marelec

A **DURAVANT** COMPANY

PORTIO

Intelligent
Portion Cutter

Contents

Introduction

When MARELEC launched its first PORTIO back in 2008, it answered a growing demand in the food-processing market. The machine was initially introduced for fish processing, but soon after, the three-camera version was developed for the meat industry. This was the start of a successful product line that quickly developed into dedicated versions that would soon be used worldwide in all segments of the fish, meat and poultry processing industries.

In 2023, Duravant, a worldwide supplier of custom equipment and automation solutions for the food processing, packaging and material handling industries, acquired MARELEC Food Technologies. Leveraging its expertise in engineering, integration, project management and operational excellence, Duravant delivers comprehensive process solutions to customers and collaborators through its extensive global sales, distribution and service networks. Duravant's market-leading trademarks are known for their innovation, durability and reliability, aligning seamlessly with MARELEC's values.

Today, we are proud to present a complete range of intelligent portion cutters, from the high-capacity PORTIO 1DAP for small products to the massive PORTIO 3-400 for the biggest pieces of meat. All models have been created with a customer-centric focus and are built using the extensive expertise we have in food processing since the early nineties.

We kindly invite you to browse through our brochure to find out more about the different models, applications and our unique selling points. Our brochure will also identify which model is most suited to your needs and products. Our sales team is ready to answer any questions you may have.

Regardless of which PORTIO you need, choosing MARELEC - a worldwide leader in this technology - will ensure that you are working with a service-oriented company, one that listens to your specific needs and is a flexible partner with a human approach. We look forward to a mutually profitable cooperation!

Unique Selling Points

The PORTIO combines state-of-the-art technology to create a high-precision yet economical portion-cutting machine.

1 // OPTIMIZED YIELD

With our highly intelligent cutting algorithm and ability to scan to the highest accuracy, all portions are within margins and with less trim. The PORTIO software always calculates how to leave zero waste on the primals, to maximize the yields. The easy fine-tuning interface allows you to make conditional programs resulting in increased yields. Fixed weight, fixed thickness or a combination of variable weight and thickness enable easy portioning of the primals to a maximum yield.

2 // UNMATCHED ACCURACY

The latest laser-vision technology, featuring a 400Hz camera, ensures unparalleled accuracy. A top-mounted camera perfectly scans flat products such as fillets, while three cameras (one from above and two from the sides) scan the contours of more rounded products such as meat primals or whole fish. This will transform the shape of the product into a 3D model. Knowing the density of the product, the intelligent software will then calculate where to cut to achieve the target weights.

3 // MODULAR BELT

The uniquely designed MARELEC modular belt combines perfect synchronization with an unrivaled lifetime. Automatic stretch compensation guarantees optimal accuracy over the years despite using the same belt. If a small part of the modular belt is damaged, only this small part needs replacing. The unique belt surface keeps the products in place and prevents them from moving during portioning. A quick-release on the belts allows for their swift removal, without the need for tools.

4 // USER FRIENDLY SOFTWARE INTERFACE

Setting up cutting programs is very intuitive and user-friendly. Each program shows the cutting pattern of the product on the screen along with the indication of the thickness and the weight of every portion. This enables very fast and easy fine-tuning of the programs to achieve maximum yields.

5 // EXTREMELY HYGIENIC, EASY TO CLEAN

The PORTIO is designed and built to comply with the most stringent hygiene standards. A CIP (cleaning in place) rinses the belts both from the top and the bottom to guarantee a fast and thorough cleaning in-between shifts or when different products are portioned after each other. All doors can be opened or removed, leaving a completely open structure that simplifies pressure washing and disinfecting of the entire interior and exterior. All electrics and electronics are in completely sealed cabinets, with heaters, fans and a unique drying system inside to prevent the build-up of condensation.

6 // MAINTENANCE

MARELEC has opted to use highly reputed international brands for electrical, pneumatic and other components. All motors and encoders are situated away from the wet area, which ensures a long lifetime. There are limited lubrication points. This results in the lowest operational cost.

