FOSS

ProFoss™ for in-line process analysis of soya



ProFoss™ soya milling process analysis system is based on NIR high resolution diode array technology, providing non destructive analysis, directly in the process line without bypass. The analyser is housed in a robust cabinet to be installed after the milling process, analysing the soya meal as it falls into the hopper to validate and adjust key parameters. Results can be fed into your production/SCADA system and/or be presented on a screen in the production area for rapid adjustments of your process. Precise instrument matching enhances method development, minimises implementation efforts and ensures calibration model transferability between analysers.

Sample	Parameters
Soya meal	Moisture, Protein & Oil

Dedicated Analytical Solutions



Streamline your production with High Resolution in-line analysis

Achieve complete control of your soya meal production with ProFoss™ in-line sensor. Follow product composition more closely with a continuous flow of "real time" measurements of moisture, protein and oil, using high resolution diode array technology. Providing continuous and accurate results for the finished meal, the ProFoss allows millers to improve efficiency at a number of key points in the production process while also improving quality and profit.

Improve your business with accurate control

Profit opportunities are waiting to be found in your soya meal production process. For instance, by improving yield through measurements of oil content to ensure the best possible balance between oil content in the meal and the amount of premium oil extracted for human consumption. Similarly, protein and moisture optimisation, reduces variability and wastage, leading to considerable cost savings and a fast return on investment.

Users of such solutions report a rapid return on investment with a typical payback time of less than twelve months.
Advantages of soya meal process control include improved yield and profit based on:

- Optimised content of moisture, protein and oil
- Run production closer to specified targets
- Consistent product quality
- Higher value products for your customers
- Increased energy efficiency
- Reduced rework

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, high resolution technology ensures a high level of accuracy that you can rely on day in day out.

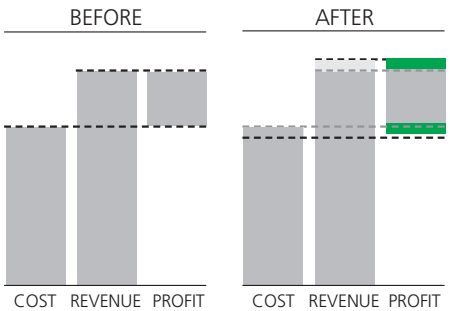
Anyone in the plant can contribute to process control. Easy-to-use calibration software options such as ISIcal™ allow non-experts to develop or expand existing calibration with automatic sample synchronization. Once calibrations have been made, there is no need for further adjustments.

Quick and simple to implement

The High Resolution 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 ISIcal™, makes it fast and easy for non-experts to develop or expand calibrations and transfer them across units.

Profit improvement

By moving protein closer to target by just 0.5%, soya millers can save US $150,000 per year (based on an annual production of 100,000 tons and a soya meal price of US $340/Ton).
Similarly, the continuous measurements of moisture content can save US $150,000 per year by helping millers to move moisture closer to target by 0.5%.



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

How to improve your Soymeal production

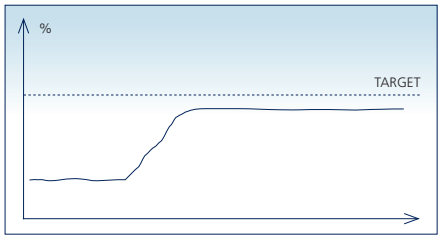
Process analysis advantages

- Production close to target specifications
- Increased yield
- Less rework and start up variation
- Optimized mass-balance

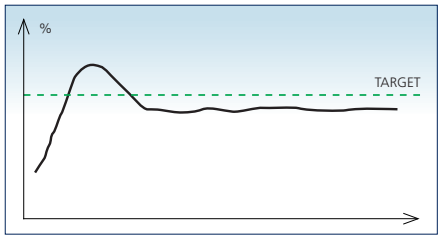
ProFoss™ – the optimal analyser for soymeal process analysis

