

ProFoss™ for in-line process analysis of mechanically deboned meat



ProFoss™ solution for poultry MDM (Mechanical Deboned Meat) production provides a new way to control product quality while avoiding waste in the process. It consists of an analyser and a specially designed lateral transmission probe installed directly in the process pipe. The system performs analysis directly in the process line and feeds a continuous stream of analysis data to a computer/screen, giving you the possibility to monitor and control the production process.

Sample	Parameters
Poultry MDM	Protein, Moisture & Fat

Streamline your production with in-line analysis

Achieve complete control of your poultry MDM production with ProFoss™ in-line sensor. Profoss™ for poultry MDM is an inline process analysis solution, employing NIR (Near Infrared) technology that measures moisture, protein and fat directly on meat transported in a pipe in the final stages of production. The ProFoss solution provides you with constant and continuous information, enabling you to make accurate, timely adjustments to the meat separator, keep production targets on spec and make the most of raw material.

Improve your business with accurate control

Profit opportunities are waiting to be found in your poultry MDM production process. More accurate control of the deboning process can increase earnings significantly. At the same time, improved product consistency can provide new pricing options.

Advantages of the poultry MDM process control include improved yield and profit based on:

- Save on lean meat give away
- Consistent product quality
- Reduce customer claims
- Increased production efficiency
- Eliminate cassation of poultry MDM
- Reduce or eliminate downgrade

Anyone can use it

With its user-friendly and low maintenance features, ProFoss™ gives your production staff the perfect tool to maintain process control for increased yield and improved consistency. Near infrared, technology ensures a high level of accuracy that you can rely on day in day out.

Anyone in the plant can contribute to process control. Easy-to-use calibration software options such as ISlcal™ allow

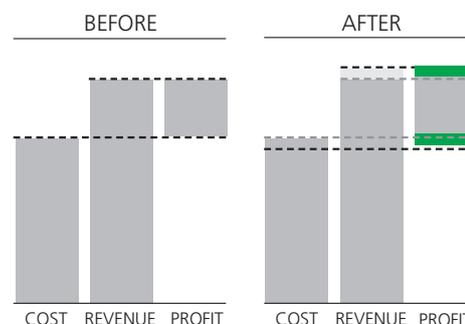
non-experts to develop or expand existing calibration with automatic sample synchronization. Once calibrations have been made, there is no need for further adjustments.

Quick and simple to implement

The technology behind the accuracy of the ProFoss system also has benefits when implementing the system. Because measurements can be relied on to be the same across individual instruments and are highly stable over time, you can reduce the time and money spent on installation of individual analysers. The standardisation and stability of the solution, as well as the intelligent FOSS calibration tool ISlcal™, makes it fast and easy for non-experts to develop or expand calibrations and transfer them across units.

Profit improvement

- Increased production efficiency leading to 1% more produced MDM leads to a total savings of euro 75,000 per year for a plant producing 15 tons of poultry MDM per day.
- Similarly, elimination of downgrade, estimated at 2% of production, earns an annual savings of euro 27,500.

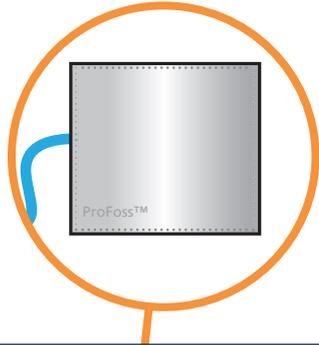


Stretch your profit zone: Production costs can be decreased and the higher product consistency will increase your competitiveness.

How to improve your poultry MDM production

Process analysis advantages

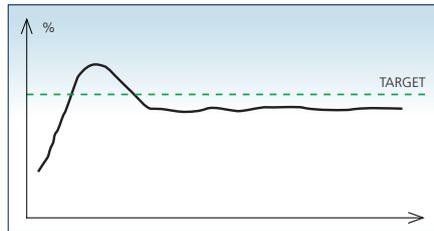
- Production close to target specifications
- Increased yield
- Reduce customer claims
- Reduce or eliminate downgrade



