FRONTMATEC

Fully Automatic Ultrasonic Carcass Grading

AutoFom III™

Highlights

- The most accurate instrument in the world for quantifying pig carcass value
- 100% automatic - grades more than 99.8% of all carcasses even at high line speeds
- The only system which provides robust and accurate information about primal value
- Provides exact knowledge on cut-floor performance
- Enables production planning decisions on the basis of verifiable data rather than on assumptions
- Provides valuable feedback for genetic development

The production management tool for the pork industry

Since its launch in 1994, AutoFom has revolutionised the world's pork industry with its ability to accurately and automatically quantify the commercial value of pig carcasses. The AutoFom III™ is a quantum leap in precision.

This is how it works

AutoFom III™ uses advanced ultrasonic image analysis. The system provides carcass classification, e.g. the total lean meat percentage and grading class (SEUROP). AutoFom III™ can also provide the lean meat percentage, weight of lean meat and total bone-in/bone-out weight of the 4 primal cuts (ham, shoulder, loin and belly). AutoFom III™ can be configured to predict commercial cuts and also specific traits like loin and ham fat thickness in order to meet the requirements of the customer. The yield information permits the slaughterhouse to optimise the sorting of the primal cuts and pay the farmers according to the exact market value. This attracts the best pigs in the market and it encourages the breeding of pigs with high commercial value.

Precision in payment

When paying your producers according to lean meat percentage, back fat thickness or other parameters, the absolute precision of the AutoFom III™ is in a class of its own, documented by many national approval tests. In actual production it is, of course, even less prone to error than a handheld instrument.

Payment by commercial value

The lean meat percentage, or the back fat thickness value, only explains in part the true value of a pig carcass. Instead, use AutoFom III™ to develop a payment matrix.

AutoFom III™ features

- Advanced image analysis software
- Image information up to 128 Mpixels per pig (256 MB)
- Measures to a depth of ~150 mm
- Instrument precision in lean meat percentage: AutoFom III™: ± 0.6, FOM II: ± 1.2 and Vision: ± 1.9
- Measures the exact fat depth as it separates fat from skin
- Line speed up to 1,400 carcasses/hour
- Non-invasive measurements
- Payment according to true market value
- No possibility for interfering with the grading results

Sorting of primals

Sorting without errors

AutoFom III™ takes the accuracy with which you can sort your cooler on the basis of quality traits to new levels. For many of our customers the automatic sorting of carcasses prior to splitting is considered key in the optimisation of their raw material utilisation.

The increase in precision in the latest generation of AutoFom is impressive, for example the AutoFom III™ predicts the fat layer profile of a loin with a precision of ± 1 mm which means few - if any - sorting errors.

No other instrument in the world comes even close to the accuracy you can achieve with AutoFom III™

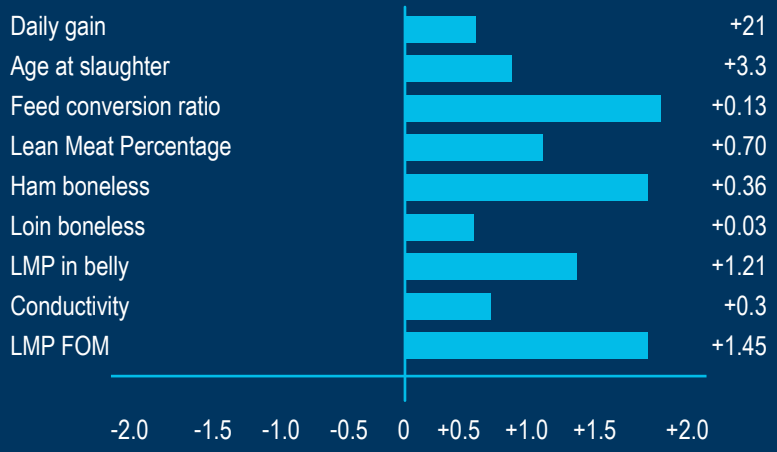
Prediction errors (RMSEP) of Spanish primals

