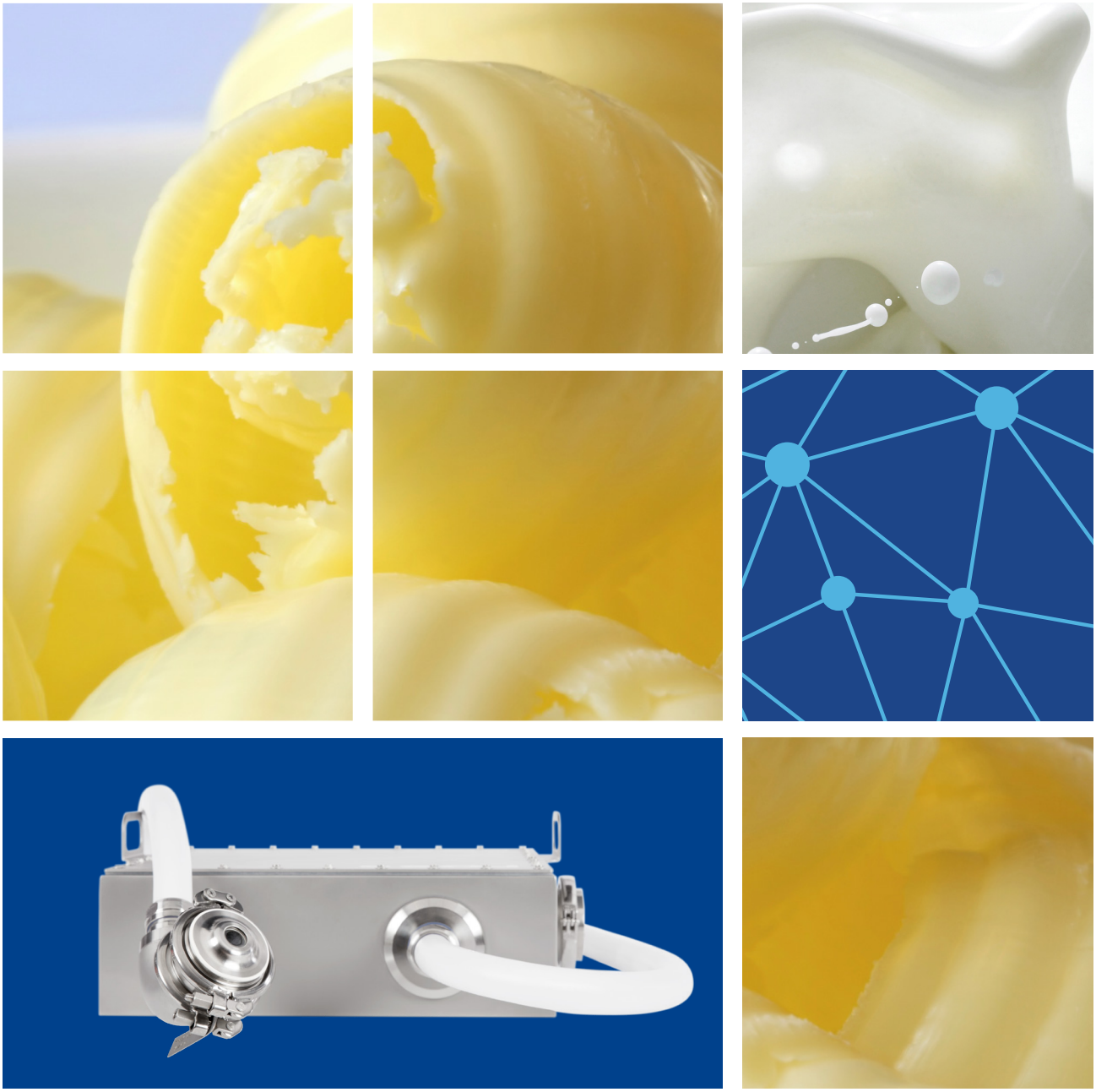
FOSS

PROFOSS™ 2

BUTTER PROCESS ANALYSIS



ANALYTICS BEYOND MEASURE

MORE BUTTER FROM THE SAME CREAM

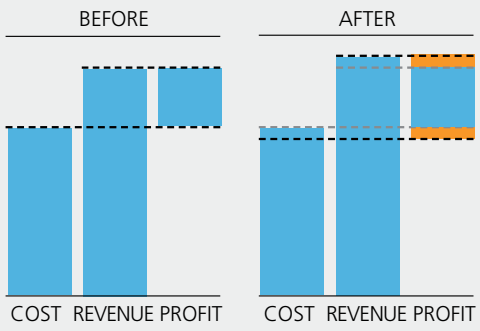
It's a common goal for butter production: get the highest possible moisture concentration with the lowest possible fat content. In this way, you can safely improve yield and profit while always meeting quality and legislative requirements. In effect, you can get more from your production without putting more in. Now, ProFoss™ 2 makes it simpler than ever to achieve this goal. Before we explore the ProFoss 2, let's catch-up with the positive development in process control over recent decades.