- Reliable and low maintenance – keeps on running for maximum up-time
- Results can be presented on a screen in the production area for rapid adjustments of your process and/or be fed into your production system

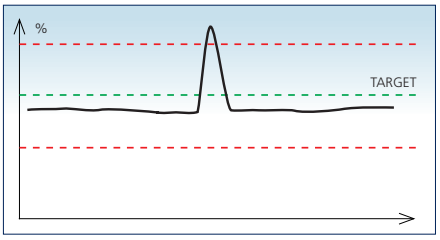
Production closer to target

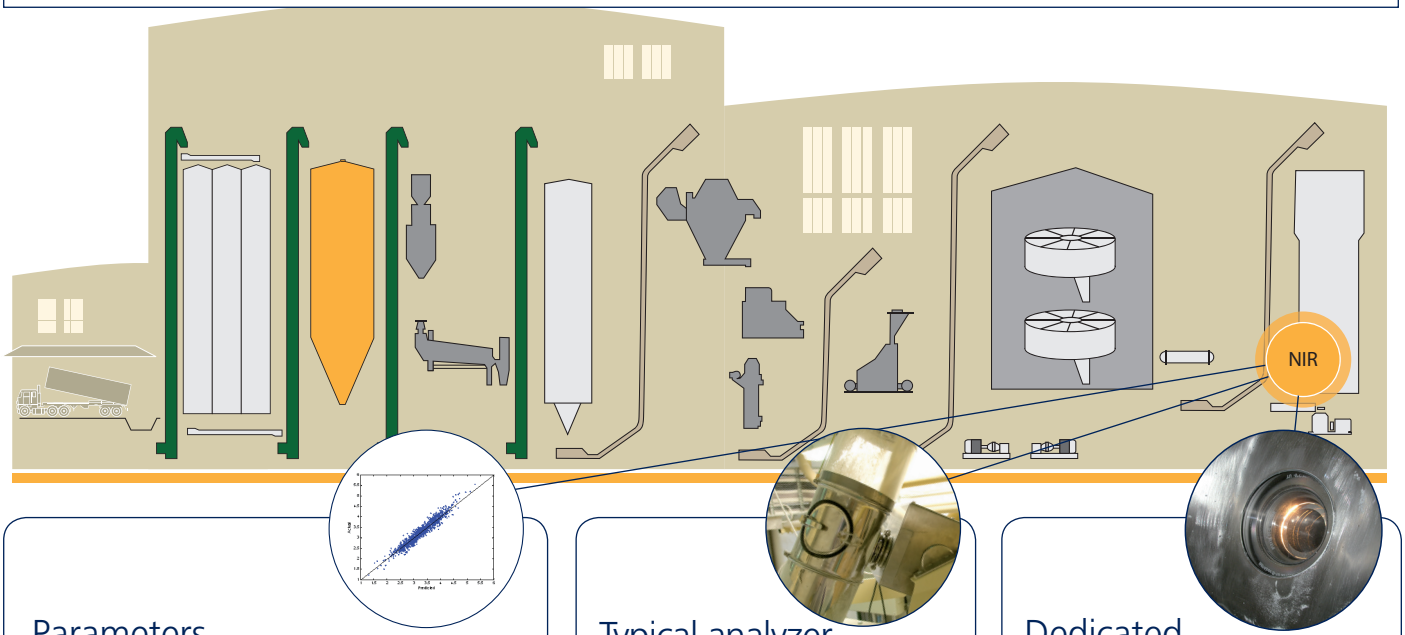


Reduce start up variation



Alarms you when production is out of spec





Parameters

- Moisture
- Protein
- Oil

Primary profit driver in the oilseed crushing industry is the optimization of the extraction process and this can be done with a constant monitoring of the quality in the finished soymeal.

Oil content in the finished soymeal should be minsiumun and protein must be closer to the specificaiton of the customers. Moisture set-point must be under a level to avoid hyineginc protblems during storage or transportation.