7 // SERVICE

MARELEC has built a very strong reputation for its after sales service. A team of service engineers is available 24/7 to reply to your queries. All machines can be connected to the internet, which allows our service team to diagnose the status of the machine from our head office. This puts us in a position to offer you on-the-spot assistance.

8 // LOW NOISE

The PORTIO is praised in the industry for its low noise level during operation, creating a pleasant environment for the operators.

Overview

Model	Applications	Lanes	Cameras	Cutting angle (°)	Belt width (mm) (mm)	Belt width (mm) (inch)
PORTIO Plus		1	1 or 3	0/30/45	305	12
PORTIO 3 - 350		1	3	0	356	14
PORTIO 3 - 400		1	3	0	406	16
PORTIO 3D		2	2 x 3	0	305	12
PORTIO 3D - 350		2	2 x 3	0	356	12
PORTIO 1DAP		2	2 x 1	0/15/30/45/50	229	9
Cube Cutting Line		2	2x1	2x 0/15/30/45/50	229	9

Max product dimensions (l x w x h) (mm)	Max product dimensions (l x w x h) (inch)	Max cutting rate (cuts/s)	Available options APH	Available options OPH	Available options BH	Available options RO	Available options DS/DIW	Available options FH	Available options HSC	Page
980 x 270 x 150	38,6 x 10,6 x 5,9*	17	X	X	X	X	X			12
800 x 340 x 150	31,5 x 13,5 x 6	12	X	X	X	X	X	X		15
800 x 380 x 180	31,5 x 15,5 x 7	13	X	X	X	X	X	X		15
800 x 280 x 150	31,5 x 11 x 6	14	X	X	X	X	X	X		16
800 x 340 x 150	31,5 x 13,5 x 6	12	X	X	X	X	X	X		16
950 x 210 x 60	37,5 x 8,5 x 2,5	25	X	X			X		X	17
950x 210x 60	37,5 x 8,5 x 2,5	36	X						X	18

Subject to modifications for technical progress.

* Depending on cutting program and number of camera's used

PORTIO features

1 // 1 CAMERA VS 3 CAMERAS

Using the top-mounted camera is perfect for scanning flat products passing through the laser light. Typical products would be fillets or products where only a fixed thickness is required.

Combining the top camera with one cameras at eiher side allows for scanning the contours of more rounded products, to prevent blind spots on the edges. Typical products would be meat, sausages or whole fish.

2 // PORTIONING AT AN ANGLE (A)

To give a more natural look on sliced portions (mainly used on chicken fillets) or to produce a bigger plate coverage, products are cut at an angle. MARELEC has a range of PORTIOs, where the angle of the knife to the vertical position can be changed from 0° to 45°/50°. This can be made without any compromise on accuracy or capacity. The adjustment of the cutting angle is done without the need for tools and comes with the patented system that automatically adjusts the gap between the in- and outfeed belts to the optimum spacing.

3 // DUAL LANE (D)

The highest-possible throughput from the smallest footprint can be achieved with a dual-lane PORTIO. Two lanes are integrated into one machine which run completely independent from each other, each with their own control panel. Certain models also have the option of changing the cutting angle.

Advantages of the dual-lane PORTIO:
- Highest throughput per sqm/sqft
- Two independent programs
- Optimal throughput / cost ratio
- Accurate cutting at high speed

4 // PRECISION & CAPACITIES WITH ONE LANE

Product	Weight	Capacity*	Precision **
	55 – 150 g 2 – 5 oz	up to 1200 kg/hour up to 2700 lb/hour	2 g/ 0,07 oz
	150 g and larger 5 oz and larger	up to 1600 kg/hour up to 3300 lb/hour	2%
	55 – 150 g 2 – 5 oz	up to 1000 kg/hour up to 2200 lb/hour	1,5 g/ 0,05 oz
	150 g and larger 5 oz and larger	up to 1400 kg/hour up to 3000 lb/hour	1,5 %
	55 – 150 g 2 – 5 oz	up to 1000 kg/hour up to 2200 lb/hour	2 g/ 0,07 oz
	150 g and larger 5 oz and larger	up to 1400 kg/hour up to 3000 lb/hour	1,5 %

