FOSS

MeatMaster™ II

MeatMaster™ II gives continuous "real time" measurements of fat content and weight of all the meat passing through the instrument on its built-in conveyor. It can scan up to 38 tons per hour and also performs foreign object detection. Options include an after grinder version and a compact version (Approx. 1.5 metres) when space is tight.

Sample	Parameters
Any type of raw meat, chilled and frozen Packed or loose meat	Fat, weight. Foreign object detection (metal, bone)

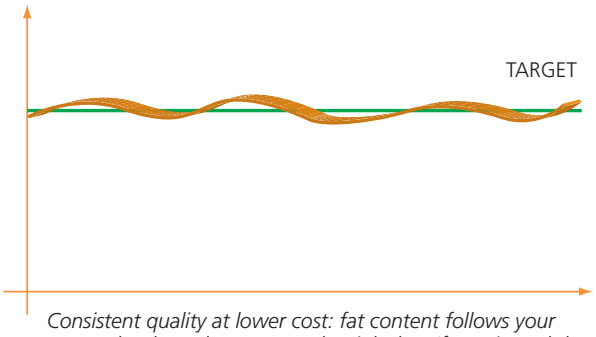
Measure it all with 100% scanning

The MeatMaster II offers you a complete picture of all the meat trimmings passing through your production. With a capacity of up to 38 tons per hour for analysis of raw meat, the MeatMaster can measure fat content, determine the weight and scan for foreign objects. X-ray technology gives a 100% scanning of all meat, regardless of the size of the pieces and whether they are fresh or frozen or packed in plastic or cardboard boxes. Typical uses include:

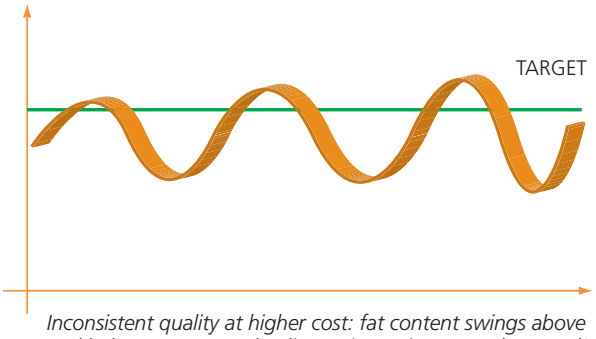
- Control of fat content in raw meat trimmings to avoid lean meat giveaway.
- Batch standardization for production of any kind of meat standards or processed meat products – for securing optimal raw material use and batches produced bang on to specifications.
- Grading of cuts like pork bellies , hams etc. – for optimizing raw material use, improving processing and obtaining final product uniformity and consistency.
- Supplier evaluation - gives you control of what you buy.

More quality and more profit

Efficiency and cost savings can be found through improved standardization of production. Besides reducing lean meat give away, this can also simplify your control procedures by avoiding routine sampling procedures and associated running costs. Likewise, the option to place the MeatMaster before the coarse grinder allows inspection of raw material early on in the production process, protecting you against unforeseen expenses.



Consistent quality at lower cost: fat content follows your target closely so that you get the right lean/fat ratio and the right end product.



Inconsistent quality at higher cost: fat content swings above and below your target leading to inconsistent products and/ or overuse of expensive lean meat.

The foreign object detection aspect helps to:

- Detect and reject bone pieces before they get smashed into lot of small pieces.
- Detect and reject metal that could damage or even destroy the grinder.

Built for integration into your production environment

MeatMaster II is easy to integrate in-line in your production with a special compact version available for tight spaces. The IP69K unit is robust and easy to clean and maintain. It is designed for rapid cleaning and routine maintenance; for example, the belt can be changed in two minutes. Installation and commissioning can be completed in a few days using a supplied calibration and with local support from FOSS experts.

We know how to boost your profit

MeatMaster was the first X-ray solution for fat analysis of meat and FOSS has been delivering analytical solutions to the meat industry for more than 30 years. During that time, FOSS has sold more than 1000 analyzers for meat process control and many X-ray analyzers and is recognized as the leading provider of X-ray fat analysis of meat.

Most importantly, FOSS expertise is available globally via our sales and high performing service and support organization.