Typical analyzer Installation point

- Installation after the desolventiser phase or before the storage bins.
- Process to validate and adjust the oilseed extraction process.
- Explosion certified according to IEC-EX (ATEX)
- Hygiene certified according to USDA

Dedicated sample interface

- Window interface connected directly to the pipe
- True in-line – no bypass – reduces waste and sampling errors
- No moving parts
- No carry over effects between analyses



ProFoss™ – High Resolution NIR technology

ProFoss™ is unique in employing a near infrared-based analysis technology known as High Resolution diode array analysis. The High Resolution 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 soya meal sample interface ensures you a total solution optimal for your process.

ProFoss™ streamlines your manufacturing process with:

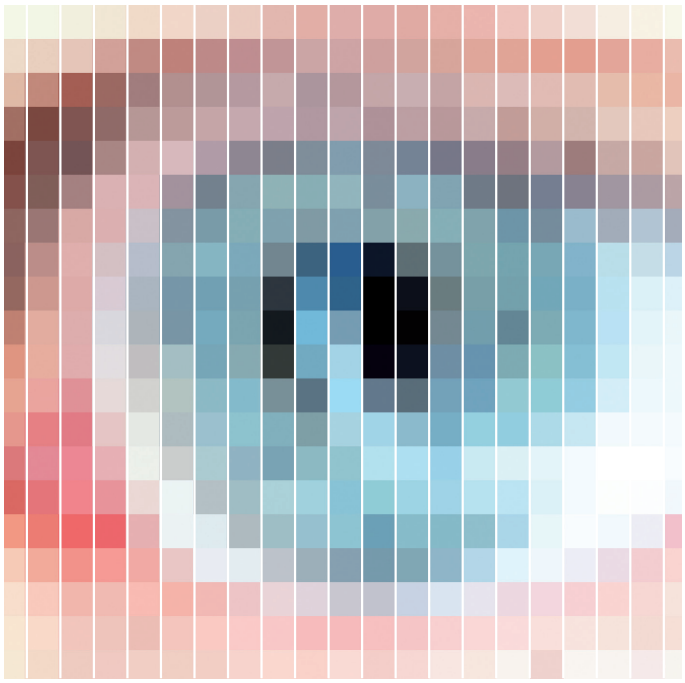
- High resolution diode array technology for accurate and continuous analysis
- Built-in instrument standardisation for quick and simple implementation
- Dedicated sample interfaces providing accuracy and rapid implementation
- Instant measurement of complete wavelength range for direct measurement of fast moving samples
- Quantitative and qualitative data for better in-line process control
- Consistent and uninterrupted analytical accuracy with Dual lamp backup technology
- Integrated intelligent FOSS calibration tool, ISIcal™ enables anyone to develop calibrations
- Interface for integration to local control systems enables automatic regulation (OPC, 4-20mA, Profibus etc communication).

