Innova

Bringing it all together

Innova production management software from Marel is the complete IT solution for today's processing companies, covering the entire production cycle value chain from intake of supplies to product dispatch, while providing all key performance indicators (KPIs) for every stage of production.

These key indicators include yields, throughput and efficiency, giveaway, quality, stock levels, loss of sales and movements, and profitability. Critical KPIs are closely monitored and controlled in real time, and Innova integrates seamlessly with Marel processing lines and equipment to ensure the best possible performance.

At the same time, remote control and automated data collection from both individual equipment and entire processing lines provide management with important new opportunities for greater efficiency, and Innova generates a wide range of easy-to-use reports in practical formats.

Innova modules include

Kill line

Deboning and Trimming performance

Yield control

Quality control

Grading

Portioning

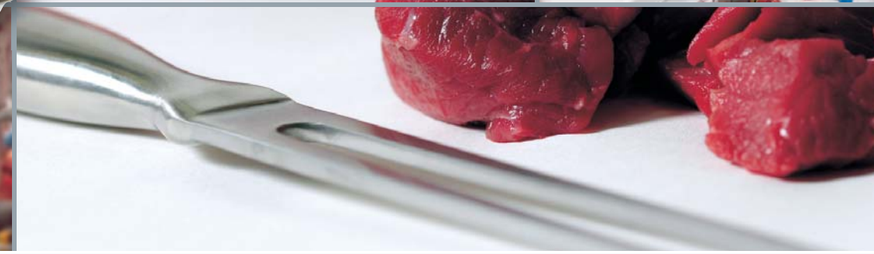
Packing

Labelling

Inventory control

marel

Off the **bone**



marel

Single-source **provider**

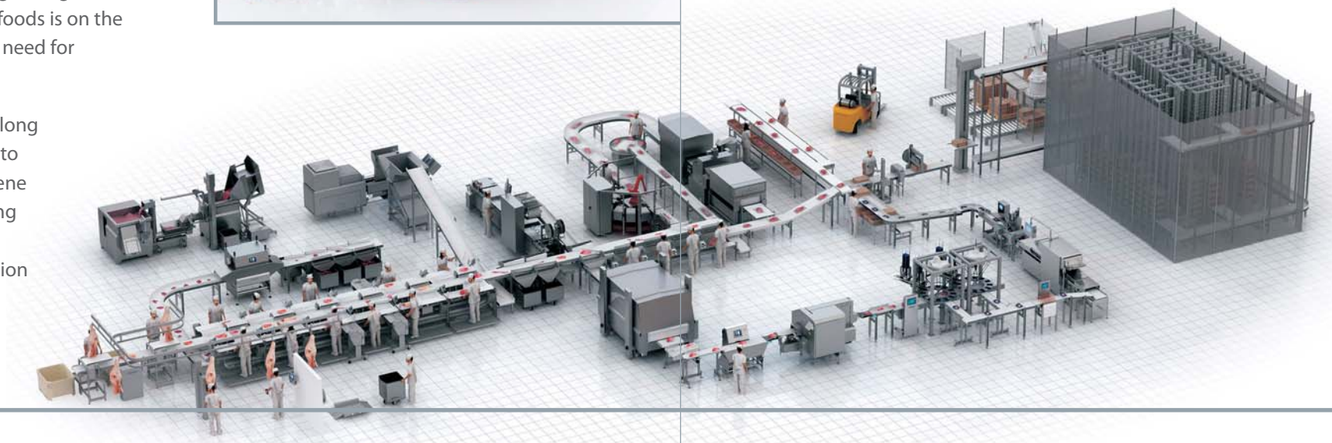
Focus on automation

Meat is one of the most valuable and demanding food products, not least due to the extensive amount of resources needed for generating the product.

Raising livestock and preparing meat products are costly activities, and profit margins are always under pressure.

Worldwide meat production and consumption is growing and the variety of products available as convenience foods is on the increase. These are factors that contribute to the need for efficient, fully optimised meat processing.

The continuously growing focus on automation along the entire meat processing chain is closely linked to the growing use of information technology. Hygiene and traceability are of crucial importance, requiring full monitoring of all processes along with the continuous documentation of origin and production data, in the interests of consumer protection.



