



FILLING FOOD - CONSIDER IT BAGGED!



BEHN + BATES

Valve Bag

Filling Systems

Contents

<u>Introduction</u>	3
<u>BEHN + BATES- Pneumatic Packer</u>	4
<u>BEHN + BATES- Impeller Packer</u>	6
<u>BEHN + BATES- Auger Packer</u>	8
<u>BEHN + BATES- Gravity Packer</u>	9
<u>Weighing and Control Technology</u>	10
<u>Accessories</u>	11
<u>Automation – Valve Bag Application</u>	12
<u>Automation – Valve Bag Sealing</u>	14
<u>The “Plug ’n Pack” Concept INTEGRA</u>	16
<u>ROTOSEAL System Valve Bag Filling to Perfection</u>	18



Choice of products that can be filled
with the BEHN + BATES filling systems

Introduction



The relation between product, bag material and filling machine has to make a good match – and this is precisely where BEHN + BATES has its main strengths.

Do you fill valve bags with food or animal feed products? – We offer you the optimum filling technology.

For decades, our valve bag filling machines have proven their worth in the international packaging industry. Due to a continuous optimisation we offer you solutions considering your individual project requirements and also the latest state-of-the-art.

Machine outputs:

80 up to 2,000 bags per hour with filled weights from 5 to 50 kg dependent on the number of filling spouts and degree of automation

Your advantages:

- machine design according to food grade requirements
- gentle product filling
- clean bag filling by our reliable BEHN + BATES inflatable sleeve
- high weight accuracy
- compact full bags that are easy to palletise
- ergonomic machine design with easy and clear operation
- easy service and maintenance
- good access and easy

replacement of all individual components

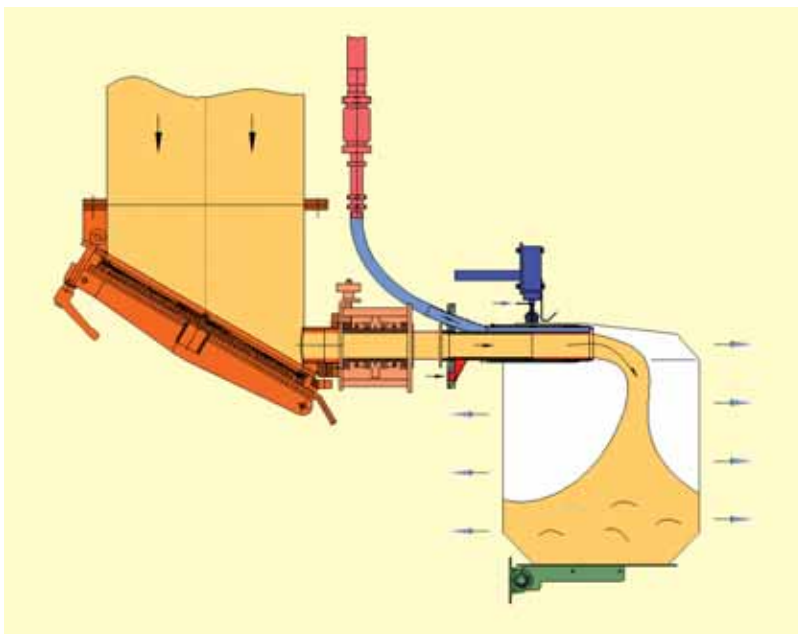
- parts coming into contact with the product made of stainless steel
- explosion-proof designs according to ATEX
- selection of components according to your project needs with your close involvement

Your product is the task. – We provide the solution.

BEHN + BATES Pneumatic Packer



BEHN + BATES pneumatic packer with ultrasound sealing station



The BEHN + BATES air filling principle

The pneumatic packer uses the air filling principle and suits for the filling of free-flowing floury, powdery and gritty products, such as:

- potato starch and fibres
- wheat and maize starch
- dextrose und maltodextrin
- cocoa powder
- flours and baking ingredients
- soypowder
- proteins
- flakes and meal, etc.

The product is filled according to the gross system, which means that the bags are weighed during the filling process.

The filling product enters the filling chamber via a butterfly valve. The continuous product flow from the filling chamber is ensured by the chamber bottom and top fluidisation air system being adjustable separately from each other and providing an optimum product feed rate with a minimal air supply. The exact dosing of the filling flow in coarse and fine flow is controlled by a product-dependent adjustable dosing unit.

