

# GEA HYGiTip Bag Emptying System

Safe handling for food powders



# Delivering safe solutions for safe products

Global food producers instinctively know that the safety of their products has a direct impact on consumer confidence and ultimately on the value of their brands.

With an increasing awareness of good manufacturing practices, consumers need to be sure that the foods they consume have been treated with the highest standards of food safety. With this in mind, producers are constantly looking for new and innovative solutions to protect their employees and the products they handle.

## **Process overview**

Each year, the global food industry handles millions of tonnes of powdered product in bags that are cut and emptied for further processing. The majority of this emptying process is performed by an operator, who manually handles each bag, cutting and discharging the product into a receiving system for further processing.

As a manual process, the operator generally uses a hand-held knife to open each bag before emptying the contents into a sifter or receiving hopper.

This manual process introduces potential hazards to the operator and increases risk to the integrity of the food itself.

By eliminating these risks, food producers can be confident that their products are free from potential contaminants resulting from improper handling of the ingredients. Further, by automating the process from start to finish, this will ensure that the plant production targets can be met in a sustainable manner. Automation not only ensures product safety; it delivers consistency and efficiency across the process. Finally, it contributes to a reduction of labor costs.

Click through the images below to view the HYGiTip in action →

# Ideal applications

The dairy and food industries demand high standards of quality, reliability and hygiene, so everything we do is done with these requirements in mind.

GEA's powder handling solutions are designed to manage the specific and demanding needs of the dairy and food industries, to maximize the reliability and sustainability of your plant for safe and efficient powder handling. Our solutions minimize product losses while maximizing plant output and productivity.

GEA understands that plant yield, efficiency and reliability will impact on your profitability and operating expenses, as well as on your product quality. All GEA systems are designed to provide maximum yield, fast product switches and operational flexibility.

The GEA HYGiTip bag emptying system can be used across a diverse range of applications, ideal for milk powders, nutritional formula, dairy ingredients and food ingredients such as coffee and tea, bakery, confectionery and pet food to name just a few.





# Complete solution

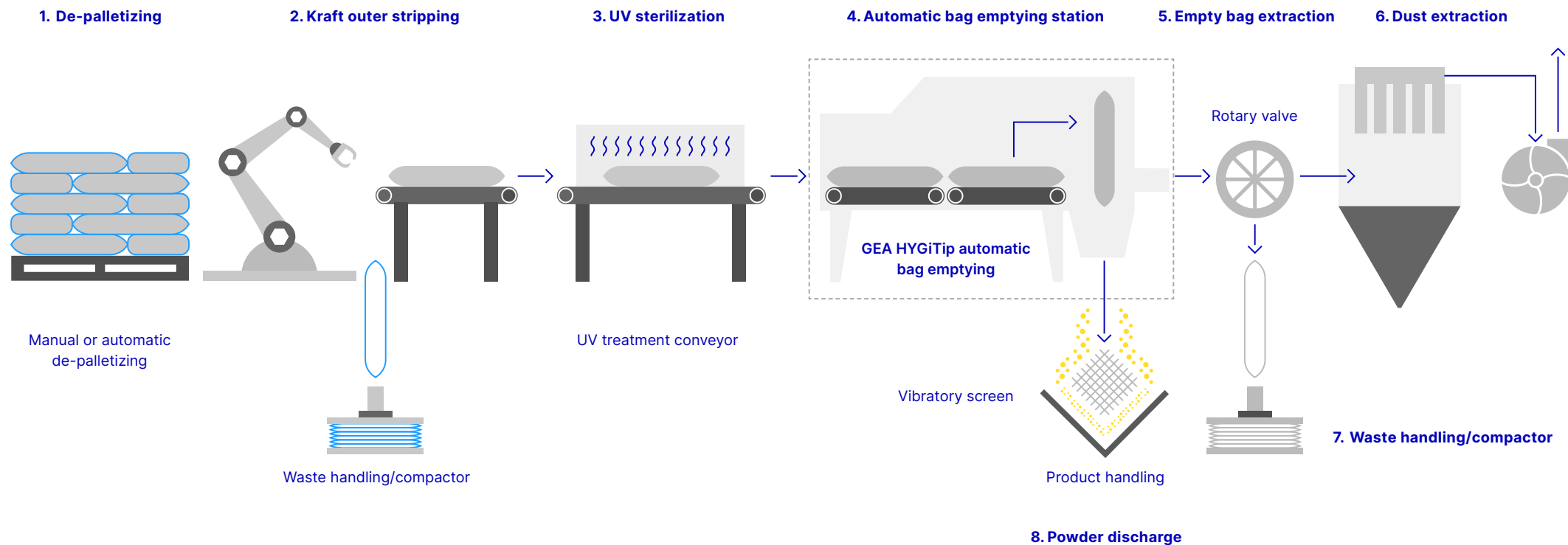
The GEA HYGiTip provides a comprehensive bag emptying machine, for the automatic removal of powdered product from pre-stripped polyethylene bags under hygienic conditions