* Actual capacity depends on raw material and cutting pattern
** Standard deviation. Precision is product- and application-dependent

PORTIO Plus
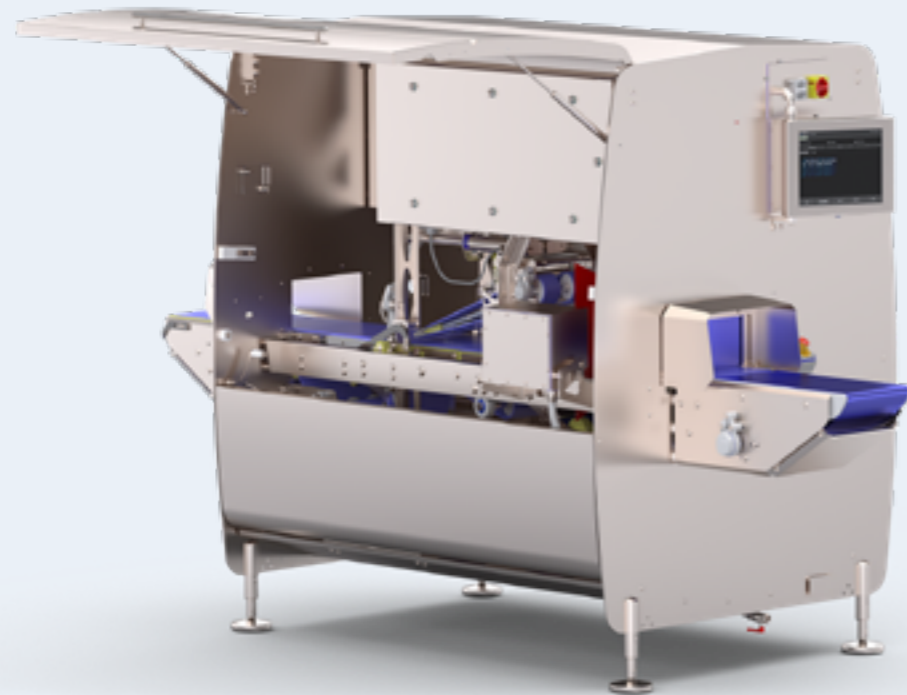
In addition to its top-mounted camera, the PORTIO Plus can be operated with two lateral cameras to create more rounded products – an effect further enhanced by a feature that can alter the angle of the knife from the 0° (vertical) position, to 30° or 45°. Cutting at an angle gives a natural look to sliced portions or creates a bigger plate coverage.

The PORTIO Plus is the most versatile machine for poultry, red meat or fish. Typical applications for the PORTIO Plus are large chicken or turkey fillets that are portioned to a target weight, yet look as though they have been cut by hand from the breast caps. The adjustment of the cutting angle is made in seconds, without the need for tools, and comes with a patented system that automatically adjusts the gap between the infeed and outfeed belt to the optimum spacing.

The infeed consists of two separate conveyors to reduce the impact of placing a heavier portion while still scanning the previous piece. This is very advantageous when processing larger pieces of meat.

L x W x H	137 x 62 x 77 inch
	3465 x 1565 x 1947 mm
net weight	2799 lb
	950 kg
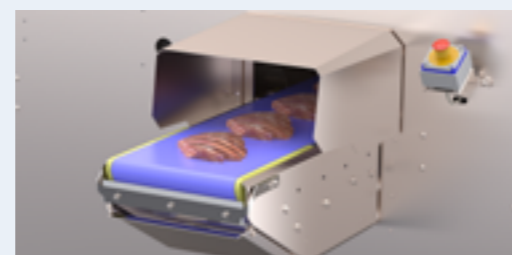
- The (new) touchscreen interface is extremely user friendly with its sturdy, rotatable yet compact screen.

- The modular approach of the (next-generation) PORTIO makes it the most versatile choice for fish, meat and poultry applications – or any combination of those. It features a 300mm-wide belt, with a split infeed to reduce the impact of placing a heavier piece while still scanning the previous one.

- Depending on the needs of the application, it comes with one or three cameras, cuts either vertically or at diferent angles, can be equipped with the Automatic Product Holder and eventually a backholder, and is able to remove trim from the main product after cutting.