Primal	Total bone-out weight	Total lean percentage	Total lean weight
Ham	376 g	1.5 %	349 g
Loin	318 g	1.8 %	277 g
Shoulder	221 g	1.7%	199 g
Belly	294 g	2.8 %	198 g

As per dissection at IRTA, Spain

Genetic development

Use of AutoFom III™ data for improving genetic potential



AI-Station GFS, Ascheberg/Germany

Development of pigs with higher commercial value by using AutoFom III™ data

Pig producers can be encouraged to produce “tailor-made” pigs for the slaughterhouses through an adapted payment matrix and consultancy services to assist farmers. Data can be used in breeding programmes and experience shows that improvement in genetics takes from 5-7 years but with a potential of high return on investment for the pig industry.

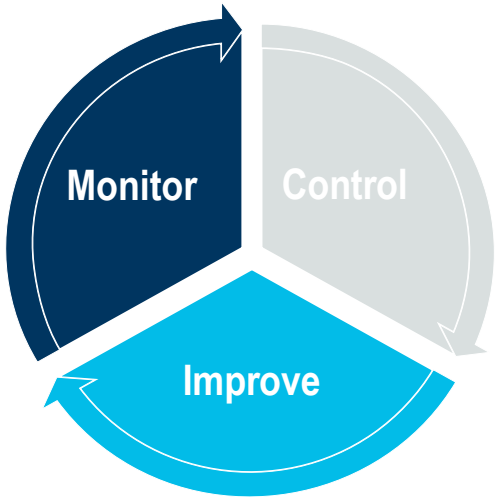
In Germany, AutoFom III™ provides input to genetic comparison of the commercial value of litter from various boars by tracking samples via an ear tag antenna over the AutoFom III™. The yield information from AutoFom III™ provides instantaneous feedback for boar selection. An example is depicted in the German company GFS’s boar catalogues, where the deviation from industry mean value for each boar in terms of lean meat content by primal, daily gain, age at slaughter, etc. is demonstrated for easy comparison.