The HYGiTip is only part of the solution. When integrated with upstream and downstream components, this forms a complete system for safe handling of food powders.

To ensure total hygiene from end to end, GEA can provide a complete system – from de-palletizing, removal of the paper outer packaging, ultraviolet sterilization, automated tipping and removal of waste, the product is protected from human contact throughout.

By configuring the HYGiTip operation, plant operators can utilize fully automatic bag emptying operations to suit their production needs. Typical applications include ingredients handling; powder recombining into liquid process and dry mixing of ingredients into a finished powder.





### 1. De-palletizing

Full bags are introduced on pallets and are either manually removed using a vacuum lifter or this can be done automatically using a robotic de-palletizer if preferred.

### 2. Kraft outer stripping

Paper outer bag is removed and discarded for recycling before proceeding.

### 3. UV sterilization

UV sterilization tunnel is used to eliminate external contaminants from the bag before passing into the high hygiene area.

### 4. Automatic bag emptying station

HYGiTip inverts, conditions and discharges the contents to a sifter and receiving system (8) installed below.

### 5. Empty bag extraction

Empty liner is automatically removed and discharged into a compactor for removal and recycling.

### 6. Dust extraction

External dust collection is used to eliminate dust generated during emptying.

### 7. Waste handling/compactor

Empty bags are automatically transferred to an empty bag compactor for recycling.

### 8. Powder discharge

Vibratory sifter and product receiver conditions powder for vacuum conveying to the main process area.

# Delivering value

The GEA HYGiTip has been engineered for continuous operation without the need for human intervention other than that required for daily cleaning



By ensuring maximum operating time, the plant efficiency is ensured throughout the production run. This fully automatic process ensures product quality and integrity of operation delivering peace of mind in handling finished products.



# How it works

The GEA HYGiTip Bag Emptying System is a new and innovative hygienic powder tipping system designed to safely discharge powdered food products at sustained rates of up to 8 metric tonnes/hr.

The HYGiTip automatically conditions the powder inside the bag before cutting and discharging into the process.

As the bag enters the HYGiTip, a unique gripping system envelops the bag. The bag is then inverted, piercing the liner to aid product discharge. A rotary cutting system instantaneously slices the bag allowing the contents to flow freely into the discharge chute below. The innovative design of the cutting heads ensures complete opening of the bag without risk of foreign material entering the product stream.

After discharge, the empty bag is automatically removed using a vacuum transfer system before the next bag is introduced into the HYGiTip.

With a discharge efficiency of around 99.9%, producers can be sure to minimize process losses whilst ensuring the safest handling of their products.