During the filling, air is removed from the bag with the help of the special BEHN + BATES filling nozzle with deaeration channel and a cyclically operating ejector. To prevent contaminating the filled bag, the filling nozzle is cleared by a blast of air after each filling operation.

Machine output:

up to 300 bags per hour per filling spout with filled weights from 10 to 50 kg

Your advantages:

- BEHN + BATES deaeration/ aspiration nozzle to reduce the overpressure in the bag during the filling process
- product specifically and separately adjustable fluidisation air quantities
- simple adjustment of coarse and fine flow dosing
- minimised product residue, easy cleaning of the filling chamber
- integrated product catching tray under the filling chamber bottom
- simple and quick replacement of the aeration plate for easy cleaning
- level indicator for the product flow control

Your benefit:

high machine outputs with low inner bag pressure and minimised spillage

Project-specific configuration thanks to:

- conical inlet arranged above the filling chamber for coarse or granulated products
- rubber chamber for residual-building or bridging products
- automatic adjustment of the top fluidisation and bottom air by way of automatic control of the pressure and air quantities
- design for wet cleaning of the product way



Filling chamber in electropolished stainless steel design



Closed filling chamber bottom with central lock and product catching tray



Opened filling chamber bottom for quick and easy cleaning

BEHN + BATES Impeller Packer



Interior view of the impeller packer with vertical filling impeller and pinch valve dosing especially for the food industry



BEHN + BATES filling nozzle with inflatable sleeve for the clean product filling and above-installed ultrasound sealing station for the hermetic sealing of the filled valve bag

The impeller packer is the optimum solution for all free-flowing fine-ground products, such as:

- cocoa powder
- baking flours
- maize starch
- wheat starch, etc.

Dependent on its characteristics, the product is filled with either a vertical or a horizontal impeller wheel. The diameter of the impeller wheel is chosen depending on the specific product properties with the goal of a reduced-air filling and optimum bag weights. A high filling pressure ensures a good product densification in the bag and thus optimum bag dimensions.

Machine output:

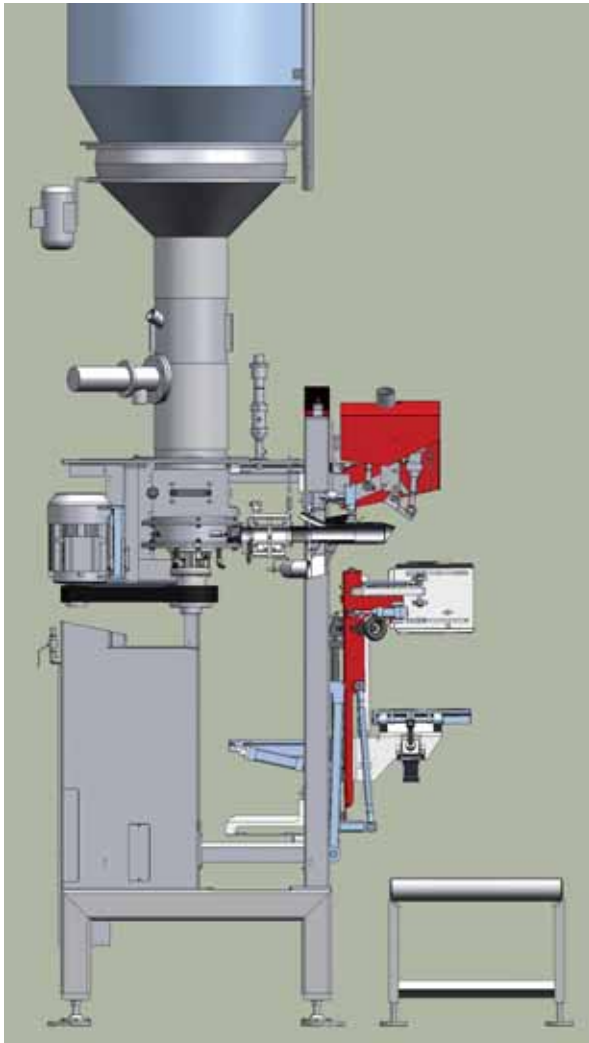
up to 300 bags per hour per filling spout with filled weights from 10 to 50 kg

