, dissolving, etc.). This container will be automatically emptied with its passive valve integrated.

With ConeValve, you know that you are choosing a dust-free installation to manage multiple ingredient recipes effectively with a minimum of equipment. The optimal solution that you have been looking for.

One of the most brilliant applications of the ConeValve solution is recipe management with multiple ingredients. When you wish opt for an automated system to dose many different ingredients, you usually end up with a lot of equipment and an expensive solution. With ConeValve innovation, we bring you exactly what you were looking for.

Raw materials reception
If your raw materials come to you in the usual 20-50 kg bags, the first step will be to transfer them into a form of packaging (big-bags, drums, containers) that is already equipped with a passive valve. To do so, you will use a bag dumping station with an air filtering device, connected to a filling station.

When you are able to receive standard big-bags, you will simply connect a reusable passive valve to them before the docking.

Now, if your raw materials are delivered in Big Bags container and drum (already featured with a passive valve), things are even simpler and you just need to put them in place before using them.
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