Ready to accept bag



Bag accepted in position



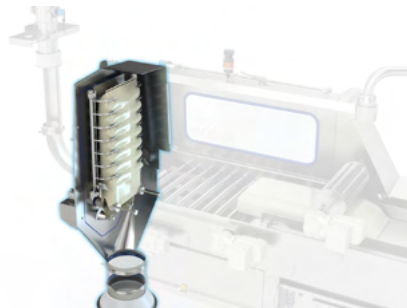
Bag clamp in position



Bag clamped



Bag raised to tip position



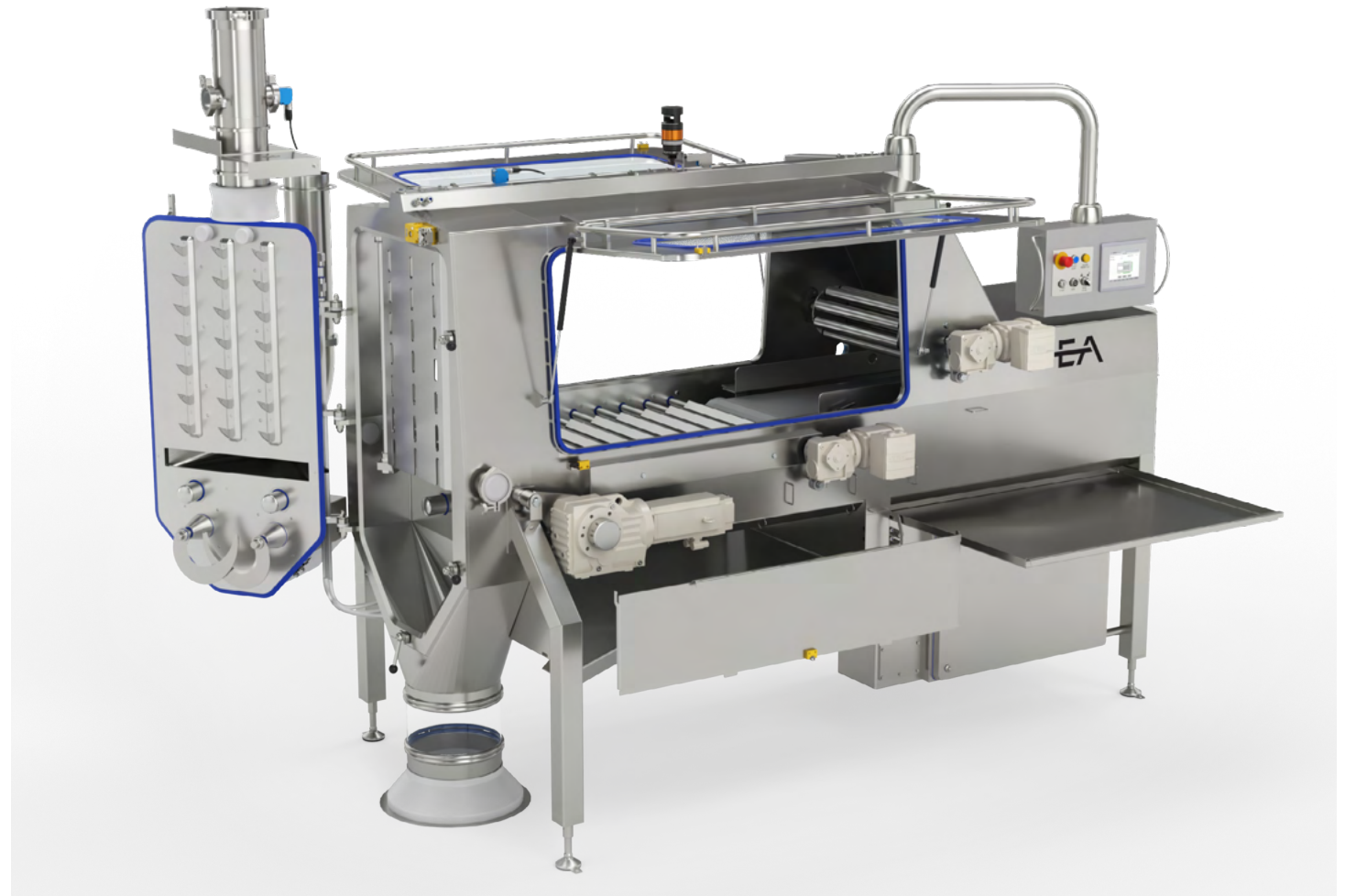
Bottom of bag sliced open



Empty bag extracted

# How we do it

Hover over the numbered circles to reveal the features →



**1. Conditioning** – Infeed conveyor with integrated conditioning system

**2. Containment** – Fully enclosed tipping environment

**3. Positive grip** – Bag is fully held during the entire tipping process

**4. Clean cut** – Super-sharp curved blades for clean and effective cutting of plastic bag

**5. Gravity discharge** – Integrated discharge chute connected to powder handling

**6. Bag extraction** – Empty bag extracted using vacuum from dust collection

**7. Easy access** – Hinged doors for easy access to cleaning and maintenance

**8. Cleaning** – Sliding drawers