Your benefit:

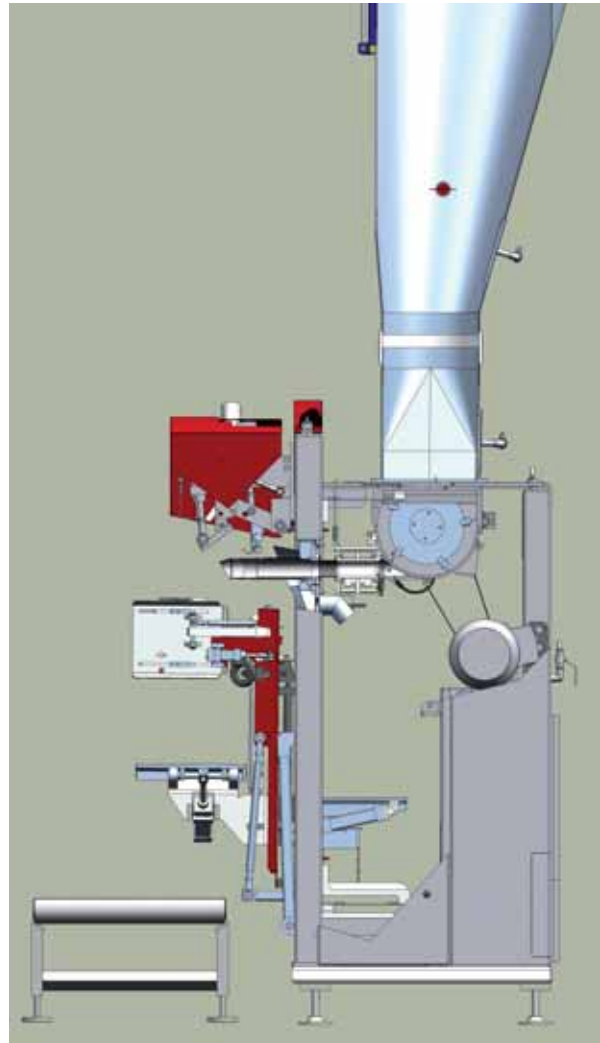
reduced air filling also for bags with low deaeration ability by means of high filling pressure

Your advantages of the vertical impeller filling system:

- clean and gentle filling of fine-ground products
- minimum spillage
- economical operation due to a low-wear drive motor
- bag filling with no overpressure



Horizontal impeller packer system



Vertical impeller packer system

Your advantages of the horizontal impeller filling system:

- clean, weight-accurate and gentle filling of difficult-to-fill powdery products
- large diameter of the product inlet, diameter: 290 mm
- continuous product feed due to a flexible rubber tube (no caking, no bridging)

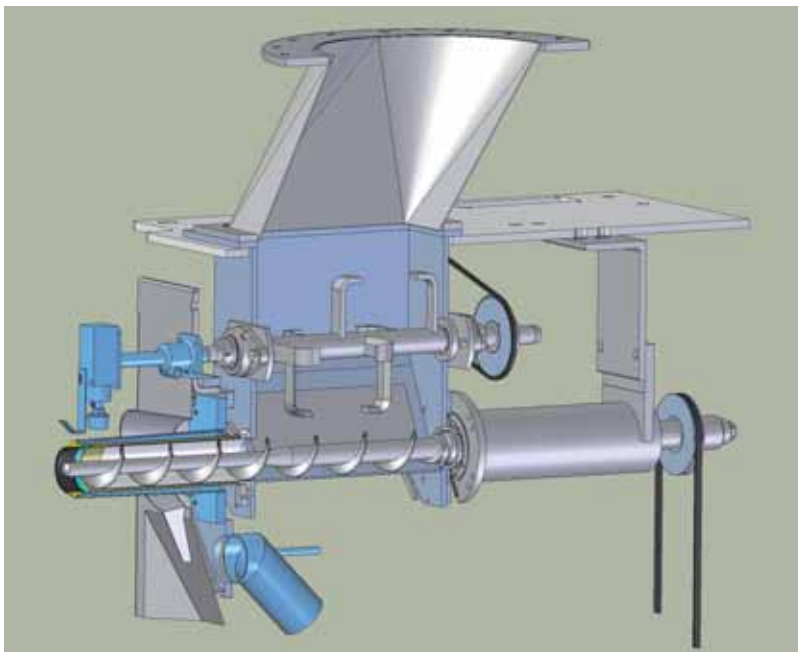


Vertical filling impeller

BEHN + BATES Auger Packer



Auger packer made of stainless steel with filling spout for open mouth bags



Functional diagram of the auger packer

The auger packer is used for the compact filling of flaky, bad flowing and gritty products, such as:

- spices
- fruit powder
- food additives, etc.