Marel is a leading global provider of advanced equipment, systems and services to the meat industry.

With offices and subsidiaries in over 30 countries on six continents and a global network of agents and distributors, we work side-by-side with our customers to extend the boundaries of meat processing performance.

Marel is a multinational company, with more than 3,700 employees worldwide. The largest number of our employees are based in the Netherlands, followed by Denmark, the United States and Iceland, with the remainder spread out across the globe – from Brazil and several other locations in South America all the way across to Australia and New Zealand in the Pacific.

For many years, Marel has worked closely with some of the most forward-thinking meat processors, building up a wealth of know-how and practical expertise in this field. We are a single-source provider for meat processors the world over. From harvesting raw materials to packaging the final product, from standardised stand-alone units to all-inclusive integrated turnkey systems, our products are designed to meet our customers' every need.

Deboning & Trimming

- Seamless integration of key equipment
- Simple, ergonomic design
- Innova software – full traceability from A to Z
- Feedback on individual operator performance
- Increased yield, throughput and quality
- Online monitoring and control
- Effective management tool

StreamLine system

The Marel StreamLine deboning and trimming system enables meat processors to closely monitor and control critical key production indicators (KPIs) in real time throughout the complete processing cycle. These include yield, throughput, cutting performance, giveaway and loss of sales. These are automatically registered and monitored for the entire line as well as for the individual operator, using Innova intelligent production control software.

Trimming to set specifications

When a carcass is registered into the StreamLine system, a range of different cutting patterns has already been specified for each particular product, determining how it will be deboned and trimmed on the line. The primals from deboning and break-up are distributed to one of the work stations, based on operator availability, where they are cut, trimmed and skinned according to specifications. The weight of the trim, fat and finished product is registered and compared to the incoming weight for throughput and yield calculation.

Carcass intake

Carcasses from stock are registered and weighed into the SteamLine deboning and trimming system. Information about each animal, such as ID, age, slaughter date, farmer, grade, PH value and other data, is captured by the Innova production control system.

Trimming

Following break-down and deboning, the primals are distributed to work stations on the trimming line, based on operator availability. They are then trimmed according to individual specifications, and all cuts are fully traceable.

Skinning

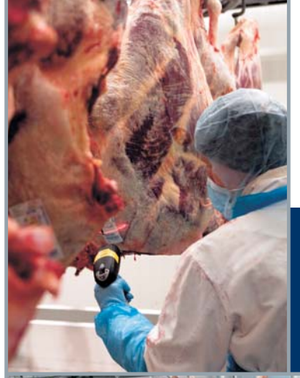
The Marel StreamLine system offers the possibility of integrated skinning. This is performed according to customer specifications and can be monitored automatically in the system.

Meat harvesting

Residual meat on the bones is harvested under low pressure as high quality 3 mm manufacturing meat.

Packing

After trimming, the products are automatically distributed for further processing (freezing, portioning, marinating, batching) and individual retail or bulk packing.