You may already be familiar with benchtop analytical solutions such as the FoodScan™ 2 dairy analyser which has become widely established and relied upon for accurate and rapid measurements of key process control parameters. Nonetheless, the amount of process data available is limited by the need to manually take a sample and present it to the instrument.

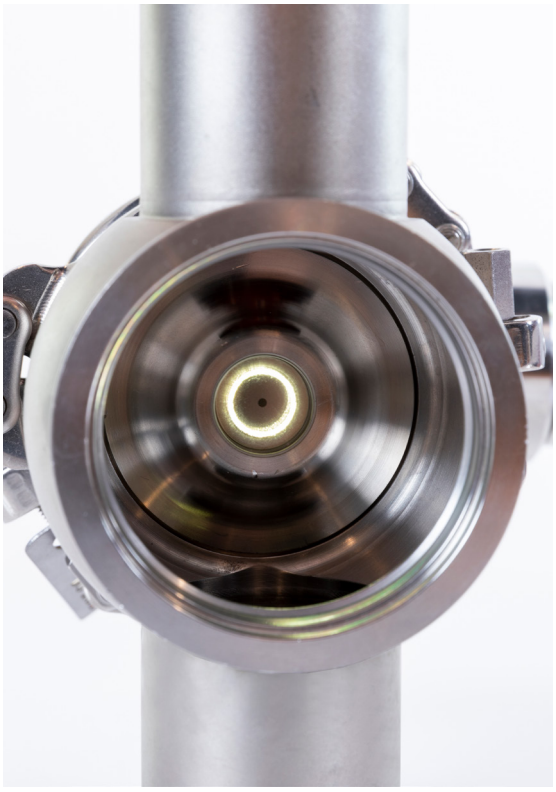
The introduction of original ProFoss™ solution changed the game by providing direct and continuous measurements of butter directly in the process pipe. Key control parameters such as fat, moisture and solids non-fat could be more closely monitored allowing tighter production control against targets. At the same time, the reliability of the results could also be easily checked against the highly stable FoodScan 2 analyser.

PROFIT IMPROVEMENT

With a butter price of Euro 3.10 and a yearly production of 4,500 tons, a moisture increase of 0.3% yields Euro 50,000 per year.



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



INTRODUCING PROFOSS™ 2:

YOUR PASSPORT TO IN-LINE PROCESS CONTROL

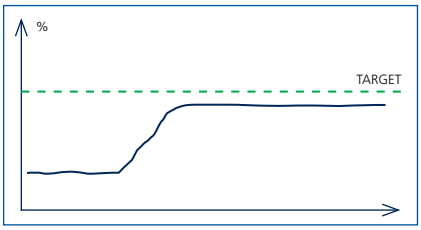
Building on the success or the first ProFoss™, ProFoss™ 2 exploits exciting developments in analytical technology encompassing instrument calibration, connectivity for data sharing, probe design and much more. The goal of achieving production targets continuously, minute by minute and hour after hour is simpler than ever. Higher yield from the same raw material is now achievable for any butter producer.

Achieve complete control of your butter production with ProFoss™ 2 in-line sensor. ProFoss 2 gives a continuous flow of "real time" results of the butter quality out of the butter churn. Optimise the use of raw materials, run production consistently closer to target specifications and make timely adjustments to your butter.