The product filling is ensured by the continuously operating agitator that is positioned above the dosing auger. This prevents the product from bridging and provides for a continuous product flow into the auger housing. The rotation speed of the product specific dosing auger is adjusted for the coarse and fine flow dosing.

For the exact fine flow dosing of extremely free-flowing products, a butterfly valve is integrated in the auger housing replacing the agitator.

Machine output:

up to 120 bags per hour per filling spout with filled weights of 10 to 50 kg

Your benefit:

high filling accuracy by flexibly adjustable auger speed

Your advantages:

- low machine height of only 1,560 mm to the auger housing
- dosing auger with divided shaft for easy and efficient cleaning
- filling of hermetically tight bags and PE bags
- integration of the BEHN + BATES deaeration system for the compact filling of extremely free-flowing products
- optional use of the BEHN + BATES filling spout for open mouth bags
- optionally integrated bag vibrator for a better product densification

BEHN + BATES Gravity Packer



Gravity packer with vertical filling tube



Gravity packer with filling spout for open mouth bags

The gravity packer is the allround-solution for all free-flowing grainy, granular and lumpy products, such as:

- pellets
- frozen foods
- cocoa cake
- cereals, etc.

The product is filled according to the gravity principle by a vertical or curved gravity tube. The supply of additional conveying air or mechanical energy is not necessary. The product dosing, dependent on the product characteristics, can be

executed by means of a slide, flap, vibratory or belt feeder. For an optimum product densification the packer can be extended by a vibrating compactor.

Machine output with filled weights from 10 – 50 kg:
approx. 160 bags per hour per filling spout (gross filling system)

up to 600 bags per hour per filling spout (net filling system in connection with the BEHN + BATES electronic net weigher)

Your benefit:
best economical machine concept for the filling of only granules or grains

Your advantages:

- easy and compact machine concept
- low service and maintenance
- optional use of a mobile frame to move the machine underneath different storage silos

Weighing and Control Technology

MEC weighing electronics

All BEHN + BATES filling machines are supplied with the MEC weighing and evaluation technology.

Your advantages:

- easy programming
- PTB and OIML authorisation
- 99 product type memories
- operator guidance via a clear text display with selection of languages
- Ethernet connection

Infrared touch panel

for the easy operation and error analysis via visualization

Your advantages:

- clear structure
- indication of all operation parameters (capacities, times, etc.)
- graphical error display for each motion sequence with clear text display to solve the error
- operating surface made of coated scratch resistant compound glass
- Ethernet connection