Case ready & food service

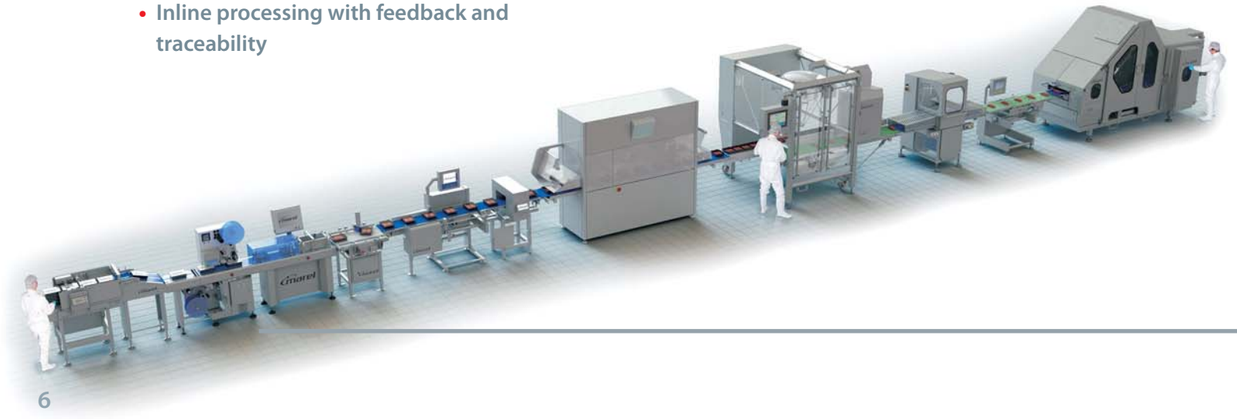
Improving the value chain

In an increasingly competitive industry, fresh food processors must be able to keep pace with the ever-increasing demands of supermarkets, the food service industry and consumers.

- Minimised giveaway, improved efficiency
- Labour saving, better working environment
- Minimal processing time, increased shelf life
- Inline processing with feedback and traceability

Marel case-ready and food service lines enable companies to supply products that are competitive in terms of price, by reducing labour costs, cutting processing time, minimising giveaway and increasing yield.

Marel case-ready and food service lines are all about improving the value chain, from the receipt of raw materials to trimming, portioning, batching, checkweighing, tray sealing, labelling and packing case-ready products for the retail industry or for food service.



Trimming

All products are trimmed prior to portioning, and may come in the form of purchased primal cuts or directly from deboning. In-line operation means less product handling, better hygiene and the ability to monitor yield and capacity per operator with full traceability, including trim and fat.

Automatic infeed weighing

Each product entering the line is weighed to determine and record the trimming yield and to adjust the density setting on the portion cutter. This eliminates any subsequent density variations and improves cutting accuracy.

Portion cutting

Trimmed products are cut into portions based on pre-programmed specifications. The Marel portion cutter features 360° scanning combined with perfect product fixation during the cutting process, resulting in very high accuracy. Precise portioning is a very important factor for reducing giveaway, improving yield and reducing labour requirements.

Batching and grading

The products are batched into bins of predefined weight categories for fixed-weight packaging, after which operators arrange the portions in the trays. During this operation, the operators can reject pieces of meat that have too much fat, blood or other defects which the portion cutter cannot see. Marel can also provide robotic solutions for batching and loading into trays.

Checkweighing

The packs or trays are checkweighed before sealing. Rejected trays are repacked using Marel bench scales, for manual weight adjustment. Using the checkweigher prior to sealing the trays eliminates the need for repacking sealed trays thus reducing costs still further and increasing efficiency.

Tray sealing

All trays are sealed immediately after batching. This increases the shelf life of the product, which is an advantage for both retailers and consumers. Sealing trays is just one way of packing products. Other alternatives include vacuum packing or wrapping.

Labelling trays / checkweighing

Packs are labelled with customer-specific labels. The weigh price labelling system also functions as a checkweigher for the ready packs, in accordance with e-weighing regulations. The labelling system is flexible, highly advanced and capable of printing any required information, such as weights, prices, dates, bar codes, special characters and other data.

Bacon

- Fast, efficient, accurate
- Produces fixed-weight or catch-weight packs
- Intelligent production control with Innova software
- Maximises on-weight percentages and decreases giveaway

Popular as ever

Manufacturing bacon is a simple process that usually involves injection followed by a short massaging process and cooking, smoking and chilling. However, there are factors in each step that require consistency in order to obtain a high-quality product.

Once bellies have been sorted and classified they are trimmed to specification and to give a rectangular shape. This increases the final slicing yields.

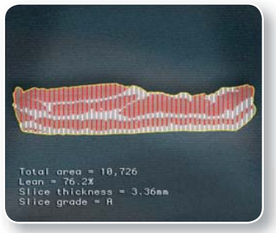
The bellies are then injected with a brine solution, after which they are left to cure for between one and five hours. The next step in the process is cooking and smoking until an internal temperature of 51-55°C (124-132°F) is reached.

Following cooking, the bacon slabs are shower chilled and placed in a refrigerated area to bring the internal temperature down to 4°C (40°F) over the next 24 hours. Tempering then takes place in another chilled area before pressing.