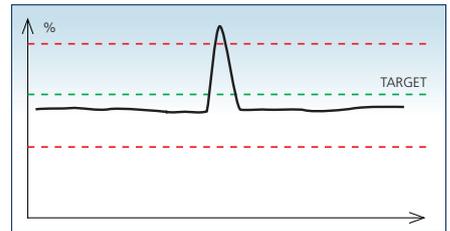
Production closer to target



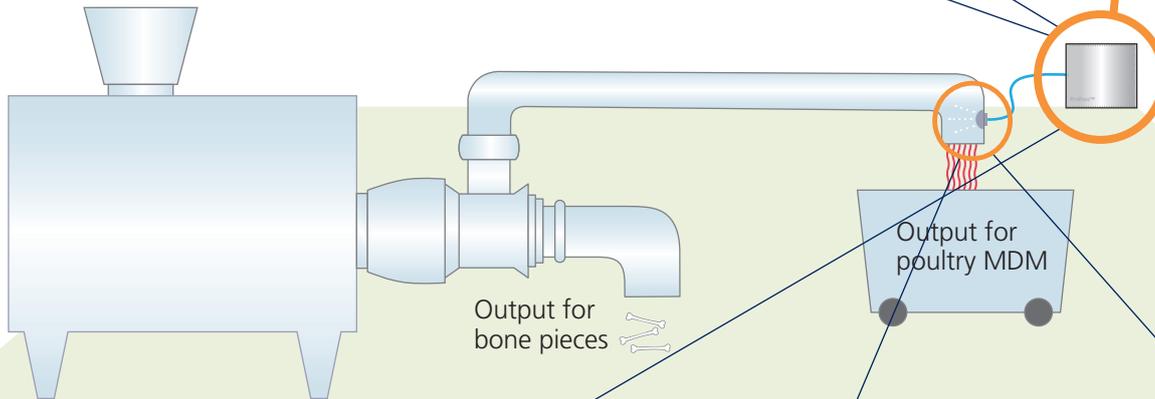
Reduce start up variation



Alarms you when production is out of spec



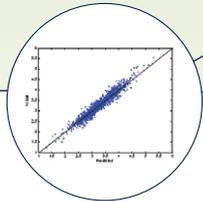
Poultry meat separator



Parameters

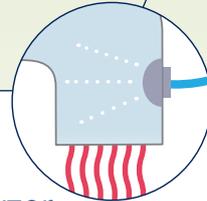
- Moisture
- Protein
- Fat

Primary profit drivers in poultry MDM are optimization of yield through accurate control of the deboning process.



Typical analyzer installation point

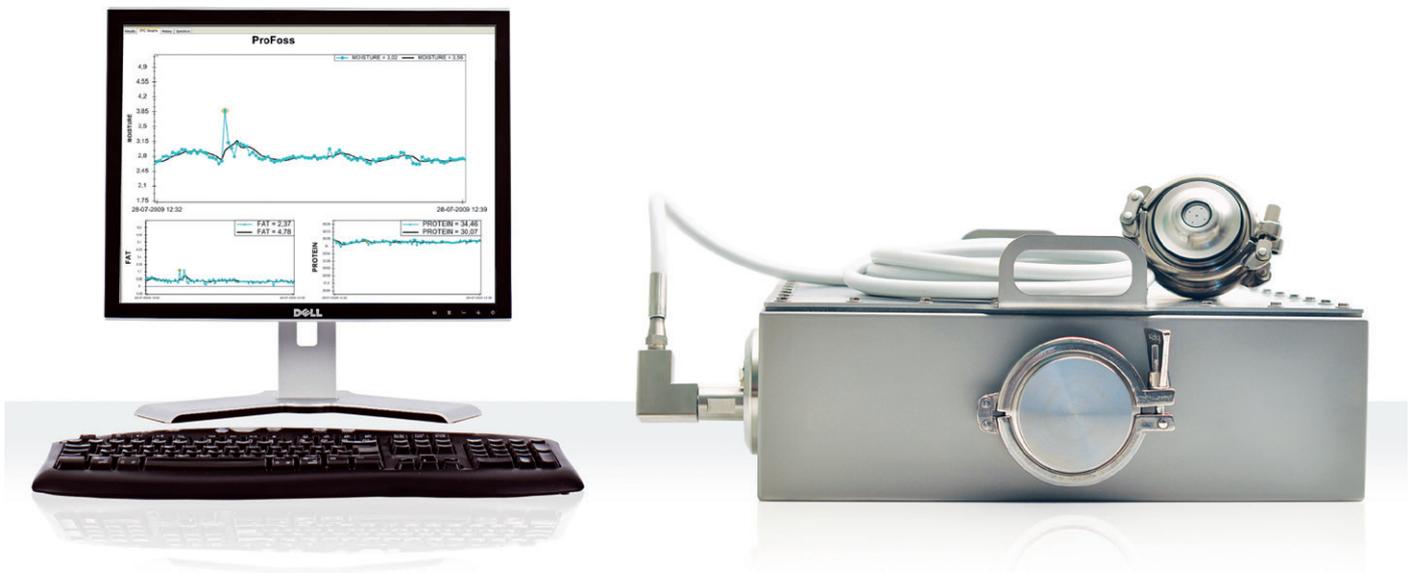
- Installation after the bone separator and before packing of product
- Hygiene certified according to USDA



Dedicated sample interface

- Lateral transmission probe installed directly in the pipe
- True in-line - no bypass - no waste
- No moving parts
- No hygiene compromises





ProFoss™ – NIR technology

ProFoss™ is unique in employing a near infrared-based analysis technology known as diode array analysis. The technology ensures accuracy and reliability with measurements based on a high density of data points.

