

Create quality burgers of any type and any volume

Burger processing technology



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- Innovative, low-pressure portioning and forming
 - Multiple proteins, textures and shapes
 - Low, medium and high volumes
 - Scalable solutions to grow with your requirements

What makes a burger a burger?

The key elements for creating the perfect patty

Texture determines taste

Texture highly influences a consumer's taste experience and is determined by the grind size of the meat and orientation of the meat proteins, most importantly the collagen fibers. By controlling the direction of the fibers, it is possible to obtain a certain texture. The size and orientation of fibers allow different amounts of air to be held inside the burger, which creates different levels of juiciness. Increasing the size of the fibers also gives more bite, improving the feeling in the mouth and giving a more meaty texture.

Shape consistency

Cooking the burger will cause collagen fibers to contract, but it is possible to ensure shrinkage is visually minimized by controlling the orientation of the collagen fibers during processing and steering them in a vertical direction. As the burger is cooked, the reduction will be in height rather than in diameter. This means that the burger will look similar in size before and after cooking, giving the consumer an optimal post-purchase experience.

Appearance is key

The appearance of a burger, in both an uncooked and a cooked state, will strongly influence the buyer decision process and is very important for overall consumer satisfaction. Fiber orientation, grind size and surface appearance all determine how visually appealing a burger is to the consumer.



The different types of burger

Each burger type has its own characteristics to meet diverse consumer preferences



The standard burger

This type of burger uses a meat mass with an unordered fiber orientation resulting from the grinding or mixing process. It is preferable not to use high-pressure forming with this kind of meat mass in order to prevent shape distortion and loss of raw material. Instead, it should be gently portioned in a mold without the use of any additional fiber orientation techniques.



The tender-fresh burger

The tender-fresh burger is characterized by its bite and beefy texture, which is created by a vertical fiber orientation. When biting into a tender-fresh burger the independent columns come loose in the mouth and there is no need to cut through fibers. An added advantage with vertical fiber orientation is that most of the shrinkage is in height rather than diameter.



The homestyle burger

When a looser bite is desired, the same fiber orientation as the tender-fresh burger is used but the size of the meat columns is reduced and finer vertical fibers are created. These smaller fibers also limit the visual shrinkage.



The butcher burger

An alternative fiber orientation is the butcher style or angel-hair texture, where the fibers are interlaced. This texture leaves some air inside the burger, which increases juiciness and reduces cooking time. It also gives the burger a unique, artisan texture and look.

Any type of protein

Burgers are no longer just made from beef, there are many alternatives such as chicken, pork, lamb and the increasingly popular plant-based proteins. The technology in our systems transfers effortlessly between all types of raw material to create the perfect burger for any protein.



Getting it right every time

The critical factors in high-quality, consistent burger production

Fat percentage

Fat to lean ratio is key to achieving the right end-product quality. Controlling fat content not only allows you to meet specification it also controls costs. X-ray technology and interactance spectroscopy are two types of technology used to precisely determine the fat to lean ratio.

Product weight

Achieving the target weight is crucial to ensure product consistency and optimal yield. Product weight can be determined in two ways. When a forming machine uses pressure to fill a mold, the volume of the mold and the density of the meat mass determine the weight of the product. When a vacuum stuffer is used, the product weight can be controlled using a set portion weight on the vacuum stuffer connected to the machine.

Temperature

Temperature is an important parameter to control meat viscosity. The right temperature can be achieved by mixing fresh and frozen meat to a specific ratio. Alternatively, if only fresh meat is required, a mixer with a nitrogen based cooling system can be used to achieve the required temperature.

Foreign body detection

Food safety is of utmost importance so it is vital to ensure contaminant free products. As a minimum, incoming and outgoing goods should be scanned with a metal detector. A more advanced inspection system using X-ray technology can also be used to detect not only metal but also bones and glass. This should take place as early as possible in the processing line to prevent bones and other hard contaminants from reaching the grinders. This not only improves product quality and safety, but also reduces waste, saves time and minimizes costs.



Marel's burger processing equipment

Flexibility is key for the modern day processor

Meeting consumer demand

To take advantage of market opportunities created by changing consumer demand, you need to be able to produce a variety of burger shapes and textures, in various quantities. At the same time, they have to have consistency and the highest quality. Regardless of volume or burger type, we have a solution to meet your needs.