The pressed bacon slabs are sliced at -5° to -4°C (23°-25°F), with the sliced groups being graded according to the processor's requirements before passing down the line for subsequent packing.

We know bacon

Marel's highly successful bacon line automatically slices and packs US, back, streaky and middle bacon. An automated Marel bacon line comprises high-speed slicing, check weighing, loading into packing machines and pack labelling. It delivers high output combined with high yields and is easy to operate with minimal product handling, which improves hygiene.



The patented vision system offers high levels of on-weights, along with a variety of grading options for both retail and food-service packing.

Injection

The IN 33-430 Injector uses a set of closely-spaced injecting needles to distribute fluid uniformly into the product. The fluid control system maintains constant, accurate injection percentages.

Slicing

Marel supplies a range of different slicing equipment, all highly suitable for bacon slicing. The IBS 2000 Vision is a continuous feed, high volume slicer developed to give unrivalled performance on belly bacon products.

Checkweighing

After slicing the bacon is checkweighed to verify the sliced group weights and provide weight feedback to the slicer.

Automatic loading

A Marel IPL Robot loads sliced groups, with or without boards, directly to a packing machine. Intelligent Portion Loading Robots (IPL Robots) are used in the food industry in increasing numbers for faster, more hygienic and more economic production.

End-of-line

When the bacon has been packed into retail packs it is sent for labelling and box packing. Marel supplies several high-speed weigh price labellers that allow processors to apply pre-printed labels or custom-printed labels on top or at base.

Cutting-edge portioning

Reduce costs, increase profitability

To keep pace with demands from supermarkets, restaurant chains and end-users, meat processors require faster, more accurate methods of portioning – the process of cutting a boneless meat product into portions of fixed weight and/or thickness.

Meat processors also need to reduce costs by saving labour – skilled butchers being scarce – and increase profitability by improving yield and reducing giveaway. The desire to improve quality, freshness and consistency must be matched by a high level of flexibility. Taken together, these factors all lead to a huge need for automation in portion cutting.

Marel supplies a wide range of highly flexible portioning equipment for the meat industry.

IPL Intelligent Portion Loading Robot

Provides a variety of options for the automatic loading of portions and shingled or stacked groups of bacon, fresh and cooked meat into trays or a thermoformer.

I-Cut 1000 – fixed-thickness portioning of thick or thin steaks or groups.

I-Cut Profile – fixed-weight portioning of thick or thin, steaks or groups.

I-Cut 36 – offers very high productivity with a cutting speed of up to 1000 cuts per minute.

I-Cut 10 – covers portioning at its most basic.

I-Cut 600 – high capacity dual-lane portion cutter.

Opticut – volumetric portioning machine that cuts boneless meat into uniform weight and shape.

StripCutter – easy-to-use portioning machine that cuts fixed-size portions at high speed.

I-Slice VA 1068 – cutting fixed weight slices or portions at an angle between 10 and 68 degrees.

I-Cut 55

The PortionCutter I-Cut 55 creates exceptionally accurate portions, using a 3D laser system that scans 360° around the product, thereby avoiding unseen areas and shadow effects. A unique V-belt design and product holder coupled with a joint piece and boundary detection system prevent products moving backwards when being cut. These and several other unique features ensure that cutting accuracy is at an absolute maximum.

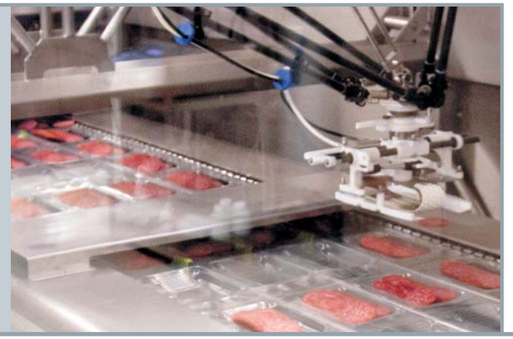
High speed **slicing**

Bacon, cooked & cured meats

In the highly competitive cooked meat market, customers are attracted by an ever-increasing range of pack formats and presentation styles. From high stacks to party packs, Marel has a range of machines to satisfy processors of all sizes.