- The concept sets new standards for hygiene/cleanability with the electrical cabinet on top of the processor, its tubeless construction, hygienic motors without covers, and a simple yet extremely rigid base construction with only four feet.

PORTIO 3-350/400

For larger pieces of meat that exceed 240 mm in width, MARELEC has added three wider PORTIO models to its product range, with a possible belt width of **350 mm or 400 mm.** These PORTIOs, all equipped with three cameras, feature a robust execution to make perpendicular cuts with ease. The infeed consists of two seperate infeed conveyors to reduce the impact of placing a heavier piece of meat while still scanning the previous piece, while the belt support is made stiffer. The 400 mm version has a servo motor with twice the power to drive the knife through the toughest pieces of meat.
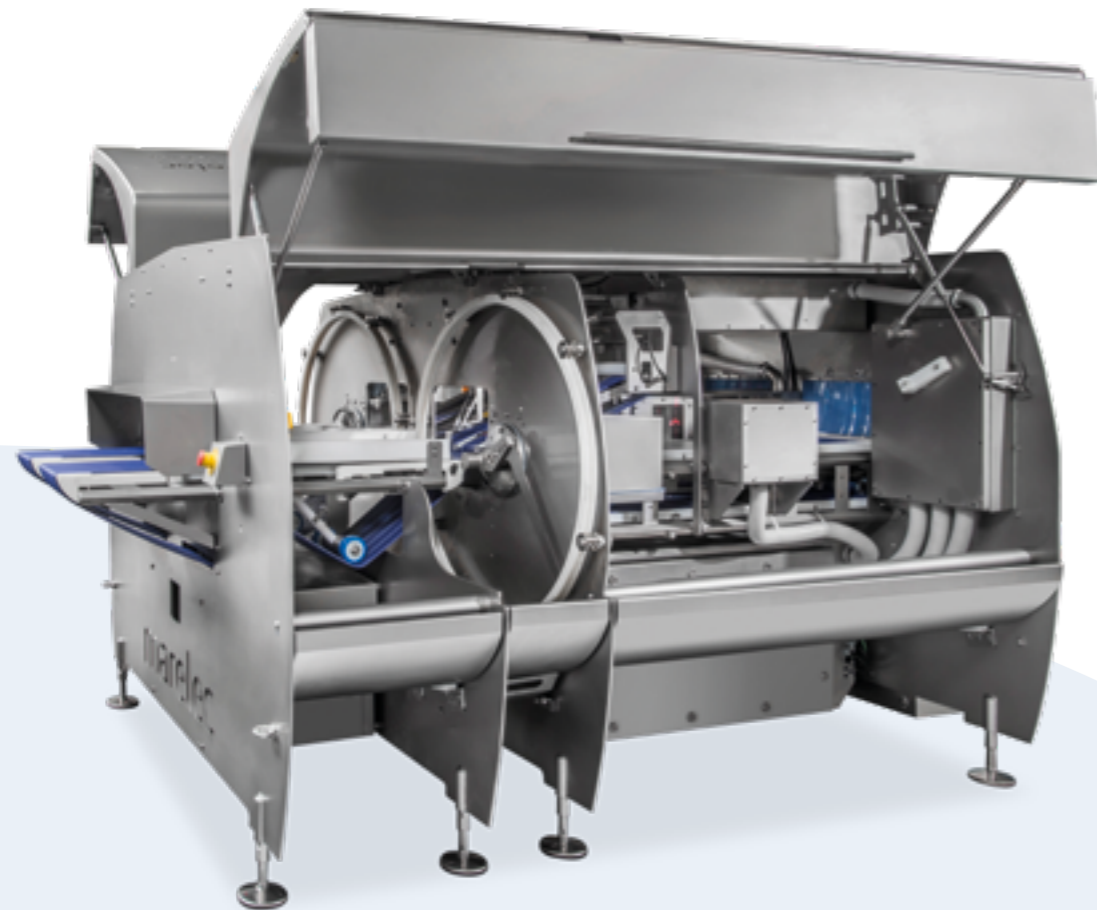
L x W x H	135 x 58 x 67 inch
	3435 x 1475 x 1711 mm
net weight	2799 lb
	1270 kg

* Dimensions of PORTIO 3-400 upon request.