Data processing system DPS

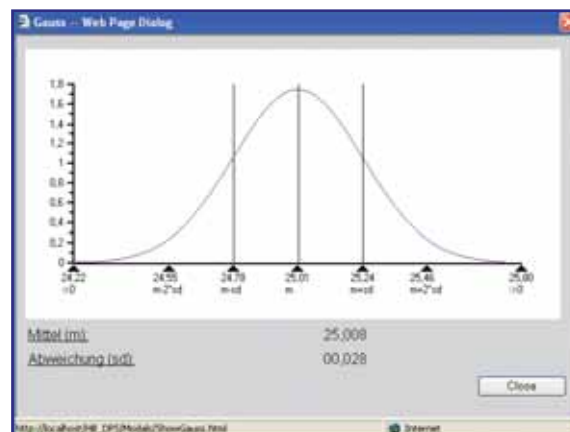
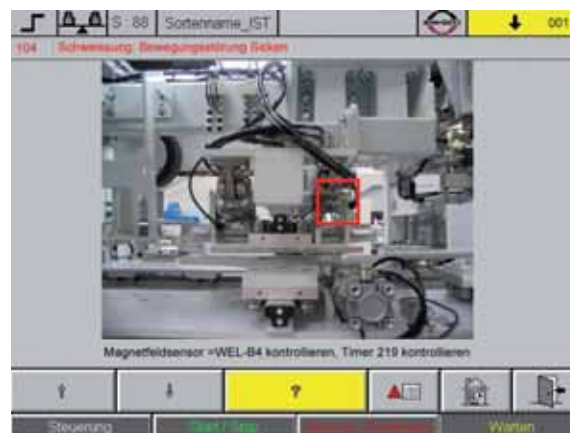
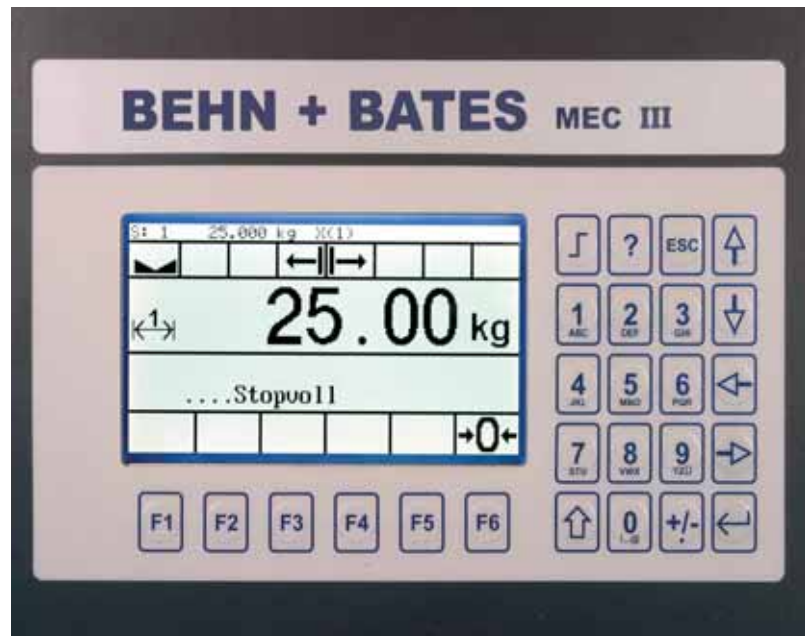
software for the graphical and spreadsheet analysis of the filling process

Your advantages:

- production of individual weight reports and weight diagrams
- complete recording of the products and batches
- optimum quality management aid

Your benefit:

consideration of all filling relevant needs by the in-house development of the complete weighing and control technologies



Upper picture:
MEC weighing
electronics

Left picture:
Touch panel with
graphical error display

Left picture:
Data processing
system DPS – Gaussian
distribution curve

Accessories

Do you have special demands on your filling machine? - Please feel free to contact us. We have the solution, e. g.

- motor-driven height adjustment of the bag chair
- special dust hoods for dust removal when filling very fine products
- filling spout for the filling of open mouth bags, barrels and buckets

- integration of a metal detector
- integrated bag vibrator for product densification during filling
- automatic vertical bag discharge
- belt control and check weigher
- sampling device
- undercarriage for moving the filling machine
- design for wet cleaning

Your benefit:
packaging solutions
tailor-made for your needs



Belt control and check weigher



Metal detector integrated in the filling channel of the impeller packer with evaluation technology at the machine frame



Bag transport system with metal detector

Automation – Valve Bag Application



3-spout filling machine for sugar, installed in a West German sugar factory

The FRONTLINE is the flexible linear valve bag application system for the economic use in combination with 1- to 3-spout inline filling machines. It can reliably process all of the usual PE or paper valve bags suitable for automated filling.

Standard bag dimensions:

bag width 300 - 600 mm
bag length 300 - 800 mm
valve width 120 - 150 mm

Also other bag dimensions can be utilized. Let us know your requests and we will realise them.