Scalable solutions

Our burger processing lines are modular so you can start small and at any time scale up to meet an increase in volume or a demand for completely new products. Our extensive range of meat preparation equipment is also compatible with all of the different forming solutions, which makes it easy to interchange forming units should you wish to diversify or specialize your burger production at any time.

Technology and innovation

From beginning to end, across an endless range of possibilities, we can create a solution for you. Our meat preparation systems can prepare your mass in a hygienic, accurate and efficient way to the highest quality. Our advanced technology for inline fat analysis and contaminant detection can assure the highest quality products as well as food safety. And for forming burgers, we have various innovative systems for low pressure portioning and forming.

Data-driven processing

Innova, our overarching, modular software solution, lets you collect data and utilize it effectively, providing full control and traceability throughout the production process.

Supporting you at every step

From incoming raw material to finished goods, we have the expertise to help you

Inspection and fat analysis

By integrating one of our solutions into your burger line, you have the unique possibility to fully control the fat percentage of the meat mass going into the forming process. Our revolutionary SensorX Magna with advanced X-ray technology also has the advantage of detecting bone and other hard contaminants.

Grinding and mixing

Our grinders and mixers are an important part of the burger line, preparing your meat mass in a gentle, accurate and efficient way to the highest quality and with

optimal stability. The design of the grinders and mixers provides minimal protein destruction and smearing of the product. They are capable of enduring extremely heavy loads, require an absolute minimum of maintenance and are designed to be thoroughly hygienic.

Forming

An essential part of a burger line is the forming unit. Our forming equipment ensures consistency and accuracy in weight, shape, size and quality. It also gives flexibility and the ability to produce a wide variety of products.

Weighing

For quality control, it is essential to integrate scales into your burger line. We manufacture inline and standalone industrial scales that provide high levels of accuracy, durability and at the same time are easy to use.

Loading solutions

When burgers need to be delivered to the customer in trays or vacuum packed, we have the equipment to help you provide the necessary presentation with interleavers, stacking and loading solutions.

Entry-level standard burger production

RevoPortioner 400

A line with a RevoPortioner 400 is the perfect solution for processors who are just entering the fresh or retail burger market.

The RevoPortioner 400 forms burgers at low pressure, retaining the texture and structure of the meat mass and ensuring that every burger will have exactly the same uniform shape and accurate weight.

Advanced air release system

The RevoPortioner's patented rotational, low-pressure forming drum is filled through a connecting divider across its width. Burgers are then ejected using an advanced air release system rather than water or pushers.

Maximum 0.3% raw material waste

The low-pressure air release, combined with the unique forming drum not only gives a better product consistency and quality but also significantly reduces raw material waste and creates a cleaner and safer working environment.

Low cost of ownership

Due to its robust construction, the RevoPortioner 400 requires minimal maintenance and has minimal operating cost, over its extensive lifetime the machine has an extremely low total cost of ownership giving greater value for longer.



-  **Burger type:** Standard
-  **Target market:** Retail
-  **Volume:** Medium

Flexible premium burger production

PremiumFormer

A line with a PremiumFormer is ideally suited to processors who want to diversify their production and create different types of premium burgers.

The PremiumFormer is a unique solution for forming fresh burgers with a variety of textures and shapes whilst ensuring the highest quality and consistency.