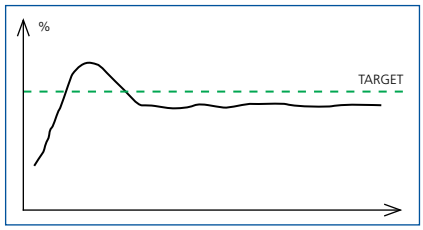
HOW TO IMPROVE YOUR BUTTER PRODUCTION

PROCESS ANALYSIS ADVANTAGES

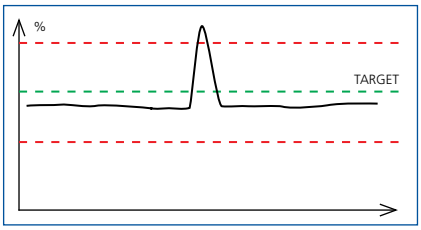
- Production close to target specifications
- Increased yield
- Less rework and start up variation
- Optimized mass-balance



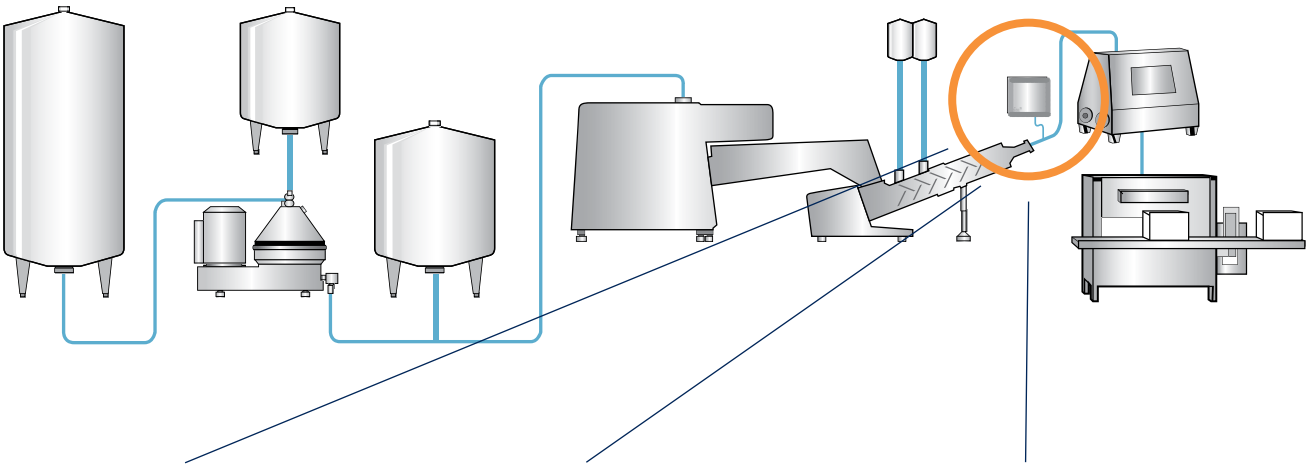
Production closer to target.



Reduce start up variation.



Alerts when production is out of spec.



Parameters

- Moisture
- SNF
- Fat
- Salt (indirect measure-ment)

In butter production the primary profit driver is to optimize the moisture level to increase yield and thus revenue.

Typical analyser Installation point

- Installation after the butter churn in order to validate and adjust final moisture content
- Hygiene certifiied according to 3A

Dedicated sample interface

- Lateral transmittance interface connected directly to the pipe
- True in-line solution – no bypass – means no waste
- No moving parts
- No hygiene compromises

ALWAYS KNOW WHAT IS GOING ON IN THE PROCESS WITH REAL-TIME ANALYSIS

The continuous flow of analysis data provided by ProFoss™ 2 allows you to shift production targets closer to fat and moisture specifications for immediate and lasting improvements to yield.

Each measurement is made up of high-frequency sub-scans. The frequency of measurement ensures that nothing gets missed and that you will always have a precise picture of any fluctuations in the process. Another aspect of the ProFoss 2 measurements is that they are made using near infrared transmittance, which penetrates deep into the sample. This avoids interference from moisture that can form on the surface of butter.

Further, the ProFoss 2 measures directly in the process pipe with the patented FOSS lateral transmittance product interface. The latest generation of the lateral probe gives a unique high-resolution signal for unprecedented accuracy. At the same time, the consistency of measurements ensures that all units can be relied on to always give the same high quality measurements.

You can choose to measure at different points in the process line or across different production lines using simple-to-implement multi-point installation options with each installation giving the same high-level of measurement performance.

THE LATERAL PROBE

ProFoss™ 2 uses a lateral transmittance probe to analyze directly in the process pipe.

As any butter producer knows, moisture can form on the surface, which is why it is important for the infrared light used in the measurement to penetrate deep into the sample. The lateral transmittance probe, as its name suggests, is positioned lengthwise in the pipe to measure from the core of the material in process. In addition, it uses a form of near infrared analysis called transmittance to penetrate deeper into the sample as opposed to so-called near infrared reflectance solutions which measure the surface of a sample.