Machine output:

up to 750 bags per hour

Your advantages:

- space-saving positioning which is located either to the right or left of the filling machine
- easy cleaning or manual operation by free access to the front of the filling station
- utilization of different empty bag magazines, dependent on the necessary storage capacity and the available space
- variable positioning of the empty bag magazine
- trouble-free application and sealing process by servo driven linear bag transport running parallel to the filling machines

... and what else counts:

- safe mechanical opening of the bag valve
- control mechanism for the valve opening and the correct application
- simple changing of bag sizes and types with the same valve size
- space-saving integration of the control panel into the FRONTLINE housing
- low maintenance by using low-maintenance components
- easy expansion of existing filling stations with minimum interruption of packing operation



Suction bar to take the empty bag out of the bag magazine



Stretching cone (within the valve) for the optimum valve opening and trouble-free empty bag application



Rapid-change bundle magazine carriage for a capacity of up to 200 bags

Your benefit:

Due to the linear application the relation valve opening/filling tube diameter is reduced to a minimum. This results in:

- a 99 % application rate, thus an optimum empty bag application
- a minimization of product loss during filling

Automation – Valve Bag Sealing

Clean and closed bags in connection with low product loss and thus clean machine components require the automatic valve bag sealing. For this, we have utilized for years our reliable ultrasound valve bag sealing station, that we have successfully refined and optimized for the use in the food industry taking into consideration the severe rules of hygiene.

Due to the air-tight bag seal, no product can escape out of the valve. The entire filling area remains clean.

The function in short:

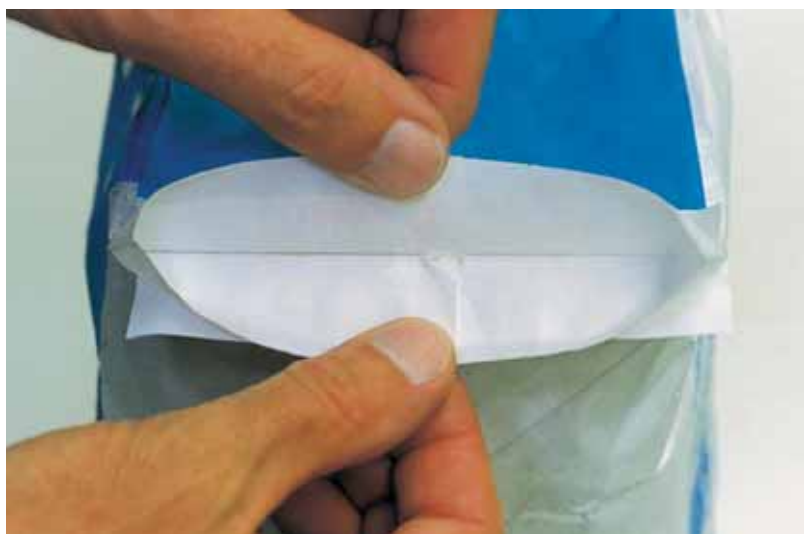
The filled bag is automatically removed from the filling spout, sealed directly with cold welding tools and then discharged onto a conveyor belt.

Your advantages:

- space- and cost-saving integration of the sealing station into the machine frame
- clean and fast sealing of the valve bag directly at the filling spout
- sealing carried out with cold welding tools
- self-cleaning effect in the welding zone
- short sealing times – high sealing rate
- explosion-proof design for the use in dust explosion zone 21 according to ATEX
- clean bags, clean working environment, better storing properties



Valve bag sealing station – space- and cost-saving integration at the filling spout



Hermetically closed valve



Bag filling



Bag chair provided as bag guiding plate for the smooth bag discharge

Your benefit due to the combination of our filling and sealing technologies :

- profit maximisation by clean and weight-accurate product processing as well as improved product and humidity protection at the same time
- cost reduction by minimum space requirement, increased cleanliness of the complete filling area and reduced machine and operation costs
- high advertising impact by clean and compact bags