A customer in Germany installed MeatMaster™ in their production line and achieved considerable savings using the automated control option.

- Production capacity was doubled using the same amount of staff
- Significant increase in profit was achieved by getting fat content right every time

The company estimates that the new fat analysis system has led to a savings of nine cents per kilo, which translates into a total savings of $3,540 per day for a typical slaughterhouse producing 30 tons of trimmings a day.

Technology

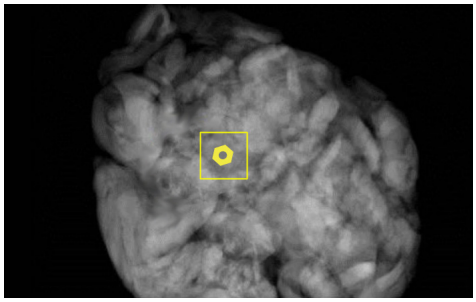
100% control with X-ray

X-ray scans 100% of the meat passing through the scanning area. X-ray can be used for scanning chilled or frozen raw meat and will give information about content of Fat, Weight and will detect foreign objects with a density higher than 1.7 g/cm^3 (metal, bone, glass, etc.)

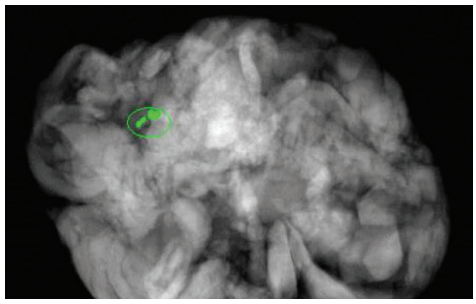
The FOSS patented X-ray system in MeatMaster results in the highest possible accuracy. The system scans meat in the form of whole cuts, trimmings or minced meat up to 20 cm in height. The meat can be in cartons, plastic trays or loose on the belt, chilled and/or frozen.

The MeatMaster scans all the meat at production speed. It comes with a built-in conveyor belt that fits directly into the production line.

MeatMaster™ is the most accurate solution for in-line fat analysis, and is well recognised as the "golden standard" for fat analysis in the meat industry.



MeatMaster™ detects metal

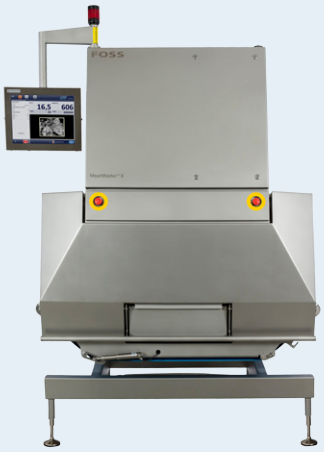


MeatMaster™ detects bone fragments.

Measure meat in trays, boxes or loose on the conveyor.

MeatMaster II C and MeatMaster II AG versions

At just 1.58 metres in length, the MeatMaster II C is nearly a metre shorter than the standard MeatMaster II and is designed to fit into production areas where space is tight. It can measure meat in boxes and trays, including blocks of frozen meat. The MeatMaster II AG is another dedicated version which is aimed at producers who need an accurate measurement of the fat content in ground meat as it is transported from the grinder to the mixer.



MeatMaster II C (compact)

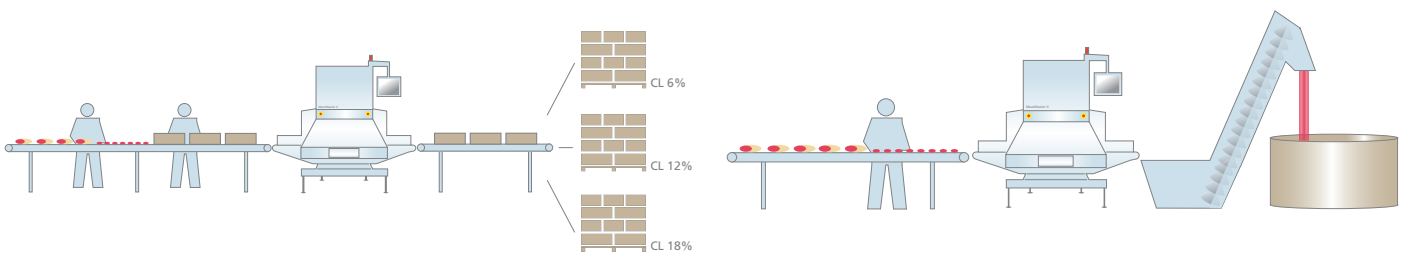
MeatMaster II AG (after grinder)

Control production of trimmings

The fat content in meat trimmings has traditionally been measured by periodic tests by 'butcher's eye' or chemical analysis methods. However, such methods do not offer satisfactory accuracy for trim product and process control. Routine analysis based on X-ray will give you much more control of your trim production and will help you to optimize the sales value of your trimmings.