Numerous fiber orientations and shapes

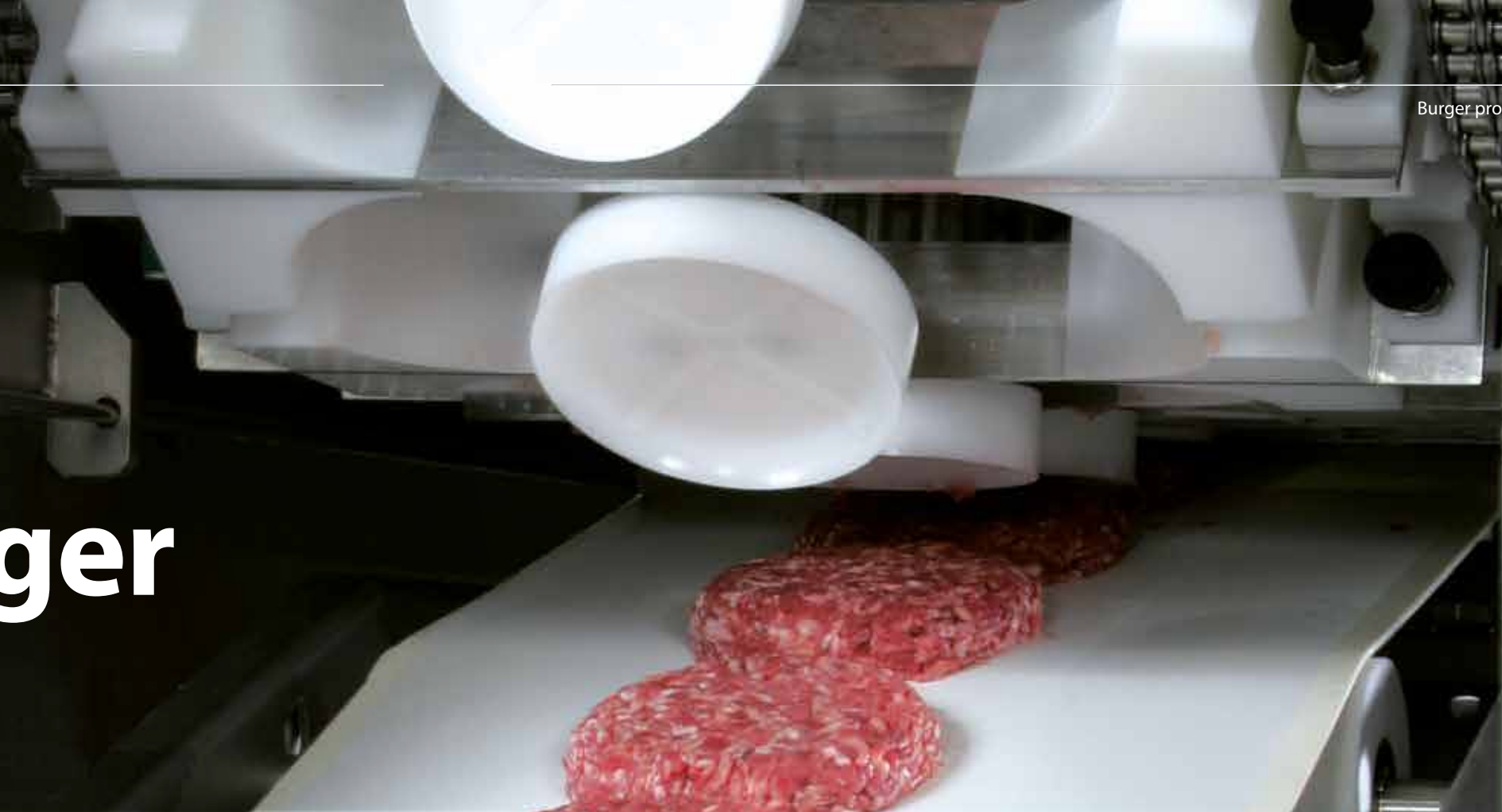
The PremiumFormer creates different fiber orientations for burgers using a finishing module that gives the burger its final texture immediately before filling the forming molds. The molds are interchangeable which allows different shapes to be created easily. The PremiumFormer also uses ultra-low pressure forming, so that the structure and texture of the meat mass is retained.

Quick and easy changeovers

Changeovers between different types of burgers take just a few minutes and thanks to its small footprint, the PremiumFormer will fit easily into any production facility.



Specialized butcher burger production



MasterFormer

For processors who want to specialize their burger production and focus on producing butcher burgers, a line with the MasterFormer is the ideal choice.

Attractive handmade appearance

The MasterFormer portions and forms meat mass into burgers, which have a hand-made appearance and an open structure and texture.

Ultra-low pressure forming

Using minimum pressure and limited mechanical handling, the MasterFormer gently pushes portioned meat into the required shape and then uses a low-pressure release mechanism to ensure the burger remains undamaged.

Minimal waste

There is also the additional advantage that virtually no raw material is wasted during the process.

Product flexibility

Not only can you create a burger with a perfect, hand-made appearance, the MasterFormer lets you switch quickly and easily to forming blocks of minced meat in various weights and sizes.



High-volume standard burger production



RevoPortioner 700 with V-pump

For processors who want to take the volume of their burger production to the next level, a line which includes the RevoPortioner 700 with a V-pump is the ultimate solution. It is ideal for processors creating burgers for quick service restaurants (QSR).