and trays for access to underside for cleaning and maintenance

**9. Design** – Stainless steel construction for hygienic applications



# Technical specifications

## Key features:

- Fully automatic operation
- Integrated bag conditioning device
- Positive grip of the bag during entire process
- Automatic liner cutting and extraction
- Non-serrated clean-cut mechanism
- Containment of cutting and tipping environment
- Stainless steel construction of all product contact parts
- Emptying rate of up to 8 tonnes/hr
- Can handle pillow type bags with integral polyethylene pouch

## Key benefits:

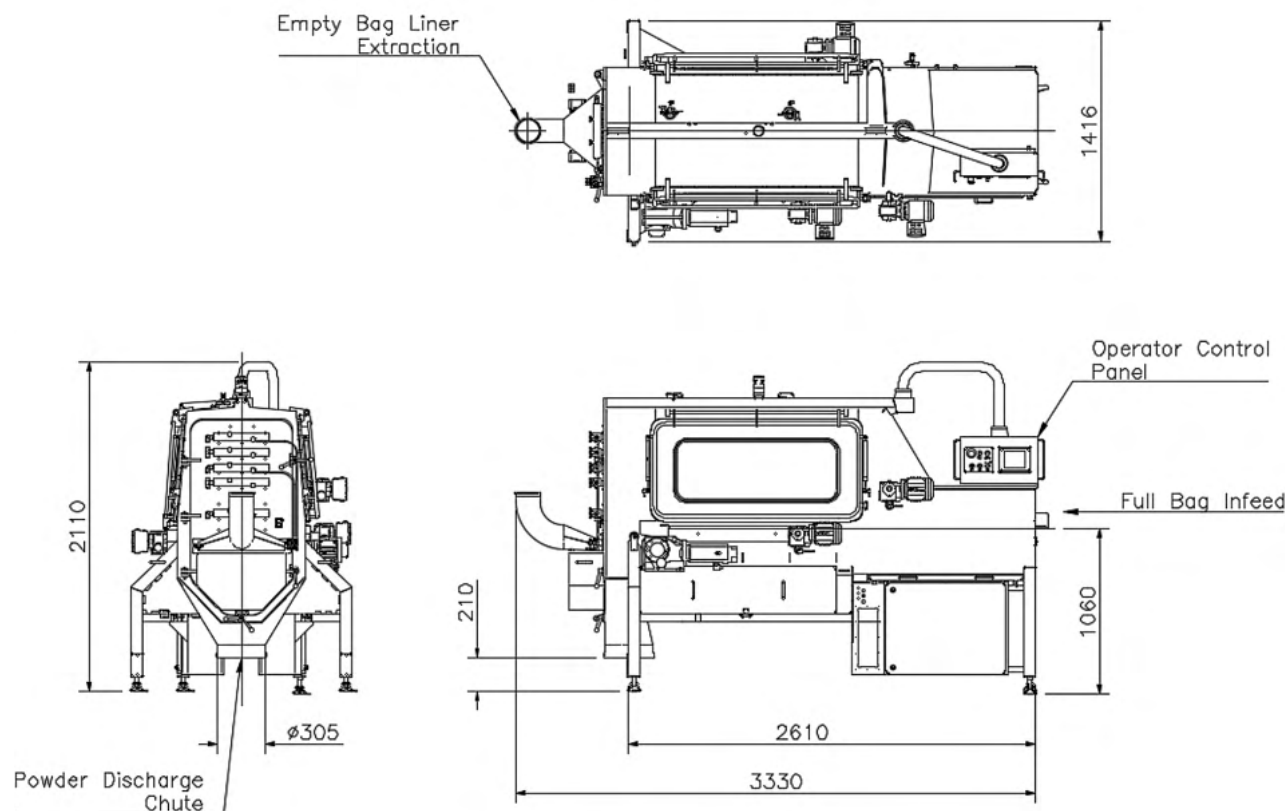
- High level of powder recovery with a discharging efficiency of 99.9% (25g residue per bag)
- Improved operator health and safety
- Improved product safety
- Improved hygiene
- Reduced product contamination risk
- Reduction of labour requirement and costs