Marel slicers also include high-end specialist bacon machines designed for consumer packs and for the pre-cooked bacon sector.

To increase profitability and yield, weight control and grading options are available across the range, using the latest vision and 3D scanning technologies.



IBS4600 Vision – the world's first 4-blade slicer to feed weight-controlled slices to a microwave oven.

IBS2000 Vision – slices belly bacon to fixed weight at up to 1750 rev/min.

IBS3000 Profile – produces fixed-weight stacks and shingles of back, streaky and folded middle bacon at up to 1800 rev/min.

Polyslicer 3000 – multi-log slicing for deli products at up to 1500 rev/min.

Polyslicer 1000 – compact slicer for deli products at up to 1500 rev/min.

Simple manual lines and fully automatic systems, including the **PolyLine** and **BaconLine** are also part of Marel's high speed slicing range.

IBS4600

Marinating

Global meat consumption is increasing rapidly, as growing economic prosperity and shifting demographics leads to an increasing demand for meat and more versatile products. At the same time, time spent in the kitchen is decreasing and issues such as convenience and health are becoming more important.

Marel assists meat producers and further processors in facing these new challenges.

ValueDrum

The Marel ValueDrum is the in-line solution for achieving a continuous flow when marinating small, firm meat products. Minimal mechanical action ensures gentle handling of valuable raw material, while controlled in-feed weight and the automatic dosage of dry or wet additives result in a standardised finished product. And thanks to the flow of small batches, the ValueDrum can be easily integrated into a line with batch weighing and automatic packing.

SpeedTumbler

The Marel SpeedTumbler is a small, offline marinating solution for producing small batches and a wide variety of meat products.

ValueSpray

Ideal for use in the in-line wet marinating of portioned and fragile products, with accurate pickup and uniform distribution of marinade and coarse pieces.

Skinning

Industry-leading performance

Marel supplies a wide spectrum of skinning technology to the global meat industry.

Ideal for maintaining consistent yields throughout the skinning process, the Townsend skinning principle eliminates the need for additional manual knife work or the time-consuming manual removal of skin and membrane.

The skinning process can be integrated as part of Marel's StreamLine deboning and trimming system or a stand alone process on the production floor.

SK 11-312 Open-Top De-Fatter Skinner
(available in Europe only)
Adapts to different fat depths and product angles from end to end. Removes fat sheets at the same time as it removes skin.

SK 11-320 Open-Top Membrane Skinner
The industry leader in membrane skinning with the highest possible yields. Features sanitation enhancements, reduced maintenance and operating costs, and ergonomic optimisation.

SK 11-350 Open-Top Skinner
Industry standard for removing heavy skin and membrane from all pork and beef cuts with the highest possible yields.

SK 11-355 Open-Top Pork Loin Skinner
(available in Europe only)
Includes specially designed table for the highest skinning yields for keeping the operator ergonomically comfortable.

SK 15-320 Conveyorised Pork Skinner
Highest skinner yields on the market combine with easy access to electrical, air and drive systems to make the best even better.

SK 15-330 Conveyorised Feed-Back Skinner
Comes equipped with a split-exit conveyor, feedback conveyor and skin take away conveyor for products that require multiple passes across the skinning surface. The meat product to be skinned can be returned to the operator multiple times via the feedback conveyor, until the desired end results are achieved. The skin is taken away from the machine as the product is returned.

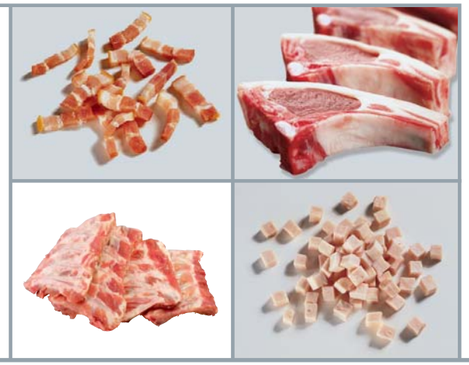
SK 15-340 Conveyorised Pork Belly Skinner
The proven industry leader in pork belly skinning, comes equipped with an automatic open bite. This conveyorised system automatically skins pork cuts and provides the highest skinning yields on the market.