You can:

- Avoid lean meat give away in each carton and/or pallet/combo
- Optimize the value of trim categories by reducing the variation between each carton on a pallet
- Reduce the risk of fat fines/fat claims
- Stop foreign objects getting into final products
- Get a protocol (fat, weight and Foreign Object Detection) of cartons on a pallet or combos for use in case of disputes



Typical uses include sorting of trimmings in cartons according to CL/fat content or building of combos to predefined CL/fat content

Batch standardization

A fast and accurate standardisation process is the key to success in production of ground meat based products. With MeatMaster it is possible to obtain accuracy at a batch level of 0.5% absolute (SD) or even better. Typically, your accuracy in assessing fat content of batches is improved by 2-3% absolute, leading to a significant improvement in earnings. The payback time of the investment can be as low as a few months.

Using MeatMaster for batch standardization, you can:

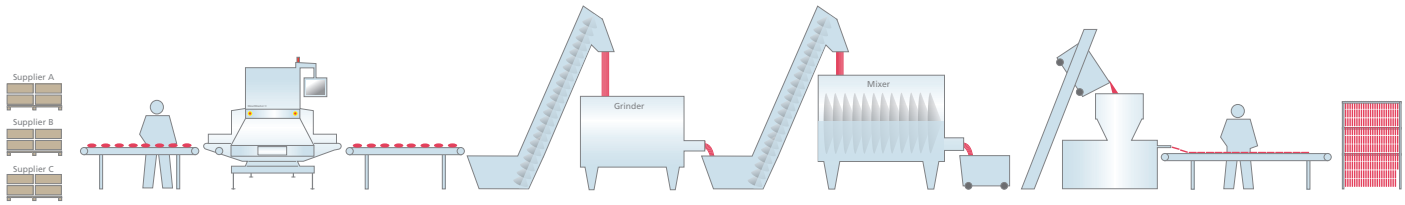
- Optimize use of raw material
- Do fast standardization of batches
- Increase line efficiency by reducing time for manual sampling, sample preparing, testing, possible adjustment, re-work and so on
- Improved brand recognition leading to more sales from improved final product quality and consistency
- Prevent foreign objects from entering the production, causing potential damage to the machinery
- Do supplier evaluation - to check if delivered raw materials are according to specifications.

Full or Semi-automated control

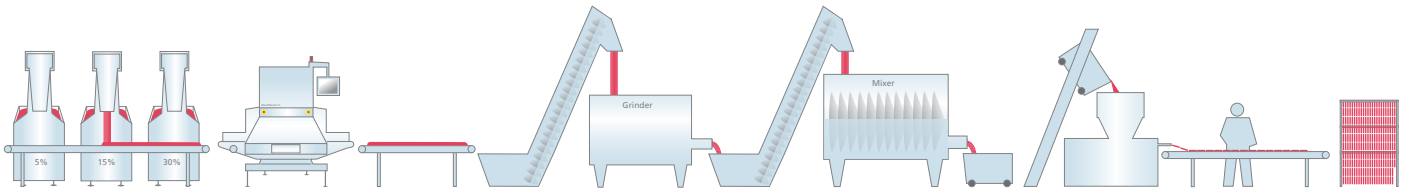
MeatMaster's measurements can be used by production staff to make timely adjustments to secure production according to recipes.

The raw material is loaded on MeatMaster's conveyor and the fat content is constantly measured by the MeatMaster. Production staff monitor results on MeatMaster's touch-screen. If the fat content starts getting too high compared to the pre-defined recipe, it can be adjusted by adding more fatty raw material according to what is displayed at the MeatMaster's monitor.