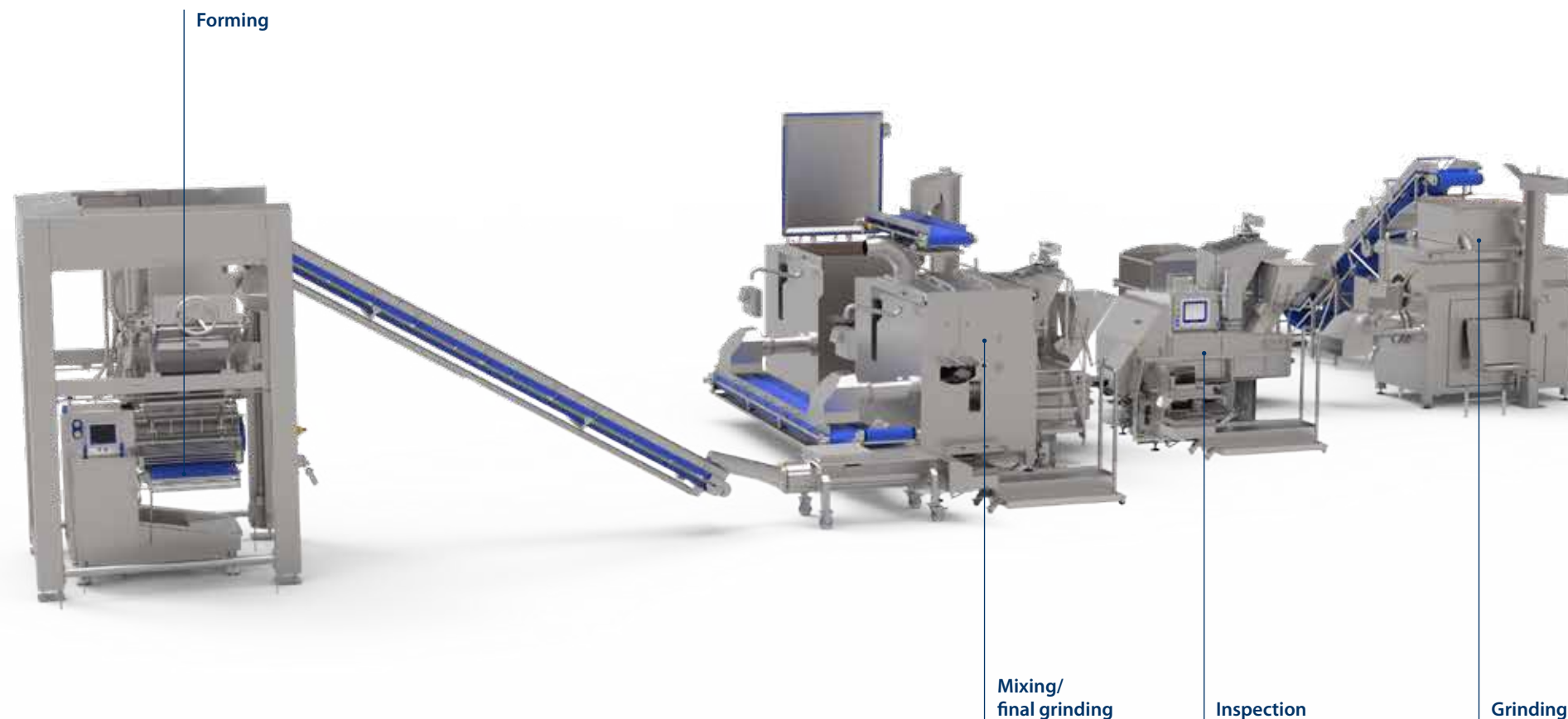
The RevoPortioner 700 forms standard burgers at low pressure, ensuring consistency in shape, weight and quality. However, to achieve higher levels of throughput, up to 5,000 kg per hour, it combines an innovative V-pump concept with patented Helix Drum technology.

Minimal handling for optimal quality

The V-pump introduces a new high-volume pump concept to burger forming. It delivers a high capacity of meat mass, with uniform pressure, to the forming unit. Because of its V-shape, the influence of the pump on the meat structure is minimal so the high volume it achieves does not compromise quality in any way. And due to the wider meat supply channel, the quality of the burgers is highly consistent across the width of the belt.

Higher capacity constant meat flow

On the RevoPortioner's Helix Drum, burger shapes are aligned diagonally to enable a continuous filling process in which the pump does not need to start and stop as frequently as with conventional drums. This leads to a more constant meat flow in the system, helping to control the filling pressure and eliminate variations resulting in a higher capacity.



-  Burger type: Standard
-  Target market: QSR
-  Volume: High

TRANSFORMING FOOD PROCESSING