SK 15-350 Push-Button Conveyorised Skinner
Offers the ability to adjust the thickness of fat removed from meat products by simply pressing a button. Up to four pre-determined thicknesses can be programmed, based on process specifications.

SK 15-360 Conveyorised Beef and Pork Skinner
Replaces top-feed rollers with a KAT track textured modular belt for removing thick fat and lean meat on even the most difficult cuts.

Accurate fixed-**weight** batching

There are many benefits to fixed-weight batching. It is especially important for meat processors to keep giveaway as low as possible when packing their products, while ensuring that an exact target weight is delivered to their customers. Marel's wide range of batching systems batch fresh or frozen meat items of almost any size into fixed-weight packages. All Marel batchers fulfil the most stringent food industry requirements, thanks to their versatility and easy-to-clean design. Marel fixed-weight batchers can operate as standalone units can be integrated into a complete packing line.



Multihead weigher

Marel multihead weighers range from 10-head up to18-head versions and include the possibility of split batches. They are specially designed to deal with wet and sticky food products by utilising, among other things, a screw feed. The multihead weighers automatically portion and pack retail food products into virtually any kind of tray, thermo pack, bag, can or box.

SpeedBatcher – compact unit available in three sizes for accurate, fast batching of products into bulk packs. Up to 23 batches per minute can be formed depending on batch size. Maximum batch size of 30 kg.

TargetBatcher – flexibility is the key word for the TargetBatcher, ideal for a large range of small to large meat products and packs. Up to 30 batches per minute can be formed depending on product type and batch size. Maximum batch size of 6 kg.

Meat **harvesting**

Yield loss from leaving muscle meat on the bone after the primal deboning process is expensive, since all this good quality meat can be collected for processing into end products such as nuggets, hamburgers and dry cured sausages.

Meat harvesting is one of Marel's advanced technologies, comprising a group of machines that allow processors to recover tissue left on the bone following manual deboning. The result is well-structured, high-quality meat and protein that make a major contribution to profitability.

Our range of meat harvesting equipment can be divided into two main groups.

Minced Meat Systems (DMM series), which produce regular meat with the highest possible quality at a reasonable yield.

Meat Harvesting Systems (MRS series), which produce MSM* meat with the highest yield at a reasonable quality.

The end-product application determines the solution that will meet the specific requirements.

*mechanically separated meat

DMM Minced Meat System

The DMM series is a range of advanced meat recovery machines that recapture meat from pork, beef, lamb and poultry bones as 3 mm ground meat.

The quality of the meat is equal to manual trim, and is therefore ideally suited for processing into high quality meat products.

MRS Meat Harvesting System

This range of meat recovery systems obtains MSM* meat from pork, beef or poultry bones. The recovered meat is a perfect ingredient for emulsified sausages.

Trim management

Perfect beef trim for further processing

- Complete trim management solution, instead of simple fat analysis
- Less lean giveaway
- Fewer complaints, claims and rework
- Takes the guesswork out of mixing/grinding
- Detects high-density contaminants, such as metal, stones and glass
- Superior bone detection

Based on Marel's extensive knowledge of X-ray technology, the most accurate means of determining fat content in meat, the trim management system is designed to analyse red meat trim for fat/lean ratio and provide processors with the ability to manage their trim and hit target fat percentage.

Knowing the accurate fat percentage of incoming product is valuable information but controlling what actually comes out of the process gives processors even more added value.

The Marel SensorX scans batches of beef trim for accurate chemical lean ratio. Products are scanned for density variations, which enable the SensorX to detect the presence of hazardous contaminants or decide the precise chemical lean ratio. The results are then sent to a grading/batching system that collects batches to a target fat-lean ratio, providing users with the exact ratio required for further processing and taking the guesswork out of mixing and grinding.

1. Batches of trim and fat from the StreamLine enter the SensorX.
2. SensorX scans each batch for contaminants, chemical lean ratio and weight.
3. Results are sent to a Marel trim grader, which distributes product according to specifications.
4. Batches of precise chemical lean ratio are formed based on the processor's requirements.