The whole process can also be fully automated based on the MeatMaster measurements and the specified targets. The in-feed from hoppers holding different trimmings categories (different fat/lean meat categories) can be automatically controlled. The software solution secures that MeatMaster, besides measuring the fat content of the scanned trimmings, also calculates the average fat content of the batch volume produced so far. This information is used by MeatMaster to check if adjustments of the process is needed. If, for example, the average fat content is too high, the software solution will secure selection of raw material from the hopper with more lean trimmings for the adjustment process to secure that the pre-defined fat content of the final batch volume is reached. The MeatMaster can be installed before or after the grinder depending on customer conditions and preferences.



Semi - automatic batch standardisation with MeatMaster II



Automatic batch standardisation with MeatMaster II

Objective grading of cuts

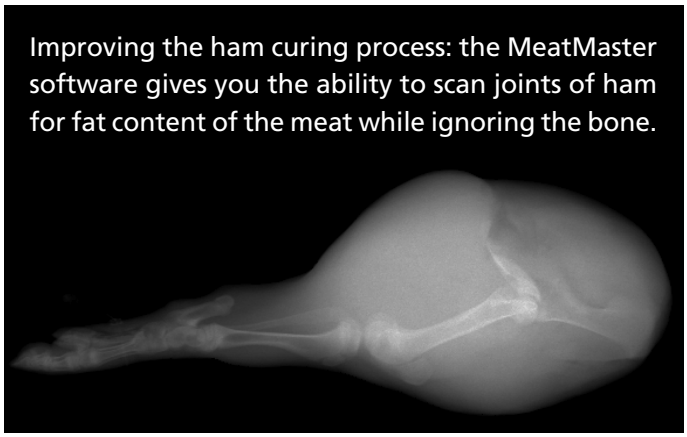
With x-ray technology it is possible objectively to grade whole cuts like pork bellies, pork hams etc. into uniform categories, which is not achievable via the traditional visual inspection. The grading is based on fat measurement and can be combined with image recognition.

The benefits of this technology apply for manufacturers of bacon, producers of dry ham products and other manufacturers of finished meat products based on whole meat cuts.

Suppliers of raw meat cuts can also ensure that deliveries are to specification (size, length, width, thickness), fat-content and without foreign objects.

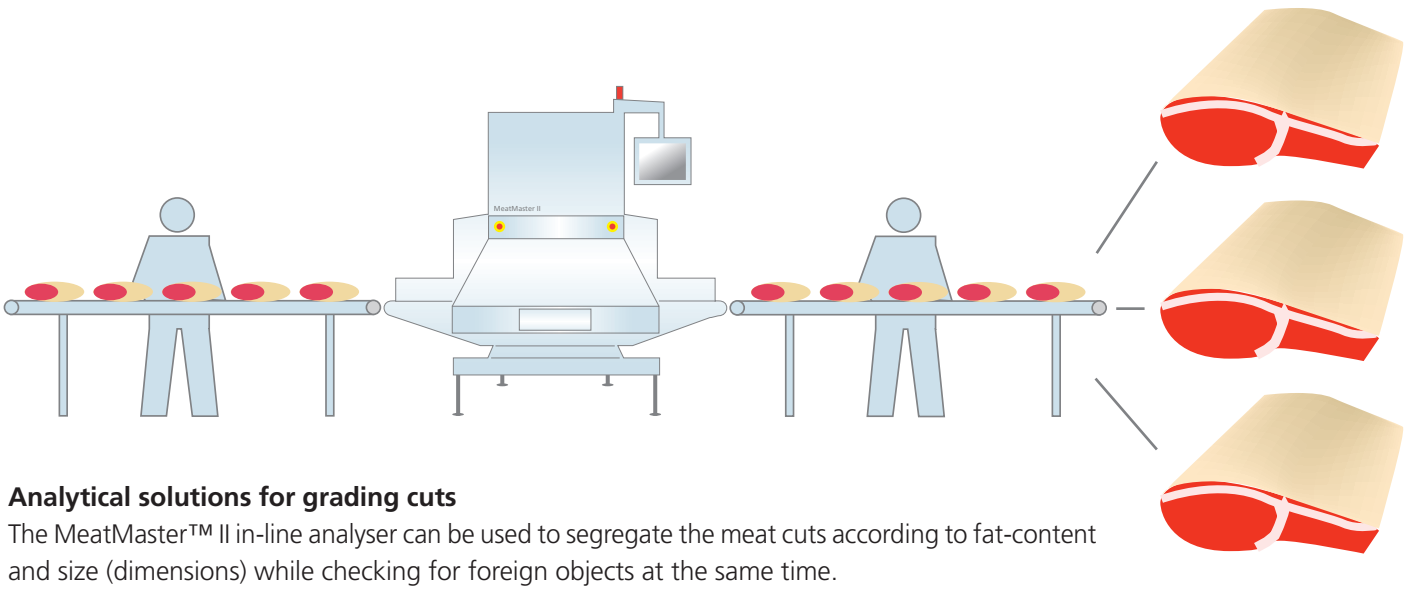
The X-ray-based grading method helps you to:

- Enhance your brand image by improving final product consistency
- Improve production yield from sorting raw material into uniform categories
- Improve production yield by reducing rejection rates of final products
- Minimize labor costs for inspection of the cuts
- Avoid paying for raw material which does not fulfill specifications



Improving the ham curing process: the MeatMaster software gives you the ability to scan joints of ham for fat content of the meat while ignoring the bone.

Improving bacon quality.
A software option allows you to scan pork bellies for dimensions (morphometry), fat and weight content and inspect for foreign objects



Analytical solutions for grading cuts
The MeatMaster™ II in-line analyser can be used to segregate the meat cuts according to fat-content and size (dimensions) while checking for foreign objects at the same time.

MeatMaster II designed for the meat production environment

Easy to integrate

MeatMaster II is easy to integrate in-line in your production with a special compact version available for tight spaces and thereby easier to integrate as an 'in-line' analyser in production plants.

The new MeatMaster II has the same renowned accuracy as the MeatMaster I, but is half the length of the original unit and thereby easier to integrate as an 'in-line' analyser in production plants.

All aspects of the instrument have been fine-tuned. Installation and commissioning can be completed in few days using a supplied calibration and with local support from FOSS experts. FOSS has the expertise and technical know-how to integrate your new MeatMaster with immediate process optimization benefits.

IP69K

The IP69K unit is robust and designed for the meat environment.

Remote support and surveillance

With remote access (like via internet) to MeatMaster's software a FOSS expert can help you to secure maximum uptime of the MeatMaster.

Via the remote access the FOSS expert can monitor the performance of MeatMaster, implement possible needed adjustments of calibration, software etc. It all serves the purpose to secure accurate performance and highest possible uptime of the MeatMaster.

Precalibrated

MeatMaster is ready for use. Only a few adjustments according to local conditions are necessary.

Pre-calibration containing pork, beef and poultry data allows you to put MeatMaster to work on a wide range of applications with only minimal calibration adjustment for local conditions.

Easy cleaning

MeatMaster II is developed for easy and convenient daily operation, including cleaning. For example, the belt can be removed for cleaning in less than two minutes.

MEASURES IT ALL WITH X-RAY – THE MOST ACCURATE TECHNOLOGY IN THE MARKET

- No sampling error because it is a 100% scanning of all raw meat
- Detects foreign objects (metal, bone, glass, stone etc.)
- Scans all types of raw meat, whether fresh or frozen and whether transported in cartons, plastic boxes or loose on the conveyor

GIVES YOU FASTER "RETURN ON INVESTMENT" THAN ANY OTHER ANALYZER

- Max. 0.8% deviation from batch target
- Reduces "lean meat give away" by up to 3%
- Industry leading up-time – up to 98%

DESIGNED FOR THE MEAT PRODUCTION ENVIRONMENT

- Fulfills all hygienic requirements
- Can be operated without specialist skills and knowledge
- Easily integrated into your production process

Secure your investment with a FossCare™ Support Agreement

Let FOSS take care of you for a maximum return on your analytical investment. Get a four year warranty as part of the new FossCare Premium Preventive Maintenance Agreement or two years as part of any other FossCare agreement. In addition to the peace of mind afforded by the warranty period, the continual preventive maintenance pays off by keeping your analytical instruments working perfectly every day, year after year.

Why preventive maintenance?