The lateral probe is now in its third generation with the ProFoss 2 butter solution and has been developed to give a better signal for more analysis data and to ensure that all units can be relied on to always give the same high quality measurements. The frequency of measurements has also been boosted to give a clearer evaluation of fluctuations in fat and moisture in the process, allowing for closer control against production targets.

THE POWER OF IN-LINE: PROFITABLE BUTTER PRODUCTION BASED ON RELIABLE MEASUREMENTS

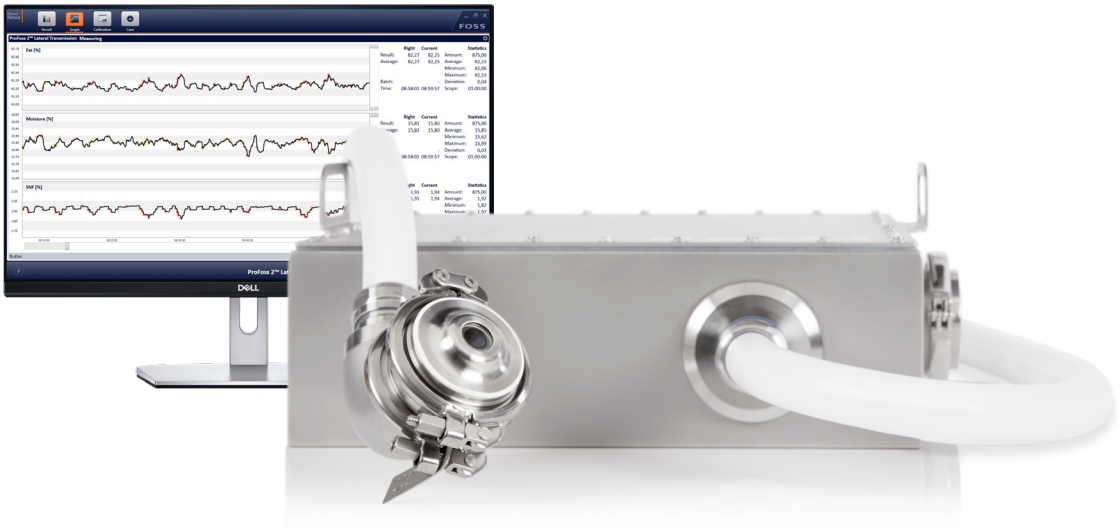
The reliability of measurements of moisture and fat across all units and production lines is assured with standardized instruments that all measure the same.

A standardised analyser with transferable calibrations significantly reduces the implementation and maintenance costs for in-line process control.

The high uniformity standards and robust design of the latest generation ProFoss™ 2 solution ensures that the same calibration can be used on multiple instruments which measure the same product. This also ensures that only minimal updates to calibrations are required during the instrument lifetime. In contrast, solutions with lower standards will require separate calibrations for each instrument and more frequent updates.

Administration concerns are further reduced due to the use of transferable calibrations based on the industry benchmark FoodScan™ 2 benchtop analyser. ProFoss 2 provides facilities to evaluate measurements against the FoodScan 2 on a regular basis. The performance validation procedure is made simple and reliable with automatic data transfer.

PROFOSS™ 2
HIGH RESOLUTION NIR TECHNOLOGY



ProFoss™ 2 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.

PROFOSS™ 2:

- High resolution diode array technology for accurate and continuous analysis
- Built-in instrument standardisation for quick and simple implementation
- Unique lateral probe interface providing accuracu and rapid implementation
- Quantitative and qualitative data for better in-line process control
- Interface for integration to local control systems enables automatic regulation (4-20mA, Profibus etc communication).

