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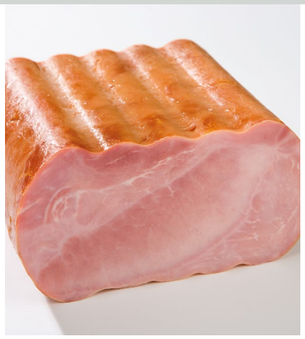
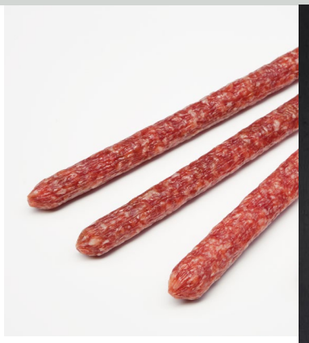
HIGH VACUUM FILLING TECHNOLOGY

Optimisation Production process. Production output. Product quality.





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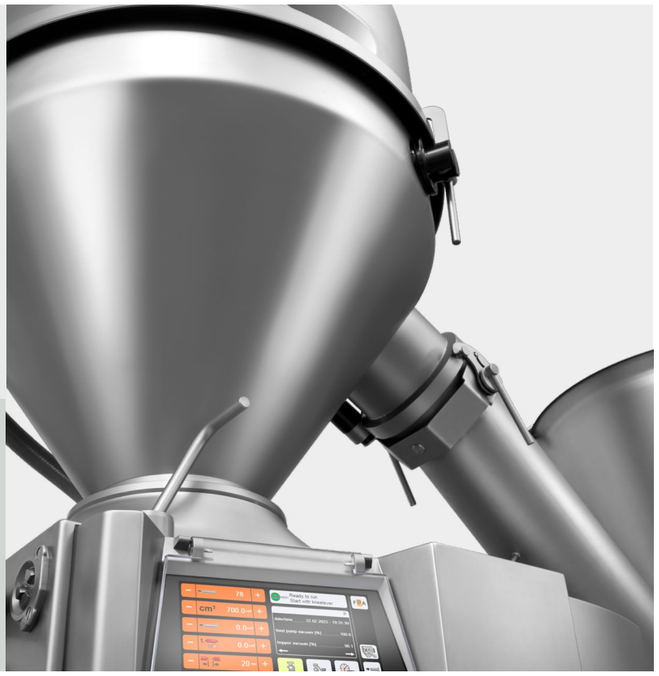
INTELLIGENT, PATENTED HIGH VACUUM FILLING TECHNOLOGY

For technological, sensory and economic advantages



Handtmann high vacuum technology offers different options for designing processing methods more efficiently and economically, while at the same time reliably exhibiting important technological and sensory features of the products.

In the Handtmann high vacuum fillers, an additional vacuum is applied to the hopper on top of the feed system vacuum. To this end, the vacuum system is enhanced with an additional vacuum pump, specially designed for the hopper. The hopper is closed and is connected to an upstream reservoir, such as a floor-standing hopper, silo or tank. The vacuum applied to the hopper allows filling product to be sucked from the reservoir into the filling machine. The filling product is additionally evacuated to the desired extent.

FIELDS OF APPLICATION

The HVF model series comprises four different machine types adapted to corresponding basic products. The range of applications is by design flexible and use in mixed operation with a broader product portfolio is possible.

HVF 670 for ham products made from large and whole muscle pieces with individual pieces weighing more than 500 grams to entire topsides/silversides.

HVF 664 for formed ham made from ground material or products made from small-piece initial product with pieces weighing up to approx. 500 grams.

HVF 660 for large-calibre dry sausage, boiled salami, cooked sausage, semi-dry sausage or summer sausage.

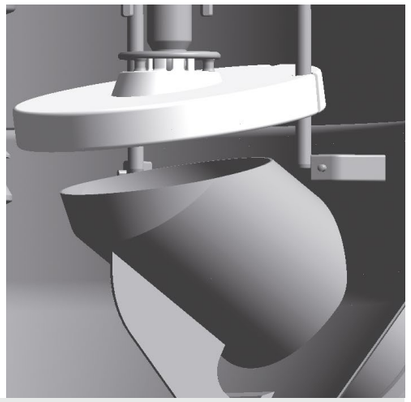
HVF 658 for small-calibre dry sausage snacks or products made from very firm feed material.