Energy-efficient freezing

Freezing is one of the most convenient, commonly used and well-proven methods of food preservation. In recent years, the general consumer profile has altered the food processing industry landscape significantly. Consumers demand foods that are excellent in every aspect – appearance, texture, taste, nutritional values – straight off the shelf.

Coupled to rapid modernisation, this has caused the food processing industry to continuously increase its output. The Marel Freezing & Temperature Division provides a wide variety of freezing solutions, using the latest advances in technology in order to meet the food processing industry's demands for higher yield, lower production costs, faster pay-back and quality end-products.

Single Crust freezer
Freezes the outer bottom layer of the product in direct contact with the belt.

Arcticflow Spiral freezer
Operates for long periods without defrosting thanks to the unique, advanced evaporator design.

Superflow Energia Mk8 Freezer
Very similar to the Superflow Easyclean but is enclosed in a standard insulation panel.

I-Crust Freezer
The small footprint of this freezer is especially appealing when space is limited.

Superflow Easyclean freezer

The Superflow Easyclean freezer has many applications and advantages. It freezes, crust freezes, deep chills and hardens products, as well as increasing the capacity of existing freezing lines. Among its unique features are its adjustable airflow plates, which enable greater flexibility to minimise freezing costs. Easy to relocate due to its mobile design, the Superflow Easyclean saves on energy and water consumption and, as its name suggests, is very easy to clean.

Weighing and monitoring

The Marel range of bench and floor scales can be combined with the comprehensive range of Marel weighing indicators, computers, printers, labellers, software and accessories to suit individual processing needs. Marel scales can be used as standalone installations or as a part of a complete production management system.

M1100

Available in several versions, the Marel M1100 weighing indicator provides a weighing range of 1.5 kg to 3,000 kg, depending on the scale chosen.

With its touch-sensitive yet tough, hardwearing keypad, the M1100 is easy to operate, while its large LED display and under/overweight indicator ensure user-friendly operation. The M1100 comes with either metric (kg, g) or avoirdupois (lbs, oz) weighing units, depending on the system required.

M2200

Used for a variety of applications in wet and dry food production, the M2200 scale can control hoppers and conveyors, as well as serving as a registration terminal. M2200 packing scales can also be integrated into a full packing system comprising several scales and printers, using Innnova Packing Lite and Innova Packing software.

Bench and floor scales

Designed to handle most weighing tasks, Marel bench and floor scales can be placed anywhere in a factory, ranging from dry packing areas to very wet or humid areas. Constructed from fully welded stainless steel (load cell and platform/frame) and waterproof to IP67 or IP69K specifications, Marel bench and floor scales are hygienic, easy to clean and come equipped with a load cell overload stop for static load protection, ensuring durability and a long working life.

The **Marel PL6000** trolley scale provides a compact, easy means of weighing products in a Vemag wagon.

The **Marel PL7000** series of floor scales is designed to handle most weighing jobs and can be placed on the floor or installed in a pit.

The **Marel PU8000** series of pallet scales provides a compact, flexible way of weighing products on a pallet.

Sawing

Frozen and bone-in products

To maintain high yields, saws must be able to run thin blades without vibration. To produce portions free of smear and bone chips, they also need to run at very high speeds. The Marel range of saws features the dynamically balanced components and high speeds necessary to achieve the best yields and product presentation.

APC Saw

Portioning Saws – a choice of automatic models for fixed-weight and/or fixed-thickness portioning.

Manual Bandsaws – a range of machines designed for anything from general processing applications to cutting heavy beef carcases.

End-of-line equipment

Marel end-of-line systems perform the final operations to complete the packing process and provide the presentation specified by the end customer. This equipment comprises a combination of well-proven elements from the Marel range, and can be tailored to each processor's particular requirements.

WPL 9000 series
weigh price labelling at speeds of 40–160 packs/min.

Pack Labellers
For top, base & wrap-around labelling, with or without printing.

Checkweighers
High speed checkweighers for wet and dry product.

Pack Handling
Including convergers, turners, stackers and packing stations.

Box/Crate Labeller
Labelling for boxes of up to 40 kg.

WPL 9000