Accurate and continuous results

Measurement accuracy is in line with traditional laboratory analysis. However, results are presented continuously rather than a few times per day giving the opportunity for immediate adjustments to production. This together with the dedicated poultry MDM sample interface ensures you a total solution optimal for your process.

ProFoss™ streamlines your manufacturing process with:

- NIR diode array technology for accurate and continuous analysis
- Consistent and uninterrupted analytical accuracy with Dual lamp backup technology
- Integrated intelligent FOSS calibration tool, ISlcal™ enables anyone to develop calibrations
- Interface for integration to local control systems enables automatic regulation (OPC, 4-20mA, Profibus etc communication).
- Low operating and maintenance costs
- Ability to measure fast moving samples

Robust and low maintenance operation

The ProFoss system keeps on running to ensure high uptime and minimal impact on daily production. Once calibrated, there is no need for constant adjustments caused by drift or other weaknesses. The high stability of the technology ensures the same accuracy day in and day out without hidden operational costs.

Intelligent calibration tool - ISlcal™

Calibration is done either through WinISI™ or by using the intelligent calibration tool, ISlcal™. ISlcal requires a minimum of user experience. Each time a reference sample is collected from the process, a button is pressed on the analyzer to synchronize the scan with the collected sample. Reference data is added and a calibration is automatically developed (or an existing calibration expanded with the new data). The ISlcal tool automatically optimizes the calibration algorithms by selecting the most reliable model for future use.



Dedicated interfaces based on transmittance technology

The ProFoss™ analyser for ground poultry MDM is available with dedicated interfaces based on transmittance technology. Measurements are done directly on the moving sample in the pipe. A high-intensity dual-lamp light source illuminates the sample through an optical fibre. The light interacts with the sample and the transmitted light is measured by the diode array sensor. The backup lamp in the dual lamp system secures uptime and analytical precision is unchanged even after switching to a new lamp.

The complete wavelength range is measured instantaneously enabling measurements to be accurately carried out even on fast moving sample. Calibrations are transferable between units ensuring easy expansion to other measurement points. Integration to process regulations systems can be done through interfacing via OPC, 4-20mA, Profibus etc. communication.

A standardised analyser

A standardised analyser with transferable calibrations significantly reduces the implementation and maintenance costs. Transferability is the solid foundation required for rapid implementation of an analyser into a complex process environment. Furthermore, once a calibration has been developed, it can be reused on other analysers. The key to achieving this is the resolution of the analysers wavelength scale. The FOSS technology has one sensor for each nm measured, securing 100% stability of the wavelength scale. In contrast, with lower wavelength resolution analysers, shifts of up to 7 – 8 nm in the wavelength scale can occur, which will require major updates of existing calibrations for each new analyser installed.

With an IP69K classification, the ProFoss solution is built to match the meat industry environment.





RINA takes your NIR support to the next level

RINA is a software for networking ProFoss. The software allows you to centralize or outsource your NIR support, which will lead to considerable cost savings and performance improvements. Technically it consists of three parts, a server, a network manager with access to internet and one or several ProFoss instruments.

Investing in a process analysis solution

With any process analysis solution you are effectively putting your production in the hands of technology. FOSS is the right partner to provide a reliable solution that will run day in, day out and year after year.

ProFoss™ is simple to install directly in the production line and comes with a total service solution to help protect your investment. FossCare™ support plans offer the option of preventative maintenance for maximum uptime and minimized repair costs.

FOSS solutions offer:

- Proven technology for precision and trouble-free operations
- User-friendly interfaces allowing anyone in the plant to contribute to process control
- Service programs offering a range of options to suit your business
- Get your service in a timely manner by fully trained local staff on site and/or remotely through internet

FOSS support plans

FossCare™ is a partnership, where FOSS helps customers with preventive maintenance, remote instrument monitoring, consultancy, training programs and downtime support. FOSS technicians work directly with the customer to solve any problem that they encounter, leading to maximum uptime and increased yield.