## Standard specification:

- Material type: Dry, free-flowing dairy and food powders or granulated materials – without lumps and not compacted in bag
- Nominal emptying rate: 320 bags/hr at 25kg (product dependent)

## Designed in accordance with:

- USDA-3A; EHEDG where applicable and practical
- EN 1672-2 Food Processing Machinery
- ISO 14159 Safety of Machinery is used as the basis of our design



# Bag specifications

## Bag type & construction

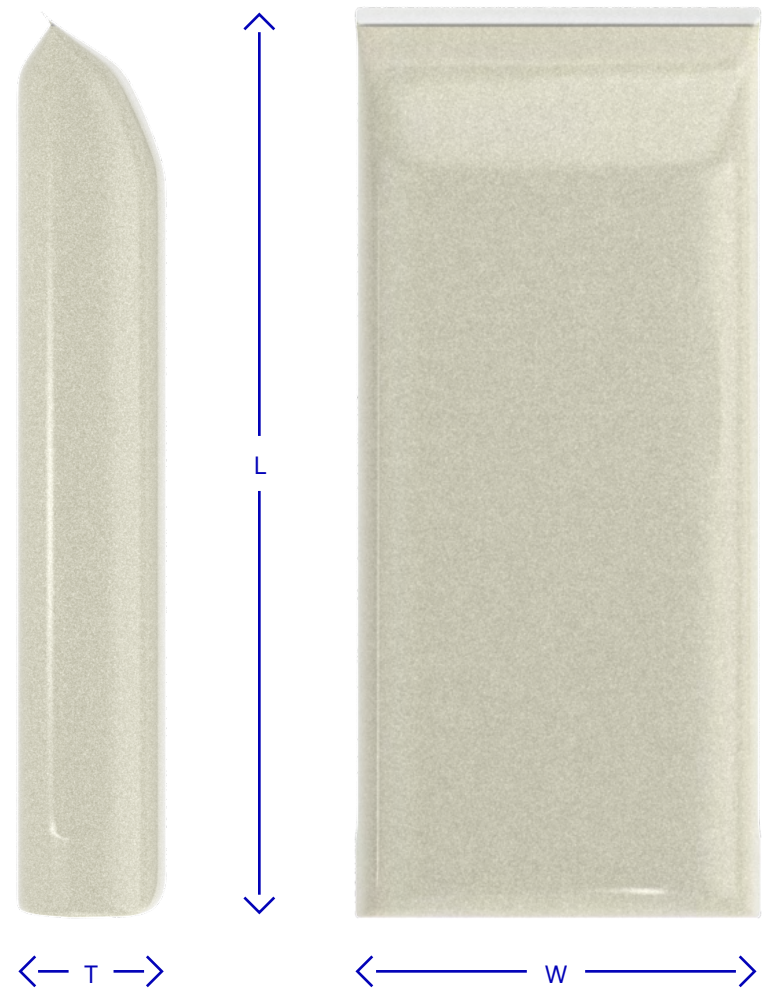
The GEA HYGiTip is designed to handle pillow style polyethylene or similar bags where the kraft paper outer has been removed.

## Bag size

- Width measured at seam: (W) 400mm (min) - 500mm (max)
- Length: (L) 600mm (min) - 1000mm (max)
- Thickness: (T) 100mm (min) - 180mm (max)
- Weight: 15-25kg (Dimensional dependent)
- Construction: Pillow style
- Material: Polyethylene or similar
- Thickness: 75-120 $\mu$ m (Nominal)

## Environmental conditions

- To achieve the best performance results, the GEA HYGiTip must be operated in an environment with humidity control to ensure there is no moisture in the air.
- Maximum air temperature at emptying station  $\leq 24$  °C
- Maximum relative humidity at filler station  $\leq 50\%$  RH



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