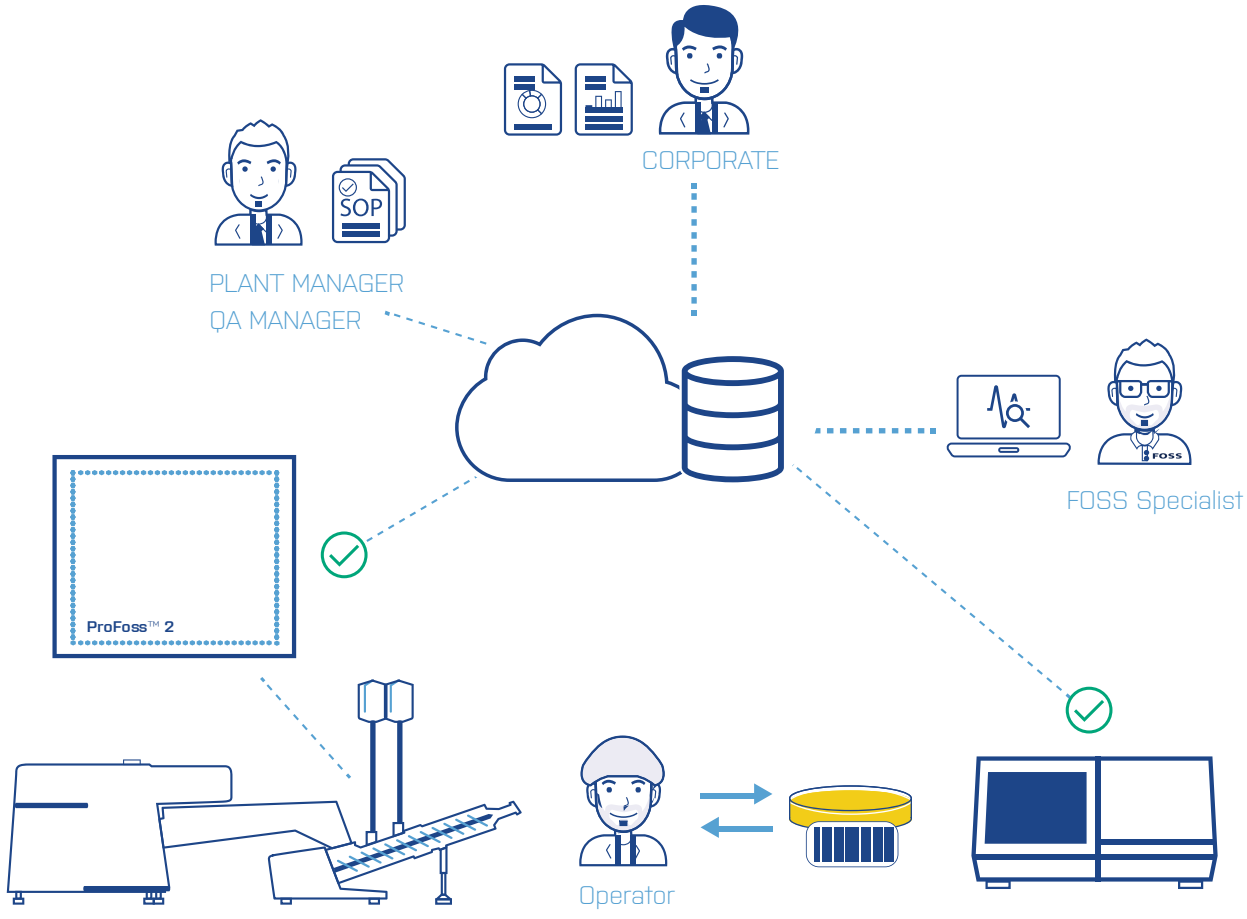
The revolutionary ProFoss™ 2 performance evaluation procedure is used to match in-line results with those from reference benchtop instruments such as the FoodScan™ 2.

FossManager™ software gives a common view of sample identifications and results from both benchtop and in-line sources on one page. The overview facilitates efficient surveillance of calibration performance and any necessary adjustments through pre-planned FossAssure™ services.

HIGHER YIELD ENSURED BY PREDICTABLE PERFORMANCE

The latest technology behind ProFoss™ 2 ensures consistent performance day in, day out and year after year. Building on the reliable measurements delivered by each and every analyser unit, software and digital connectivity services help to maintain stable high performance across whole populations of instruments.

Calibrations can be monitored and adjusted remotely from anywhere. Automatic instrument monitoring and alerts can be set up and maintenance schedules can be proactively planned for optimal uptime.



Software and digital connectivity services contribute to reliable performance across individual or whole populations of instruments. ProFoss 2 units can be monitored and managed from a single desktop, for example, when making calibration adjustments or proactively planning maintenance cycles for optimal uptime. This can be done from anywhere in the world from any PC.