PORTIO 3D

Designed to comply with the demand for high capacities in the meat-processing industry, the PORTIO 3D is a dual-lane machine featuring 300 mm or 350mm wide belts and lateral cameras for maximum scanning precision. The two lanes are integrated into one machine but run completely independently of each other, each with their own control panel. Like other typical meat machines, it has separate infeed conveyors to reduce the impact of placing a heavier piece of meat while still scanning the previous piece. A variety of options, typically designed for meat processing, can be seen on page 20.

| L x W x H	144 x 83 x 64 inch
	3653 x 2091 x 1616 mm
net weight	5027 lb
	2280 kg

PORTIO 1DAP
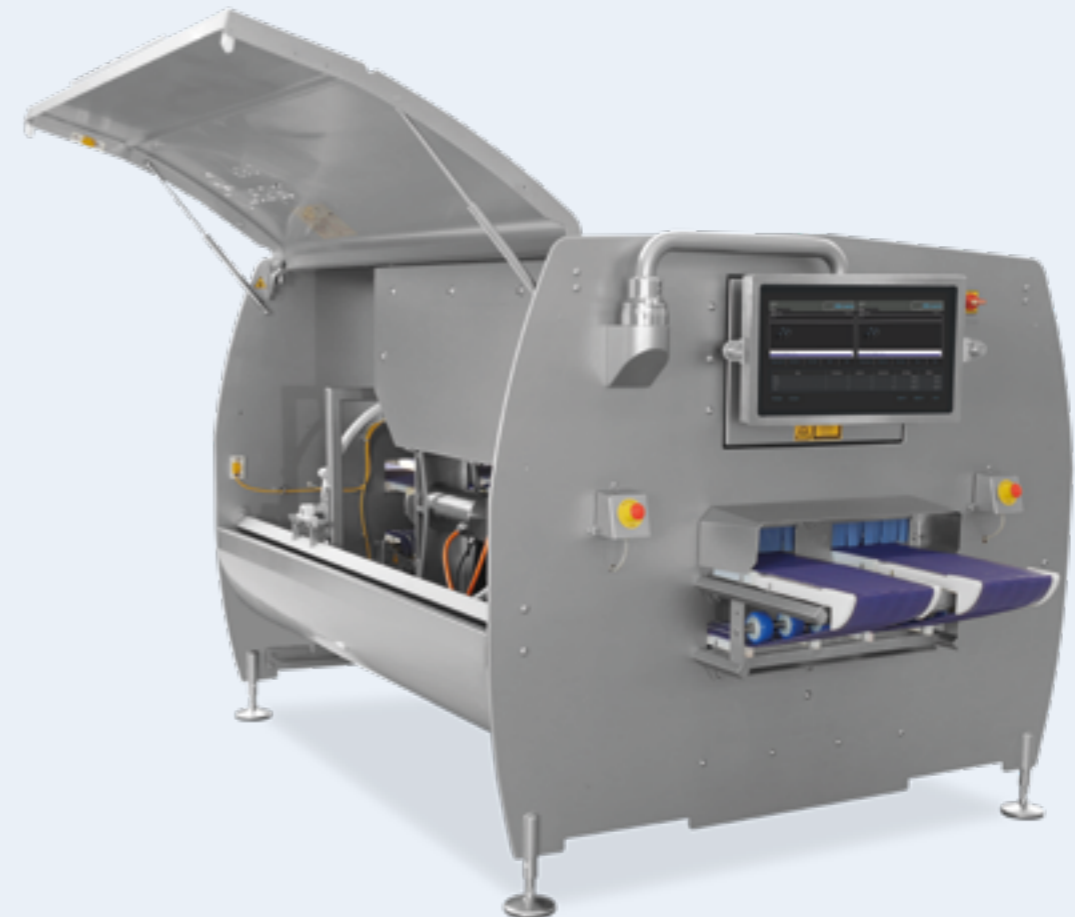
For the highest capacity on poultry and smaller fish fillets, MARELEC has developed a dual-lane PORTIO with 229 mm belts, enabling the processing of products with a width up to 210 mm. The two lanes are integrated into one machine but run completely independently of each other, each with their own control panel. The standard cutting rate is 25 cuts per second, optionally 36 cuts per second is available. Both lanes can independently adjust their cutting angle in five positions (0/15/30/45/50°), and both feature the patented auto-adjusting outfeed belt. A fully stainless steel servo motor drives the knife, making the PORTIO 1DAP the most hygienic model on the market. Both lanes can be operated individually from one single touchscreen interface, which can be rotated to the operator's most ergonomic positions.