Continuous filling. Double vacuum.
A significant advantage of the Handtmann HVF technology is the servo-controlled intake valve between reservoir and hopper in combination with an automatic filling level sensor for continuous filling of the hopper. By means of this control, the opening gap of the valve and the inflow rate into the hopper can be adjusted to the filling product. This adjustment is made according to the piece size or to the homogeneity and viscosity of the filling product. Moreover, an active feed is installed to support continued transport of the filling product into the feed system. According to the requirements of product quality, it too can be adjusted to the filling product both mechanically and by the control system, and thus guarantees portions with highly accurate weights. The level of the applied vacuum has a very large influence on product quality and can therefore be controlled.

Modular. Compatible. Connectable.
Thanks to their modular design, compatibility with all auxiliary devices and connection to the HCU software, Handtmann high vacuum fillers are flexible production modules. They are compatible with all commonly used additional equipment and are synonymous with modern production methods and profitable process optimisation. The control system developed by Handtmann combines the mechanical and electronic components to form a perfectly matched and synchronised overall system. As reliable production factors, the high vacuum fillers guarantee a level of process reliability that is a key factor for sustained success in the field of high-performance industrial production.

BENEFIT FROM THESE ADVANTAGES

- First-class product quality due to the complete evacuation of air pockets. This ensures longer shelf life and perfect product appearance, also inside the packaging
- Extremely high portioning accuracy due to optimum and patented feeding
- High production output thanks to a continuous production with excellent suction of the product
- Cost reduction due to shorter maturing time and higher selling weight
- Universally applicable system with low running costs
- Essential sensory, technological, economic and legal advantages compared to conventional production



TECHNOLOGICAL FEATURES

Perfect interplay of intelligent components

1. CENTRAL CONTROL SYSTEM: MONITOR TOUCH-CONTROL

The monitor touch-control is the central control element of Handtmann high vacuum fillers. The entire production process involving the high vacuum filler is controlled entirely via the monitor control system, even with line solutions such as when using clippers.

- Flexibility of use due to versatile communication with auxiliary devices and in line solutions
- High user convenience due to touch functionality and 12" colour display
- Simple operating logic thanks to icon language and clear display
- Program memory with 250 storage spaces
- Choice of 30 languages

2. DRIVE TECHNOLOGY

The Handtmann servo technology converts the high vacuum fillers into reliable production factors in terms of precision, performance and availability. All drives are designed with highly-dynamic, maintenance-free servo technology, thus reducing maintenance costs significantly.

3. VACUUM HOPPER

The vacuum hopper plays a very important role within the system. With a permanent and controllable vacuum, it provides excellent evacuation, which is a key factor for the quality and the longer shelf life of the product. Automatic vacuum hopper filling level monitoring ensures high filling capacity and therefore makes the system very economical as idle times are eliminated.

4. INTAKE GEOMETRY/INTAKE VALVE

The generously proportioned intake area, which allows free flow of the product and a short, direct suction path guarantee high filling capacity. The intake valve is controlled dynamically via servo technology and the hopper intake gap is continuously regulated, allowing individual adaptation in line with product requirements. Uniform filling which is gentle on the product and maximum product evacuation are the result.

5. FEEDING/VANE CELL FEED SYSTEM

Two separately controlled vacuum systems in the hopper and the vane cell feed system create the ideal vacuum. This generates perfect evacuation and ensures excellent product quality. Furthermore, the feeding device and the auger are driven and can be controlled independently of one another, thus ensuring uniformly good cell in-feed and therefore accurate portioning weights. The vane cell feed systems in the high vacuum fillers are equipped with large vane cell feed system capacities, adapted in line with the particular application. The system can therefore be tailor-made for the product. The short product path and the maximum cross-section in the vane cell feed system and outlet ensure that the product is handled gently.

6. SUCTION PIPE

The suction pipe ensures that the feed material is sucked in reliably and gently. Even large pieces of meat or whole topsides/silversides do not present a problem. A short and direct suction path guarantees industrial high performance. The suction pipes with diameters of 200 mm or 250 mm are easy to handle due to the quick-release lock solution.

7. INTELLIGENT VACUUM MANAGEMENT SYSTEM (IVM)

The Intelligent Vacuum Management System developed by Handtmann monitors and controls the vacuum circuits in the vacuum hopper and vane cell feed system which are controlled independently of one another, as well as the filling level sensor and the intake valve.