A FAST RETURN ON INVESTMENT

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

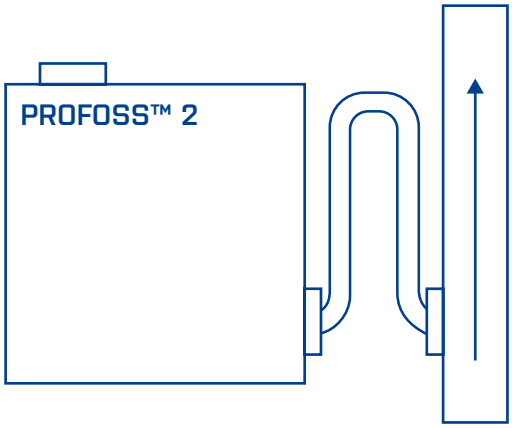
THE NEW PROFOSS™ 2 SOLUTION OFFERS:

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

DEDICATED SAMPLE INTERFACE

LATERAL TRANSMITTANCE:

The 3rd generation Lateral Transmittance probe does not restrict the flow rate of the product. It can easily be installed in the production line using a standard Varinline connection for installation in a pipe or by welding an interface flange into the wall of a tank. In combination with the ProFoss™ 2 unit it is perfect for in-line analysis of butter, sweet butter, salted butter, butter blends and more.



PROFOSS™ 2, DESIGNED FOR PROCESS ENVIRONMENT AND PROCESS OPTIMISATION:

ProFoss 2 is a flexible and easy-to-implement solution with key food-safety certifications. Implementing ProFoss 2 provides insight into the process to help maximise production yield across multiple production lines. ProFoss 2 is supported by a range of digital services.

STANDARDS AND APPROVALS

ProFoss™ 2 is CE labeled and complies with the following directives:

- ATEX & IECEx rating
- Low Voltage Directive 2014/35/EU
- EMC (Electro Magnetic Compatibility) Directive 2014/30/EU
- Packaging and Packaging Waste Directive 94/62/EC
- WEEE Directive 2012/19/EU
- RoHS directive 2011/65/EU
- REACH Regulation (EC) No. 1907/2006

TECHNICAL SPECIFICATIONS

Measuring technology: Lateral Transmittance	
Analysis frequency	Real time: Average analysis time per result 2 - 3 seconds
Wavelength range	850 - 1050 nm
Detector	Si Diode Array
Spectral dispersion Si Diode Array detector	1.0 nm/pixel
Process line interface	Sapphire, 5 mm thick, with food grade FFPM O-ring seal Fits into standard GEA Tuchenhagen Varinline Access Units with Ø68 mm opening or with Ø50 mm opening or FOSS Stainless steel welding flange.
Product temperature	Max 150°C (302°F)
Product pressure	Production pressure < 30 bar (< 435 PSI). Shock pressure < 75 bar (< 1088 PSI). Warning! Varinline access units higher than DN 80 permit a maximum pressure of 10 bar (145 PSI).
Optical fiber protection:	Steel armoured (1, 3, 5 or 10 meters)

Technology	**NIR technology**
Software package	ISIscan NOVA™ for instrument control
Wavelength accuracy	< 0.5 nm
Wavelength precision	< 0.02 nm
Wavelength temperature stability	< 0.01 nm/ °C
Spectral noise	< 60 micro AU
Vibrations - require optical fiber fixation	0.4 Grms
Ambient operating temperature	Basic configuration -5 °C - 40 °C (23 °F - 104 °F), Cooling with a compressed air line allows use up to 65 °C (149 °F) ATEX configuration 0 °C - 50 °C (32 °F - 122 °F)
Pressurised air – cooling (Amb. Temp. 45 - 65°C)	Cooling air Flow rate minimum 5 l/min, >99.9 % water free, >99.9 % free of oil and fine particles down to 0.3 µm
Ambient humidity	< 90% RH
Dimensions (W x D x H)	w x h x d = 420 x 420 x 135 mm (16.5 x 16.5 x 5.3 inches) + brackets to hold the unit
Weight	25 kg (20 kg)
Power suply	1 phase, 100-240 VAC (max ±10 % of the rated voltage), max. 40 VA, 50 - 60 Hx
Cabinet / Housing materials	1.5 mm (lid 2.5mm) Stainless Steel EN 1.4301 (SS2333)
Mechanical environment	Process control equipment
Degree of protection	IP 69*
Approvals	ATEX & IECEx certified (Dust explosion approved)
Hygiene	3A hygiene certified
Communication	KEPServerEX (Ethernet, Analogue Profibus/Profinet) to PLC/SCADA; FossManager™
Network	High quality, shielded LAN cable; minimum category 5e. RJ 45 (IP 67) LAN connections
Operation	Indoor use or outdoor shielded from rain and direct sunlight

** IP69 is the highest protection for dust entering the unit. IP69 means protected against the effect of high-pressure water and/or steam cleaning high temperature.*

FOSS

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