| L x W x H	144 x 76 x 65 inch
	3655 x 1922 x 1663 mm
net weight	3970 lb
	1800 kg

CUBE CUTTING LINE
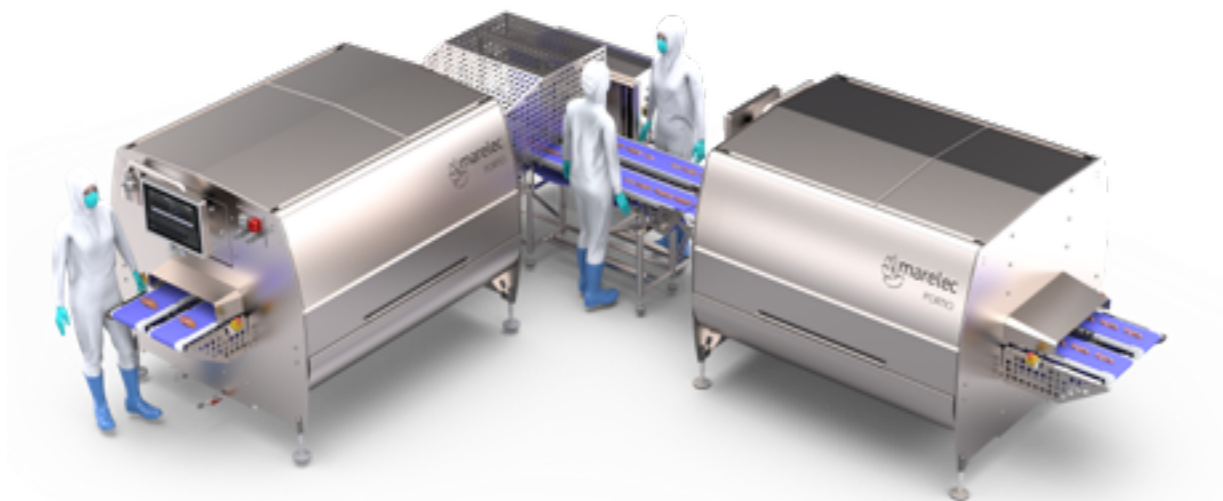
Cutting cubes out of chicken fillets adds value to your products. The cubes are the basis for various meals all around the world. Controlling the weight is crucial when it comes to preparing the cubes, or when producing fixed weight packs for retail or food service. To be profitable, cutting cubes must be done at high volumes with a maximum yield and no give away or trim.

MARELEC offers a wide range of solutions for cutting cubes at capacities of up to 2800kg/h. Depending on the customer's needs, one or more machines can be combined in a variety of ways to increase capacity and reduce labor as much as possible.