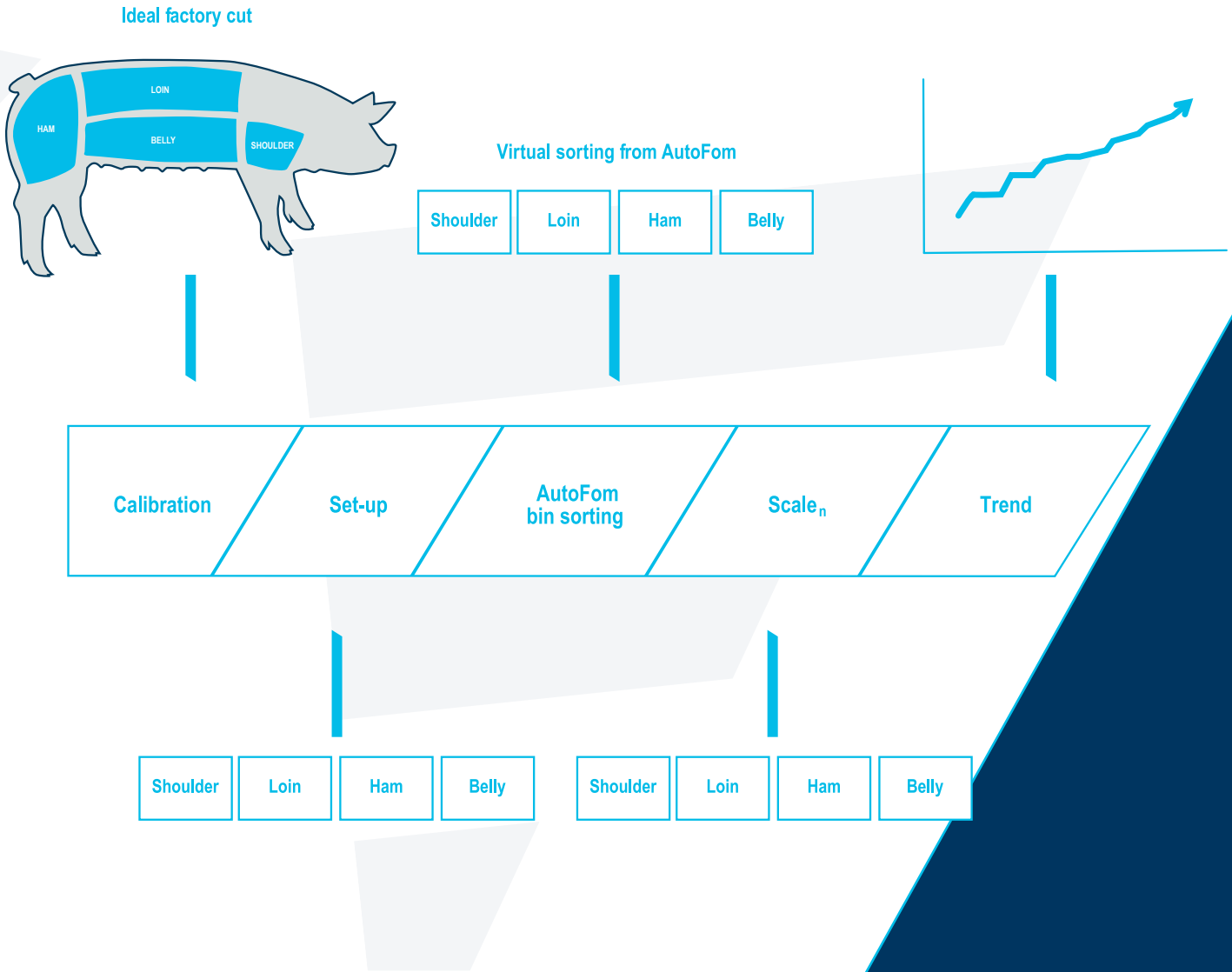
Another example is how PIC utilises data on weight and value of individual cuts from thousands of fully pedigreed slaughter pigs to provide genetic feedback for their breeding programmes. Thereby, PIC optimises the primal quantity of their offspring.

Yield management - a tool for the pork industry

Continuous improvement with AutoFom III™

The AutoFom III™ is unique in the world in its ability to accurately predict the characteristics of a pig carcass prior to any processing steps. With an exceptional precision AutoFom III™ can define each primal cut and the lean meat yield of that cut, thus enabling accurate yield management control of cut-floor performance. With a factory calibration it is possible to monitor changes and/or improvements in the yield.





Modelling

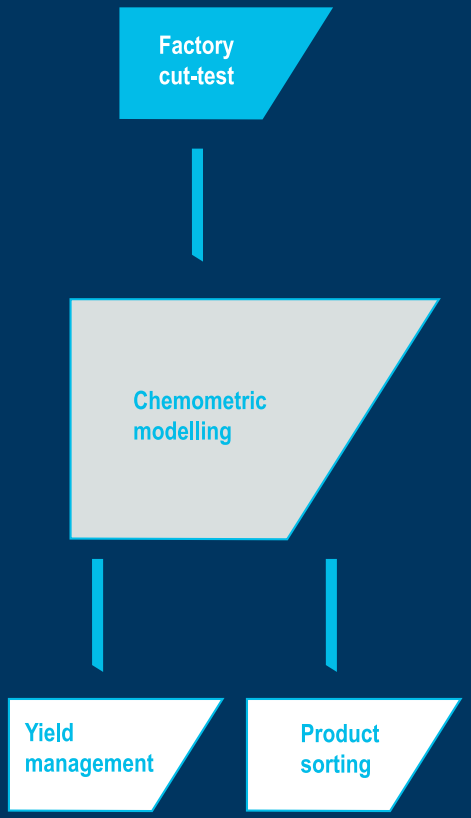
Custom calibrations and modelling

Frontmatec offers to help develop customer specific models for primals or various commercial cuts in your slaughterhouse.