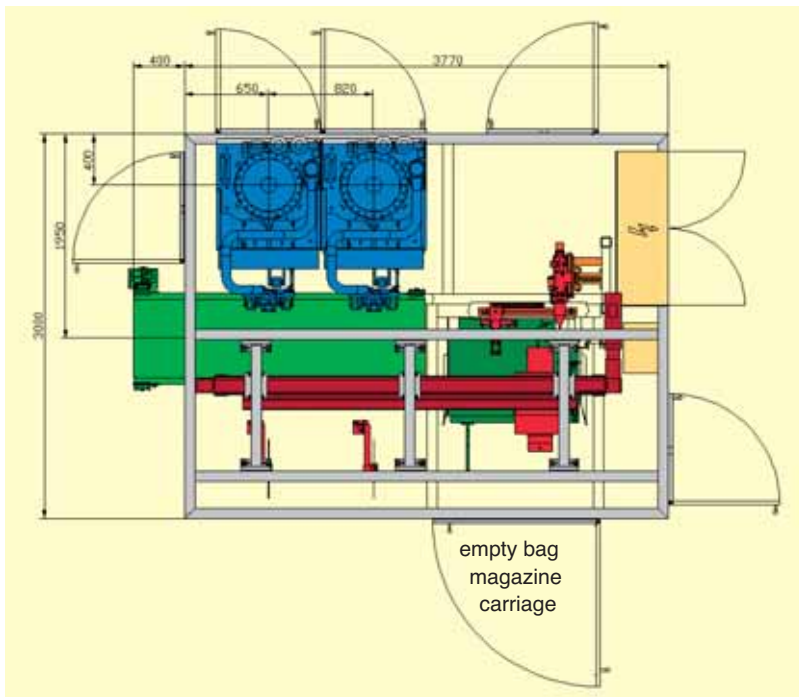
Discharge of the filled, sealed bag without any machine contamination by product dust

The “Plug ’n Pack” Concept INTEGRA

All in One System: Applying – Filling – Sealing



INTEGRA FD1 for the filling of cocoa powder



Possible positioning of an INTEGRA FD2 with empty bag bundle magazine carriage

The INTEGRA system unifies the applying, filling and sealing technology in one compact readily assembled unit. The filling principle is chosen dependent on your product.

Machine output:

100 up to 750 bags per hour with filled weights from 10 to 50 kg, dependent on your product and number of filling spouts. The INTEGRA is available with 1, 2 or 3 filling spouts or on demand in expandable version.

Your benefit:

You will have a compact unit ensuring a clean, low noise filling operation and an optimum work environment.

Your advantages:

- compact unit, low space requirement
- short commissioning times due to the supply of a readily assembled unit
- integrated operating terminal for easy operator guidance
- completely housed machine design with large maintenance doors
- low noise filling operation
- integrated control panel
- simple operation and maintenance
- anti-static polycarbonate windows for visual inspection of the packing process
- high level of operational reliability
- mobile plant concept (optional)



INTEGRA FD3 for the filling of starch at an output of 600 bags per hour



INTEGRA in operation: applying, filling and sealing

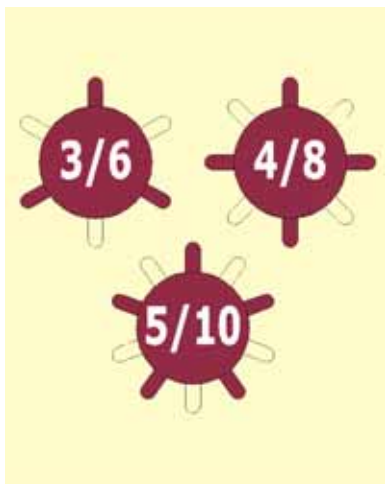


The result: perfectly filled bags with high advertising impact

ROTOSEAL System – Valve Bag Filling to Perfection



Air type ROTOSEAL system – can be extended from 6 to 8 spouts –



Expandable ROTOSEAL designs



Filling spout with integrated sealing station

With our ROTOSEAL system we offer you a rotating high-performance filling system that accurately seals the valve bags immediately after having been filled at the filling spout.

In contrast to the conventional inline filling machines the filling spouts are installed on a rotating silo. The filling spouts are independently working individual units, each equipped with its own control and weighing technology.

The filling principle – impeller or air – is chosen dependent on your product to be filled.

Machine output:

600 up to 2,000 bags per hour with filled weights of 10 to 50 kg

Your benefit:

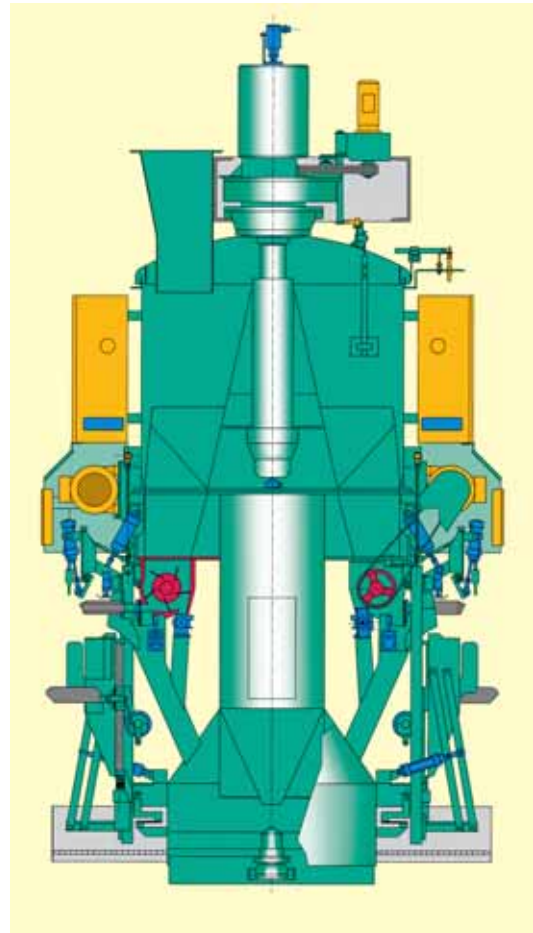
high functionality and efficiency for high-performance packaging operations

Your advantages:

- high packaging output with space-saving integration
- central product feed
- clean and weight-accurate product filling
- bag sealing by means of ultrasound prior to bag discharge
- central filled bag transport system
- possible automation of product and bag size settings
- integrated dust collection system



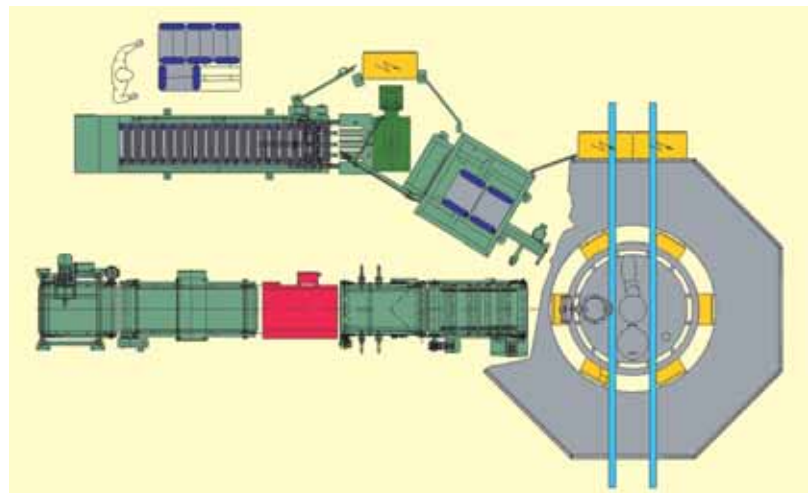
8-spout ROTOSEAL system based on the impeller filling principle for starch



Cross-section of the impeller type ROTOSEAL system

... and what else counts:

- gentle operation of subsequent machine aggregates by continuous bag discharge
- easy future output increase without any expensive system adjustments when using an expandable Rotoseal system
- cost savings due to reduced plant operating costs



Typical arrangement of a ROTOSEAL system with automatic valve bag applicator and bag transport system

BEHN + BATES

FILLING FOOD - CONSIDER IT BAGGED!

Step by step to success

Your continuous and reliable support during all phases of a project – that is a fundamental part of our company philosophy. This applies also for projecting new plants and modernising existing systems as well as for assembly and commissioning, training, maintenance and spare parts supply.

BEHN + BATES – Your reliable partner when it comes to fill food products in a clean and efficient way.



TOPLINE for the filling of powdery products into open mouth bags

BEHN + BATES

Maschinenfabrik GmbH & Co. KG

Robert-Bosch-Straße 6 · 48153 Münster · Germany

Telephone: +49 251 9796-0 · Telefax: +49 251 9796-260

E-mail: sales@behnbates.com · Internet: www.behnbates.com

BEHN + BATES America in the United States:

P.O. Box 80937 · Conyers, GA 30013 · Telephone: +1-770-388-7886 · Telefax: +1-770-760-1181

27281 Las Ramblas, Suite 200 · Mission Viejo, CA 92691

Telephone: +1-949-420-3090 · Telefax +1-949-420-3091

E-mail: foodpackaging@behnbatesusa.com · Internet: www.behnbatesusa.com