One such solution is to place two PORTIO 1DAP in line, with the first one cutting strips. The strips are delivered one behind another in the correct orientation to the second PORTIO 1DAP, with no manual intervention being required. The second machine then cuts the strips into cubes.
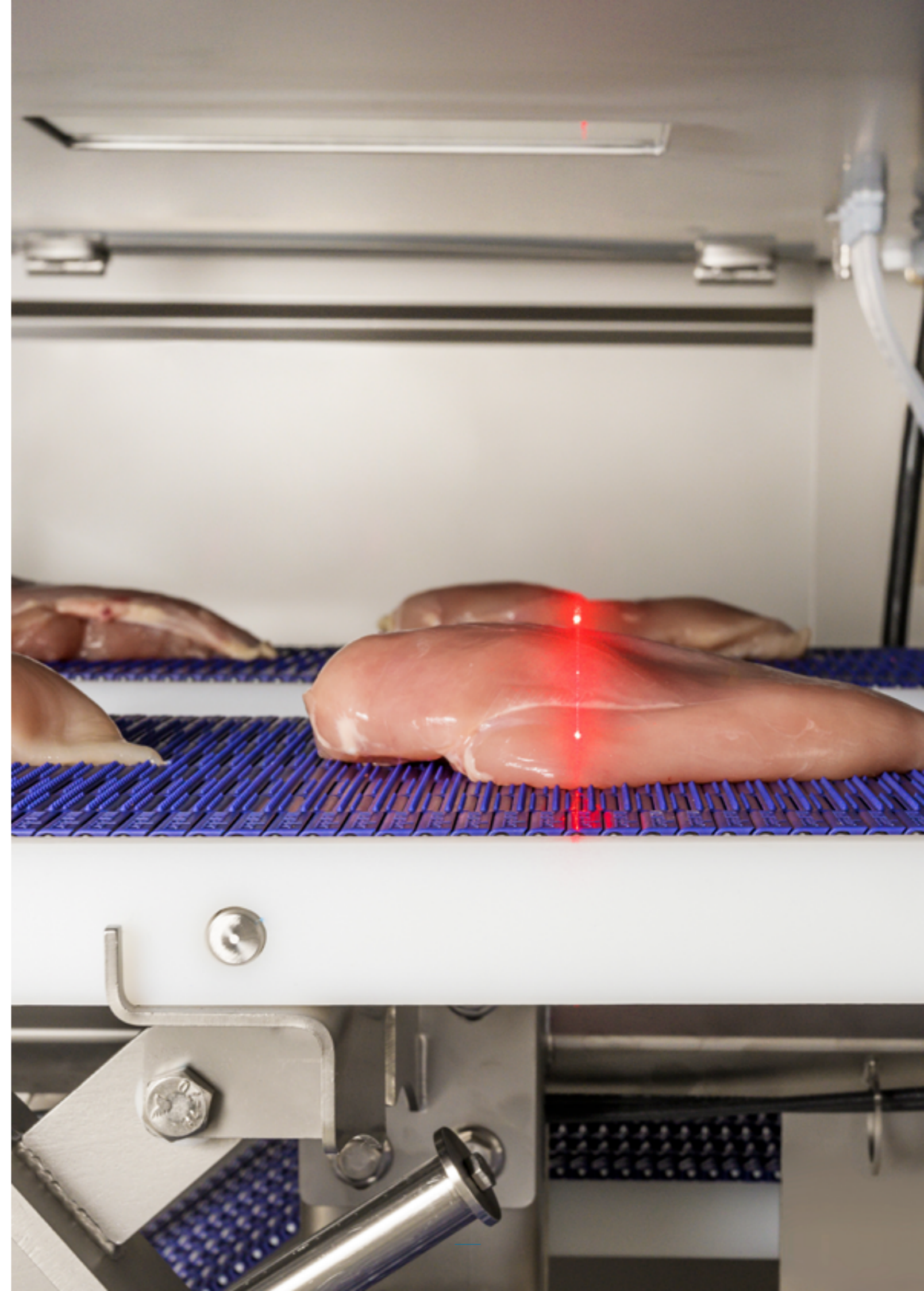
Options

1 // DENSITY SCALE OR DYNAMIC INFEED WEIGHER

When the density of the products varies, the expected accuracy can be obtained using a Density Scale or Dynamic Infeed Weigher (DIW) before the PORTIO. The weight of each individual product is communicated to the PORTIO which will calculate the correct density automatically, for each separate product.

2 // APH

The **Automatic Product Holder** consists of one or multiple pneumatically controlled arms with conveyor belts. These arms will prevent rounder, slippery or crust-frozen products from moving during the cutting. Also recommended when multiple cuts are done at an angle.

3 // BH

The **Back Holder** combines a fork on a linear guide in-between two wide arms of the APH. The outer arms with conveyors prevent the products from moving during the cutting, where the fork keeps the last portion upright and prevents it from tipping over before the last cut is made.