As with any analytical solution, it is essential that your FOSS instrument receives regular maintenance to ensure optimal performance and extended lifetime. Avoiding expensive downtime is a matter of following factory standards and preventively replacing parts before they wear out. In turn, this helps ensure reliable and consistent results at the highest level.

Preventive and predictive maintenance combined with global support from 300 dedicated service, application, software and calibration specialists keeps your instrument running perfectly all year round.

Benefits of a FossCare™ Support Agreement:

- Extended Warranty (two or four years depending on the chosen agreement)
- Regular maintenance; the instrument is diagnosed, cleaned, adjusted, tested, fine tuned and recalibrated
- Minimal downtime from replacing components before they are worn out
- Consistent, accurate and reliable results you can always trust
- Preventative maintenance visits when it suits you (your business)
- 24/7 phone support - no need to worry about closing hours or PO
- Low, fixed service budget prevents unexpected expenses
- Discounts on additional services, spares, training and software upgrades

Contact your local Foss office for more information.

Specifications

Products measured and product presentation:	
Products	Natural raw meat, fresh or frozen.
Properties	Fat, weight and foreign object detection
Meat applications	Placed in plastic trays (without PVC) or cartons or directly on the conveyor
Measuring range	2 - 85% fat
Product temperature	-20 to 35°C
Product presentation	Average height of the meat: between 5 and 20 cm Max. width of boxed meat/meat loose on the conveyor: 57 cm Min. distance between trays and cartons: 5 cm.

Capacity:

- Up to 38 tons/hour depending on application

Accuracy:

- Fat content is measured at an accuracy of 1% or better (accuracy on 20 kg sample)
- Weight is measured at an accuracy down to 1% relative or better
- Metal is detected down to 2 mm (3 mm in 15-20 cm meat height)
- Bone, glass and other foreign objects are detected down to 5 mm (typically 9-10 mm in 15-20 cm meat height)

Dimensions

H * W * D: 2.37 * 2.50/1.58[1] * 1.22 m (94,8 * 100/60[1]* 48,8 inches) and requires
W *D: 2.50/1.58[1] * 2,20 m (100/60[1] * 88,8 inches)

1) Lenght of MeatMaster II C version.

Instrument data

Ambient conditions	
Temperature	Ambient temperature 2 – 15 °C (max dT/dt 3 °C/3h) (35 – 59 °F) (max dT/dt 5.5 °F/3h
Humidity	Ambient humidity: 5 – 95 % RH

Instrument supplies	
Electrical supply	Power Supply: 230 VAC ±10 %, 50-60 Hz Power Consumption: Max 1200 VA
Water supply	Quality Potable water, temperature 8 - 15 °C (46 - 59 °F), maximum pressure 10 bars (140 psi) Water consumption: Maximum 60 l/h (16 U.S.gal/h) Cooling need: 450 W Local water recirculation setup may be considered
Pressurised air	Air requirement: Clean dry air at min 2 bars (28 psi) Flow: Approximately 15 l/minute Dew point: Lower than temperature at the MeatMaster II location
Waste collection	Drain for water

X-Ray	
X-Ray source	Operated at 140 kV/3 mA
X-Ray Emission	MeatMaster is shielded to <0,5 µSv/hour at a distance of 10 cm and <2 µSv/hour at a distance of 5 cm
X-Ray dosage received by meat	< 0.000005 Gy (Grey)

Data connection

Ethernet 10/100
OPC data standards

Standards and approvals

MeatMaster™ is CE labelled and complies with the following directives:

- EMC (Electromagnetic Compatibility) Directive 2004/108/EEC
- LVD (Low voltage directive) 2006/95/EEC
- MD (Machine Directive) 2006/42/EEC

Patents

EP: 1226431, AU: 768044, NZ: 518315, CA: 2387756, US: 6600805

Reference methods

- Schmid-Bondzynski-Ratslaff (SBR) method No. 131, 1989 from the Nordic Committee for Food Analysis (NMKL)
- ISO 1443:1973 Fat in Meat Products

Installation

The analyser is of a robust design. We recommend nevertheless that the installed unit is protected by concrete mounted poles or rails that prevent the unit from being hit by passing vehicles. Such devices are not part of a FOSS delivery unless specified.

FOSS

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