- When the floor-standing hopper starts to be emptied, the intake valve shuts instantly to prevent a drop in vacuum.
- The vacuum hopper is emptied until the minimum filling level is reached.
- Intake valve opens, vacuum drops, HVF stops.
- Complete emptying of the floor-standing hopper.
- The intake valve closes, the vacuum hopper is evacuated, the HVF processes the entire hopper batch.

The IVM therefore guarantees excellent process reliability and evacuation. Reliably high product quality from the first to the very last portion.

EQUIPMENT OPTIONS AND ACCESSORIES

For versatile use as flexible production module

1. FLOOR-STANDING HOPPER

Type 695 and type 697 floor-standing hoppers are tailor-made for the specific production requirements.

Type 695 is suitable for particularly difficult to feed products, such as dry sausage and cohesive cooked sausage, as well as for all other products in conjunction with HVF 658/660/664.

- Hopper volume 450 litres
- 250 mm suction pipe with quick-release lock
- Optional attachment of 83-6 arm lifting device with 200-litre sausage meat trolley
- Optional filling level sensor for automatic feed control and for automatic HVF intake control, e.g. when the floor-standing hopper is empty.

Type 697 has been designed for ham production in conjunction with HVF 670 or HVF 664.

- Hopper volume 1,100 litres
- 200 mm suction pipe with quick-release lock
- Optional filling level sensor for automatic feed control and for automatic HVF intake control, e.g. when the floor-standing hopper is empty.

2. PARTS TROLLEY

The parts trolley is the ideal additional extra for daily handling activities, for cleaning and storing the parts of the high vacuum filler efficiently.

- Type 449-02 for HVF 658, HVF 660 and HVF 664
- Type 449-03 for HVF 670

3. INTEGRATED INLINE GRINDING TECHNOLOGY

Optional use of the Handtmann GD 93-3 inline grinding system in conjunction with HVF 658/660 facilitates enhanced optimisation in terms of product quality and processing. With the Handtmann inline grinding system, the product is ground to its final grain size and simultaneously portioned in one process step. This reduces cutting stresses and shortens process steps. The key advantages are the sensory attractiveness of the products and the optimisation of conventional production methods.

4. VACUUM PIPE UNIT

The vacuum pipe unit with patented casing brake facilitates additional evacuation directly where the product exits from the filling pipe. Any air bubbles under the casing are eliminated, thus the product is totally free of air. The vacuum is controlled by the HVF control system in synch with product ejection.

5. WEIGHT COMPENSATION

The integrated weight compensation for HVF 660 and HVF 658 facilitates an even greater improvement in weight accuracy with excellent production output and product quality. It provides pressure and volume compensation in the cells of the vane cell feed system and thus eliminates fluctuations caused by different consistencies in the product to be processed.

6. MOBILE VACUUM UNITS

The mobile vacuum units are the ideal alternative to the central vacuum or the directly attached vacuum pump: 448-01 mobile vacuum unit with one 100 m³/h vacuum pump 448-02 mobile vacuum unit with two 100 m³/h vacuum pumps

7. LINKING THE FILLING SYSTEM VIA HCU

Planning. Checking. Control. HCU (Handtmann Communication Unit) is the groundbreaking software from Handtmann, used for linking the filling systems with the production plant's data network. For transparency and optimisation of complex production processes. Automatic weight control is one of the options. An integrated weighing system constantly supplies a target/actual value comparison and readjusts the portion weight. Minimising overfilling alone results in significant cost reductions.

8. CONNECTION TO AL SYSTEM

For an automated sausage production, the HVF 664, HVF 660 and HVF 658 high vacuum fillers need to be operated together with the Handtmann linking and hanging lines. Reliable and economical production of cooked or dry sausages in natural, collagen or artificial casing is guaranteed with the hanging or cutting options.

9. COMPATIBILITY

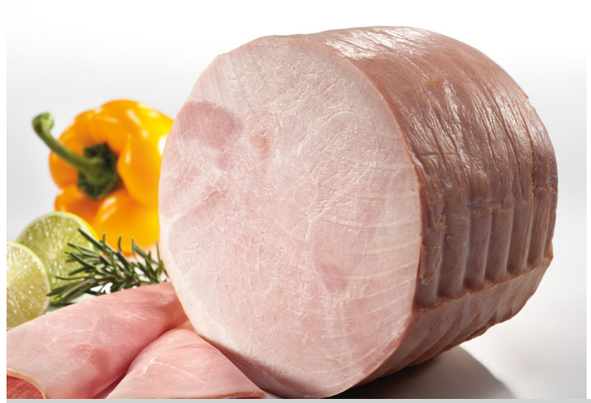
Every high vacuum filler is suitable for connecting all types of clippers from all manufacturers.