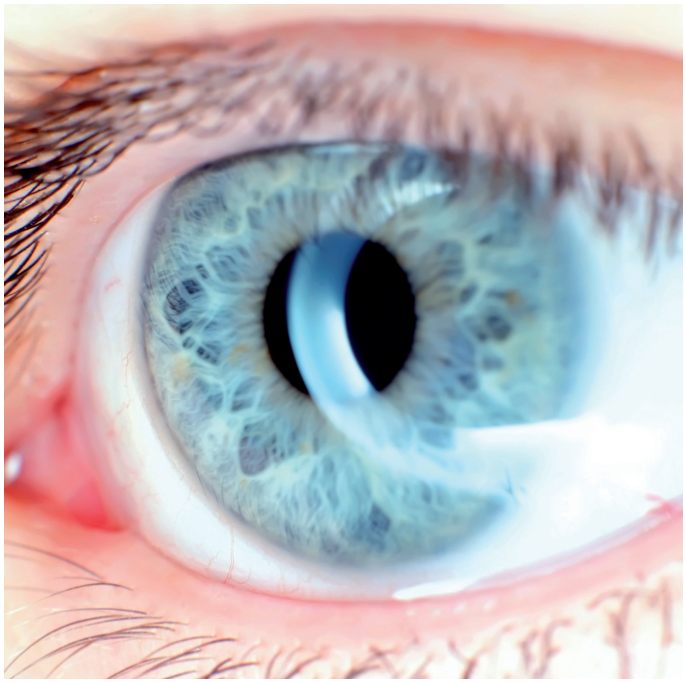
Robust and low maintenance operation

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 High Resolution technology ensures the same accuracy day in and day out without hidden operational costs.

Intelligent calibration tool - ISIcal™

Calibration is done either through WinISI™ or by using the intelligent calibration tool, ISIcal™. ISIcal 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 ISIcal tool automatically optimizes the calibration algorithms by selecting the most reliable model for future use.





High Resolution near infrared technology gives you a clearer picture of your process. A high number of pixels (diode sensors) in the spectrum secures a more detailed (accurate) and uniform (repeatable) analysis result.
High Resolution also enables manufacturing of "identical" (standardized) analyzers which stay the same over time (no drift).

Dedicated interfaces based on reflectance technology

The ProFoss™ analyser for soya meal is available with dedicated interfaces based on reflectance technology. Measurements are done directly on the moving sample in the process system. A high-intensity dual-lamp light source illuminates the sample directly. The light interacts with the sample and the reflected 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 samples. 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 High Resolution 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 High Resolution technology has one sensor for each nm measured, securing 100% stability of the wavelength scale. In contrast, with lower wavelength resolution, 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.





RINA takes your NIR support to the next level

RINA is a software suite for networking of the following ISIscan™ based instruments such as InfraXact, XDS, NIRSystem II (Feed and Forage Analysers), ProFoss and Foodscan. 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 clients (NIR 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 onsite 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



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.

Technical Specifications

ProFoss Reflection:	
Analysis time:	5 – 50 ms / integration time; Average time per result 3 – 15 seconds
Measurement mode:	Reflection
Wavelength range:	1100 – 1650 nm
Detector:	InGaAs Diode array
Spectral dispersion:	1.1 nm / pixel

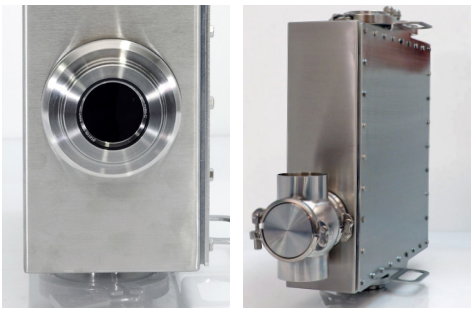
General:	
Light source lifetime:	Dual lamp system = 17500 h
Software package:	ISIscan™ for instrument control; ISIcal™ for calibration development
Wavelength accuracy:	0.5 nm
Wavelength precision:	< 0.02 nm
Wavelength stability:	< 0.01 nm/°C
Noise:	< 60 micro AU
Random Vibrations:	0.4 grms at 10 – 150 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

Window reflectance:

In-line analysis of paste, granulates, powdered products etc in pipes or transport systems without bypass can be performed. The products pass over the interface window. The window reflection interface can easily be installed into the production line using standard GEA Tuchenhagen flowcells or welding an interface flange into the wall of the pipe/transport system.



Temperature:	150°C (302°F)
Pressure:	Production pressure < 21 bar (< 305 PSI) Shock pressure < 50 bar (< 725 PSI)
Lens:	Sapphire; Diameter 45 mm, thickness 12 mm, w. food grade EPDM O-ring seal
Hygiene:	USDA
Pipe flowcells:	Fits directly into GEA Tuchenhagen Varinline Access units Type N (DN40 to DN150) with 68 mm opening
Transport system:	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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