Frontmatec offers planning of a factory cut-test and execution support by experienced meat scientists. This ensures that modelling is based on cuts that are reproducible and prediction models can be developed and implemented in the AutoFom III™ using state-of-the-art chemometric modelling.

The purpose of modelling

- To develop factory specific sorting specifications
- To develop yield management software to help ensure consistency between AutoFom III™ predictions and available data



Technical data

Specifications

	Transducers array	Split box	Control panel	Computer rack
Transducers	16 x 2MHz	-	-	-
Array diameter	Ø356mm (14")	-	-	-
Scan depth	150mm (6")	-	-	-
Scan length	1.8m (71")	-	-	-
Hard disk	-	-	Single SSD	RAID 1 and 5
Working temperature range	0°C to 45°C 32°F to 113°F	-40°C to +60°C -40°F to +140°F	0°C to 45°C 32°F to 113°F	10°C to 25°C 50°F to 77°F
Storage temperature range	-40°C to +85°C -40°F to +185°F	-40°C to +85°C -40°F to +185°F	-10°C to +60°C 14°F to 140°F	-40°C to +60°C -40°F to +140°F
Relative humidity	0% to 100% condensing	0% to 100% condensing	0% to 100% condensing	20% to 100% condensing
Mechanical environment	2014/32/EU Class M3	2014/32/EU Class M3	2014/32/EU Class M2	2014/32/EU Class M1
Resistance to airborne contaminants	ISA 71.04 Class GX	ISA 71.04 Class GX	ISA 71.04 Class GX	ISA 71.04 Class G1
Enclosure rating	IP65	IP65	IP69K	IP40
EMC	2014/32/EU Class E2, EN 61000-6-2 and EN 61000-6-4			
Uninterruptable power supply	Online UPS			
Input voltage and frequency without using batteries	100/120/160/184V to 284V 40Hz to 70Hz			
Maximum power consumption	1980 Watt			

Technical data may be subject to changes

Versions

	Full	PTB (German official version)	Basic	Compact
Total lean meat percentage	✓	✓	✓	✓
Prediction models	✓	✓	N/A	N/A
Customer specific formulas	Optional	N/A	N/A	N/A
DataMerger	Optional	Optional	Optional	Optional
AutoMarker	Optional	✓	Optional	Optional
AutoTag	Optional	Optional	Optional	Optional
CaroSecure	Optional	✓	Optional	Optional
Remote Access	Optional	Optional	Optional	Optional
Hot swap	Optional	N/A	Optional	N/A
PTB approved	No	Yes	No	No
Line speed, carcasses per hour	Up to 1,400	Up to 1,400	Up to 1,400	Up to 350

Technical data may be subject to changes

What AutoFom III™ does for you

Dr. Wilhelm Jaeger

Head of Agricultural Department Tönnies Fleisch

“AutoFom is probably the single most important tool for production and yield optimisation at our pork plants. Understanding and releasing the full potential of the benefits, that the new generation of AutoFom will bring, is key to our future carcass sorting and cut-floor optimisation strategies.”