10. 424/425 CUTTING VALVE

425 cutting valve for 1 or 2-lane portioning into moulds or thermo-forming machines in conjunction with HVF 670, HVF 660 or HVF 664, for large pieces of ham of up to approx. 500 g feed piece weight.
424 cutting valve for HVF 670, HVF 664, HVF 660, HVF 658.

11. INTEGRATION INTO LINE SOLUTIONS

All high vacuum fillers can be easily integrated into complex process solutions. Due to their flexible usage they are key components of modular line solutions or highly-compatible basic modules in automated production processes. The high vacuum fillers are the reliable basis for an effective production environment.



HVF 670 HIGH VACUUM FILLER

For high-quality ham products from whole muscle pieces

The HVF 670 high vacuum filler is a unique specialist model for the production of premium ham products from large and whole muscle pieces with individual pieces weighing more than 500 grams.

Without using a portioning unit attachment, the HVF 670 fills and portions all qualities of ham with impressive speed, efficiency and accuracy. It boasts unrivalled production characteristics when processing large muscle pieces or whole topsides/silversides, and it therefore sets completely new quality standards for processing cooked ham. The individual pieces are portioned gently and remain as whole muscle pieces. In conjunction with the excellent evacuation provided by the high vacuum technology, a first-class product is produced with no air pockets and without gel being deposited. The cutting valves also allow direct portioning into containers or thermo-forming machines.

FIELD OF APPLICATION

- Whole muscle pieces
- Ham with individual pieces weighing more than 500 grams

OPTIONS

- Clipper connection
- 449-03 parts trolley
- Digital HDS options: HCU, HMC, HFM
- Vacuum pipe unit
- 448-01/448-02 mobile vacuum units
- Type 697 and type 695 floor-standing hopper
- 424/425 cutting valve

ADVANTAGES

- Vane cell feed system with large feed system volume for whole muscle pieces
- Optimum product protection due to short product path and large outlet cross-section of 100 mm. No abrasion, therefore no sausage meat-type pockets
- Excellent product quality for high-quality ham products made from large and whole muscle pieces, with optimum product cohesion
- Maintains the muscle structure with only a few cuts in the system
- Direct connection of clippers and other auxiliary devices
- 424/425 cutting valve as equipment option for portioning directly into containers or thermo-forming machines

PERFORMANCE DATA	HVF 670
Filling capacity (can be continuously controlled)	670-7: 7,000 kg/h 670-11: 11,500 kg/h 670-16: 16,000 kg/h
Filling pressure	up to 10 bar
Outlet diameter	100 mm
Portioning range	100 to 200,000 g
Feed system 10,000 cm³	1,666 cm³ – 6 pump vanes 3,333 cm³ – 3 pump vanes
Net weight	1,640 kg
Gross weight	1,885 kg (case: 2,095 kg)
Case dimensions	2,310 x 1,850 x 2,250 mm

PRODUCT EXAMPLE HAM IN ASPIC	
Product description	Jellied meat product with inserts up to approx. 30 mm Filling calibre 105 mm
Production process	Cooled down, pre-ground aspic product is mixed cold with pre-processed inserts and filled via the feed/vacuum tube system of the HVF 670.

PRODUCT EXAMPLE COOKED HAM	
Product description	High-quality, large-piece cooked ham product Filling calibre approx. 150 mm
Production process	Tumbled, cured meat parts are filled via the feed system of the HVF 670 into corresponding casings. The portions then undergo a thermal boiling process before they are cut in slices by the cutting machines.

PRODUCT EXAMPLE DRY-CURED HAM	
Product description	High-quality, large-piece dry-cured ham product Filling calibre approx. 130 mm
Production process	Meat parts, cohesively tumbled and dry salted, are filled via the feed system of the HVF 670 into corresponding gas-permeable casings, in the same way as in cooked ham production. A conditioned thermal treatment follows (maturing/smoking/drying) before the portions are cut in slices or cubes by the cutting machines.