4 // TRIM REMOVER

The **Trim Remover** is a linear guided tool that enables the picking out of trims from a product. Both front and/or end trims can be removed, without affecting the positions of the other cuts. Depending on the size of the portions, the trim remover can also take out bigger portions from the middle of the product.
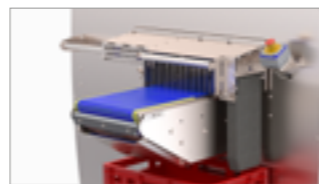
5 // OPH

The unique **Outfeed Product Holder** is a conveyor belt at the outfeed of the machine. This option is recommended when a grader is placed in-line with the PORTIO, in order to separate the portions. This removes the risk of multiple portions passing over the weighing unit at the same time.
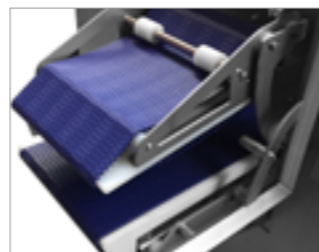
6 // RO

The **Retractable Outfeed** enables separation of the head and/or tail trim from the product. At the end of the outfeed, the belt will retract under the product to drop the trim into a crate underneath. The rest of the portions will be separated by a conveyor behind the RO.

7 // BLOW OFF

To aid the separation of the trim from the portions, a pneumatic nozzle blows from the top or from the side at the end of the outfeed conveyor.
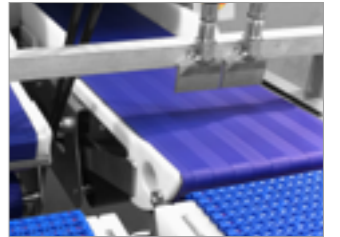
8 // FH

The **Front Holder** is a movable arm with a plate positioned above the outfeed belt. It supports the product from the front in combination with the BH, which is supporting the product from the back. This prevents the product from deforming to a wider shape during the cutting.
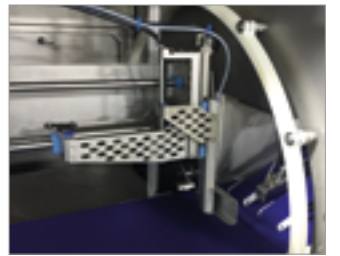
9 // GRADER IN-LINE WITH PORTIO

To optimize yields, multiple target weights can be programmed on the PORTIO. To group the different weights together, a grader is put in-line with the PORTIO. The OPH on the PORTIO will separate the portions while acceleration conveyors on the grader provides the correct distance between the portions to optimize the maximum capacity via consistent feeding to the weighing unit.
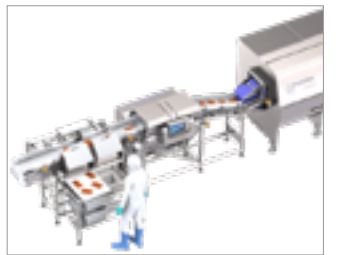
10 // MATRIX P

The MATRIX P software collects all production data from the PORTIO and uses it to generate production reports per shift or program and to trace changes at a machine level. MATRIX P enables users to remotely create programs and monitor the machine status through an event log.

11 // MARELEC SHARPENING DEVICE

A sharp knife is crucial when it comes to cutting fresh products. The MARELEC Sharpening Device guarantees the correct angle on the edge of the knife to ensure a clean cut, the best performance and lowest cutting loss.

Demo

// SEEING IS BELIEVING

MARELEC Food Technologies has created a state-of-the-art demonstration room, fitting it with all the equipment necessary to film and stream online live demonstrations. Of course, customers are very welcome to visit the MARELEC headquarters in Nieuwpoort, Belgium, to test the PORTIO with their own products. Another possibility is for MARELEC experts to undertake trials in the production facilities of our customers.

We strongly believe this is the best way to convice our valued customers of the quality of the cut, as well as the accuracy, apacity and the obtained yields, gains and fast return on investment that results from using the MARELEC PORTIO.

Please contact the MARELEC sales team to make an appointment. They will then make sure the ideal machine for your application will be available for a successful demonstration.