Stig Eilenberg

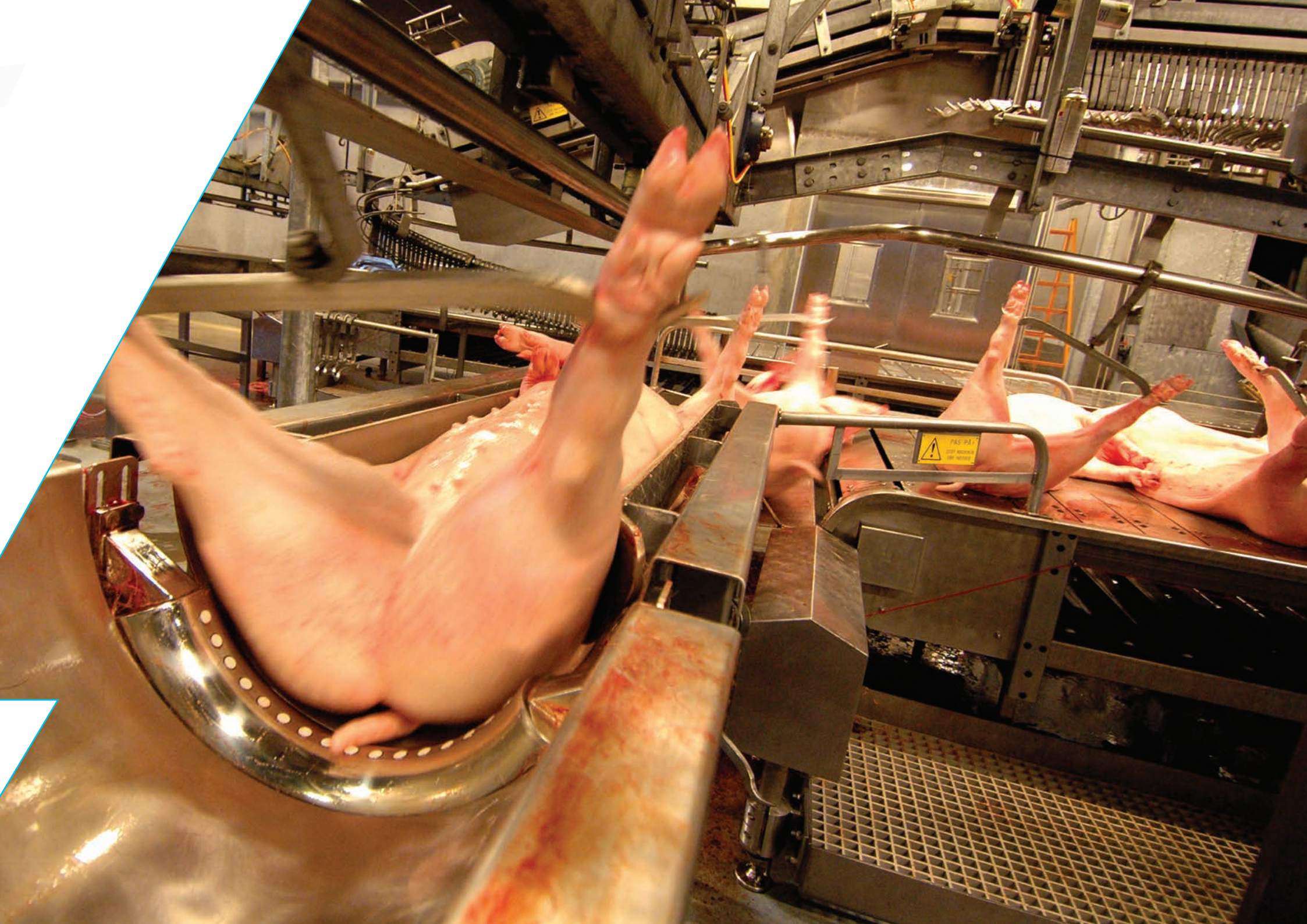
Production Support Danish Crown

“AutoFom is an extremely important tool to help us find the correct raw material to manufacture the products that our customers expect. AutoFom forms the very foundation for Danish Crown’s internal optimisation of raw materials.”

Jesus Siles

Technical and Production Director FACCSA

“AutoFom is truly the core of the production organisation at FACCSA. Upstream, it is an essential piece in our pork purchasing system. Downstream, it forms the basis for the cutting optimisation and the fulfillment of our customer requirements. Definitely, it’s a powerful and consistent tool fully adaptable to our needs.”



FRONTMATEC

Frontmatec develops world-leading customised solutions for automation in the food industry, other hygiene sensitive industries and the utilities industry. We are especially renowned for our high-quality systems for the entire value chain of the meat industry – from carcass grading, slaughter lines, cutting and deboning lines, hygiene systems and control systems, to logistics and packaging.

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