HVF 664 HIGH VACUUM FILLER

For products made from small-piece or ground material

The HVF 664 high vacuum filler is tailor-made for the production of ham made from small-piece initial product or ground material with pieces weighing up to 500 grams, such as formed ham.

The higher the level of evacuation, the higher quality the ham appears to have. The performance of the HVF 664 high vacuum filler sets new standards in this largest market segment for ham product in the world: excellent product quality and product presentation as well as no trapped air thanks to the very high evacuation capacity. Perfect weight checking and the fact that the system is a compact, continuous portioning system without an external portioning unit ensure that the most stringent demands on economical performance are met.

FIELD OF APPLICATION

- Formed ham from ground material or small-piece initial product with pieces weighing up to approx. 500 g

OPTIONS

- Clipper connection
- 449-02 parts trolley
- Digital HDS options: HCU, HMC, HFM
- 448-01/448-02 mobile vacuum units
- Vacuum pipe unit
- Operation in VF mode without hopper vacuum
- 695 or 697 floor-standing hopper
- 695 floor-standing hopper with arm lifting device as an option
- 424/425 cutting valve

ADVANTAGES

- Optimum filling of the vane cell feed system's cells and outstanding weight accuracy, even with a very high hopper vacuum through an active feeding device
- Unrivalled product quality for ham with excellent product appearance and elimination of air pockets
- High effective capacity due to continuous filling and portioning without additional equipment
- Direct connection of clippers and other auxiliary devices
- 424/425 cutting valve as equipment option for portioning directly into containers or thermo-forming machines

Performance data	HVF 664
Filling capacity (can be continuously controlled)	14,400 kg/h 240 litres/min.
Filling pressure	up to 35 bar (30 bar with max. filling capacity)
Feed system 1,930 cm³	138 cm³ – 14 pump vanes 276 cm³ – 7 pump vanes 483 cm³ – 4 pump vanes
Outlet diameter	60 mm
Portioning range	100 to 200,000 g
Net weight	1,540 kg
Gross weight	1,775 kg (case: 1,990 kg)
Case dimensions	2,310 x 1,850 x 2,250 mm

PRODUCT EXAMPLE COOKED SAUSAGE	
Product description	Cooked sausage product finely ground Filling calibre 48 mm
Production process	The product is fed to the HVF 664 through applied vacuum via an upstream grinding and silo system. The sensitive control system of the intake valve and the HVF 664 vacuum system ensure pore-free cuts.

PRODUCT EXAMPLE SMALL-PIECE HAM	
Product description	Small-piece cooked ham product Filling calibre approx. 100 mm
Production process	Ground and tumbled, cured meat parts are filled via the feed system of the HVF 664 into corresponding casings. The portions then undergo a thermal boiling process before they are cut in slices by the cutting machines.

HVF 660 HIGH VACUUM FILLER

For innovative cooked, boiled and dry sausage production

The HVF 660 high vacuum filler makes it possible to produce classic and new products more economically using high vacuum technology.

The excellent evacuation performance of the Handtmann high vacuum technology achieves totally pore-free products.Cooked sausage, boiled salami, boiled sausage and semi-dry sausage benefit from efficient hopper feeding and extremely gentle product handling. High production output, a state-of-the-art energy balance, up-to-date safety and hygiene standards and a specially adapted parts trolley for ergonomic working ensure efficiency, economic use and an extremely short payback period.

FIELD OF APPLICATION

- Large-calibre dry sausage
- Boiled salami
- Cooked sausage
- Semi-dry sausage

OPTIONS

- GD 93-3 inline grinding system
- 695 floor-standing hopper with arm lifting device as an option
- 449-02 parts trolley
- Weight compensation
- Digital HDS options: HCU, HMC, HFM
- Clipper connection
- Operation in VF mode without hopper vacuum
- 448-01/448-02 mobile vacuum units
- 424/425 cutting valve

ADVANTAGES

- First-class product quality with excellent product appearance due to elimination of all residual air. This ensures longer shelf life and perfect appearance, including inside the packaging
- Very high production output due to excellent suction and continuous filling without downtimes
- Very good portioning capacity and weight accuracy due to optimum feed Maximum evacuation for reduced maturing time and higher selling weight
- Optional use of the integrated Handtmann inline grinding technology facilitates further optimisation of product quality and processing
- Compact and universally applicable system with easy handling and low running costs