By participating in a Preventive Maintenance program, focus is moved from “fix it when it breaks” to a predictable and proactive approach, reducing the cost of unplanned downtime and emergency repairs and increasing the equipment reliability and availability of the solution.

Remote Monitoring and diagnostics

RINA is a remote instrument monitoring and diagnostics software that makes it easy for an internal or external expert to precisely configure, monitor and diagnose FOSS instruments from a remote location. Calibration updates and bias corrections are easily handled through the network and the system can be monitored on a daily basis, allowing you to focus on optimizing your production.

FOSS Total Service Solutions

- FOSS is committed to providing complete and fully integrated solutions to our customers
- Our relationship with you is a continuous partnership, not a time-limited occurrence
- FossCare™ Total Service Solutions are available at multiple levels according to your needs

FOSS



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, reagents, consumables and software upgrades

Contact your local Foss office for more information.

Dedicated Analytical Solutions

Technical Specifications

ProFoss Transmittance	
Analysis time:	5 ms – 60 sec / integration time; Average time per result 3 – 15 seconds
Measurement mode:	Transmittance (Lateral transmittance, transmittance probe pair)
Wavelength range:	850 – 1050 nm
Detector:	Si Diode array
Spectral dispersion:	1.0 nm / pixel

General:	
Light source lifetime:	Dual lamp system = 17500 h
Software package:	ISIScan™ for instrument control; ISIScal™ for calibration development
Wavelength accuracy:	0.5 nm
Wavelength precision:	< 0.02 nm
Wavelength stability:	< 0.01 nm/°C
Noise:	< 60 micro AU
Random Vibrations:	0.4 grms at 10 – 150 Hz according to IEC 60068-2-64 0.4 grms at 10 – 1250 Hz according to FOSS internal standard (more information available on request)
Temperature:	-5 – 40°C (23 – 104°F). With purge -5 – 65°C (23 – 149°F)
Installation in ATEX zone:	0 – 40°C (32 – 104°F). With purge 0 – 65°C (32 – 149°F)
Purge air:	Flow rate minimum 5 l/min, > 99.9% water free, > 99.9% free of oil and fine particles down to 0.3µm
Ambient humidity:	10 – 90 % relative
Dimensions:	(w × h × d): 42 × 42 × 13.5 cm (16.5 × 16.5 × 5.3 inches) + brackets to hold the unit
Weight:	25 kg / 55 lbs
Cabinet:	1.5 mm (lid 2.5mm) Stainless Steel EN 1.4301 (SS2333)
Protection:	IP69K 1) according to IEC 60529 and DIN 40050 part 9, NT ELEC 023
Communication:	Ethernet, OPC "4 - 20 mA, Profibus, RINA
Power supply:	Recommended isolated or conditioned line power 100 – 240 VAC, 50 – 60 Hz, 2.0 A, 150W

1) IP6x is the highest protection for dust entering the unit. IPx9K means protected against the effect of high-pressure water and/or steam cleaning at high temperature.

Dedicated sample interface

Lateral transmittance:

The Lateral transmittance probe does not restrict the flow rate of the product and can easily be installed in the production line using a standard GEA Tuchenhagen flowcell for installation in a pipe. The lateral transmittance probe can be installed in pipes with different diameters.



Materials:	Stainless steel
Lens:	Sapphire, 5 mm thick, with food grade EPDM O-ring seal
Temperature:	Max 150°C (302°F)
Pressure:	Production pressure < 30bar (435 PSI) Shock pressure 75bar (1087 PSI) Warning! Varinline access units higher number than DN 80 permit a maximum pressure of 10 bars.
Hygiene:	USDA, Dairy
Optical fibre:	Steel armoured fibre bundle (1, 3, 5 or 10 meters)
Pipe flowcells:	Fits directly into GEA Tuchenhagen Varinline Access units Type N (DN40 to DN150), with 68 mm opening or Type F (DN 25), with 50 mm opening)
Tank:	Stainless steel welding flange.

Standards and approvals

ProFoss™ is CE labeled and complies with the following directives:

- EMC Directive (2004/108/EC)
- Low Voltage Directive (LVD) (2006/95/EC)
- RoHS Directive (2002/95/EC)
- Packaging and packing and waste Directive (94/62/EC)
- WEEE Directive (2002/96/EC)
- EN 60079-0:2009 - Explosive atmospheres - Part 0: Equipment - General requirements
- EN 60079-31:2009 - Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure 't'
- REACH Directive (1907/2006/EC)
- Developed and produced according to FOSS ISO approval ISO 9001

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