Performance data	HVF 660
Filling capacity (can be continuously controlled)	10,200 kg/h 170 litres/min.
Filling pressure	up to 40 bar
Feed system 1,930 cm³	138 cm³ – 14 pump vanes 276 cm³ – 7 pump vanes 483 cm³ – 4 pump vanes
Outlet diameter	60 mm
Portioning range	100 to 200,000 g
Net weight	1,480 kg
Gross weight	1,780 kg
Case dimensions	2,310 x 1,850 x 2,250 mm

PRODUCT EXAMPLE JELLIED MEAT	
Product description	Polish jellied meat product with inserts of approx. 20 mm
Machine equipment	Filling pipe 48 mm
Process	Pre-cooked inserts cut in cubes are mixed with cooled down, ground rind pulp as well as additives and filled into meat trolleys. The product is poured into the floor-standing hopper using the HVF 660 lifting device, sucked in by the intake valve of the hopper and portioned by the feed system in combination with a clipper.

PRODUCT EXAMPLE COOKED SAUSAGE	
Product description	Polish cooked sausage product, semi-dry sausage
Machine equipment	Filling pipe 48 mm
Process	The coarse cooked sausage is prepared for the inline grinding system application with conventional means (grinder/ cutter). The combination of HVF 660 and inline grinding technology results in uniform insert distribution and a homogeneous, pore-free product appearance.

HVF 658 HIGH VACUUM FILLER

For first-class, air-free and compact dry sausage products:

The HVF 658 high vacuum filler with a filling pressure of up to 72 bar is the perfect solution for dry sausage, dry sausage snacks and products made from very firm or cold product.

A totally pore-free and compact dry sausage product is achieved thanks to the excellent evacuation facilitated by the Handtmann HVF 658 high vacuum filler. An outstanding level of productivity is ensured by high filling pressure, optimum firm product suction characteristics and perfect feeding into the vane cell feed system. Optional use of the integrated Handtmann inline grinding technology facilitates further optimisation of product quality and processing. Other products with very firm or cold feed material also benefit from Handtmann high vacuum technology.

FIELD OF APPLICATION

- Small-calibre dry sausage
- Dry sausage snacks
- Products made from very firm feed material

OPTIONS

- GD 93-3 inline grinding system
- 695 floor-standing hopper with arm lifting device as an option
- 449-02 parts trolley
- Weight compensation
- Digital HDS options: HCU, HMC, HFM
- Connection of clippers or linking lines
- Operation in VF mode without hopper vacuum
- 448-01/448-02 mobile vacuum units

ADVANTAGES

- Pore-free, compact product quality with excellent product appearance and attractive colour due to the elimination of all residual air. This ensures longer shelf life and perfect appearance, including inside the packaging.
- Outstanding suction of firm or cold products results in high filling capacity and productivity.
- Very good portioning capacity and weight accuracy due to optimum feed.
- Maximum evacuation for reduced maturing time and higher selling weight.
- Space-saving, compact system with easy handling and low running costs.

Performance data	HVF 658
Filling capacity (can be continuously controlled)	6,000 or 7,200 kg/h 100 or 120 litres/min.
Filling pressure	up to 72 bar (50 bar with max. filling capacity)
Feed system 1,070 cm³	89 cm³ – 12 pump vanes 178 cm³ – 6 pump vanes 267 cm³ – 4 pump vanes
Outlet diameter	60 mm
Portioning range	100 to 200,000 g
Net weight	1,480 kg
Gross weight	1,740 kg
Case dimensions	2,310 x 1,850 x 2,250 mm

PRODUCT EXAMPLE DRY SAUSAGE	
Product description	Standard dry sausage product Calibre 73 mm Grain size 2 mm Filling calibre approx. 73 mm Filling process via filling pipe 36 mm
Process	The dry sausage product is prepared for the inline grinding system via frozen meat cutter and cutter using conventional machine technology. The filling temperature is -2.5 °C. The measurable air content is reduced to 0 %.

PRODUCT EXAMPLE DRY COCKTAIL SAUSAGE	
Product description	Calibre 24 mm Filling process via filling pipe 12 mm
Process	The dry sausage product is prepared for the inline grinding system and the AL system via frozen meat cutter and cutter using conventional machine technology. The filling temperature is -2.5 °C. The measurable air content is reduced to 0 %.