

MilkoStream™ FT Inline FTIR analyser for improved milk standardisation



The MilkoStream™ FT in-line analyser measures five key parameters of liquid milk directly in the process pipe. MilkoStream™ FT uses the best analytical technology for milk standardisation, Fourier Transform Infrared (FTIR), to give an accurate picture of what is going on inside the process at any time. Armed with this information you can improve the efficiency of your milk standardisation for an immediate payback in terms of improved product consistency and reduced production variation.

Sample	Parameters
Milk parameters	Fat, protein, lactose, total solids, solids non fat (SNF)



Reduce production variation by more than 20% with real-time MilkoScan results

The concept of standardising fat and protein in milk is increasingly popular as a way to boost economy in dairy production. The continuous and accurate measurements provided by MilkoStream™ FT allow you to move your targets closer to specification. Typically, you can improve product consistency and reduce production variation by more than 20%. The resulting increase in yield is considerable, for example, saving a medium sized cheese plant around EUR 120.000 per year.



The continuous flow of analytical results reduces operator time spent on manual sampling and lab analysis is also effectively avoided.

As the world's first truly in-line FTIR analyser, MilkoStream™ FT offers unique analytical performance on fat and protein and is fully aligned with the well known MilkoScan™ FT 120, MilkoScan™ FT1 and MilkoScan™ FT2 analysers used in over 2000 dairies around the globe.

Quick to install, high uptime and low cost of ownership

The patented in-line DDP™ (Dynamic Diamond Probe), with dynamic reference standardisation during CIP ensures top performance and keeps maintenance costs low.

It is simple to install with interface to all major PLCs and Scada systems. And you can start saving straight away. Only a few samples are required to adjust the solution to your production. The MilkoStream™ FT hardware is built for solid performance with minimal maintenance. There is no flow system because the probe intercepts the normal milk flow. Self-diagnostic software alerts to any potential failures and remote surveillance to ensure high up time. Comprehensive preventive maintenance agreements are available from our global support network.

Partner with the global leader in dairy in-line analysis

FOSS is the global leader in dairy in-line analysis with 40 years of experience with in-line analysis and a network of more than 200 customer support engineers supporting an installed base of 1000s of instruments. Support is provided by certified support engineers stationed close to our customers across the globe. Local, competent and certified they keep your analytical solution running at peak performance for maximum productivity, payback and profit. A range of proactive services is available for you to choose from according to your business requirements.

Immediate payback

Controlling the standardisation process requires rapid, frequent and accurate analysis. The more accurate results, the more precise the standardisation, helping you to reduce variation between tanks and vats.

For example, if a dairy plant producing 10,000 tons of skim milk powder per year can decrease the Protein/Solids-non-Fat ratio by 0.6, it can save up to 197,000 Euro per year, assuming the price of skim milk powder at 1.69 Euro and the cost of lactose at 0.59 Euro per Kilo.

Technology

MilkoStream™ FT is an in-line process instrument designed for protein and fat standardisation of liquid milk. It takes little space and can be easily installed in the process pipe.

The total MilkoStream™ FT solution contains the following elements:

1. DDP™ probe unit
2. Optical fiber cable
3. Cabinet incl. interferometer and detector module
4. Instrument software
5. Milk calibration
6. FossCare™ Support Agreement

Built on the well proven technology behind the world's most widely used milk analyser - the MilkoScan™ - the MilkoStream™ provides a solid platform for liquid milk analysis.

Purpose built FTIR unit for reliable analysis operations

In-line Fourier transform infrared technology (FTIR) sampling and tests are easy to perform with no risk of operator error. The FTIR interferometer scans the full mid-infrared spectrum so that analysing new products and parameters is only a matter of calibration development. Based on the spectra a qualification model can be made to monitor that the product in the pipe meets specification.

It is also a robust solution for use directly in the harsh conditions found in the production plant and the cleaning procedures employed. Housed in a protective case, the interferometer is insensitive to temperature and humidity.

The method is in compliance with (Association of Analytical Chemists) and IDF (International Dairy Federation).

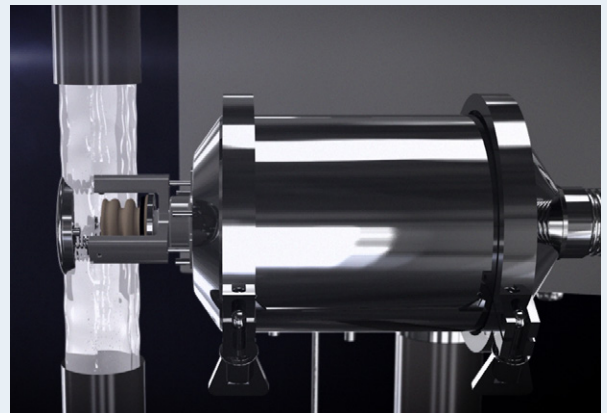
Patented in-line probe DDP™

The FOSS patented in-line DDP™ (Dynamic Diamond Probe) performs dynamic reference samples after CIP and the need for zero setting is eliminated. It is based on a movable diamond window in the measurement cuvette that gives two reference gap measurements of a few nanometres. The dynamic reference standardisation performed by the MilkoStream™ therefore effectively allows FTIR analysis on milk directly in the process pipe. In addition, the gap in the cuvette can be opened up to 1 millimetre for CIP cleaning.

The movement of the diamond window is made possible by a mechanical system driven by three stepper motors, where each motor controls the location of a contact point in the plane of the diamond cuvette.

The probe is attached to the process line through a standard VARINLINE interface. Part of the probe sits inside the process pipe. Those parts of the probe that are in contact with the process are designed to withstand the process environment including CIP.

The parts of the probe in contact with the process are designed to withstand the process environment including CIP, meeting 3A and EHEDG standards.



The DDP™ probe is automatically cleaned during the CIP procedure



The movable diamond cuvette



Instrument standardisation and calibration transferability

MilkoStream™ instruments are factory standardised for high stability and for the same results on multiple instruments.

Ready-made calibrations are based on the extensive FOSS chemometrics knowledge built-up over more than fifty years.

Simple to use software

The MilkoStream™ FT runs on the easy-to-use ISIsScan™ Nova software and can be connected to PLC or Scada systems.

IP66 Cabinet

The cabinet protects against the environment (IP66) and acts as a container for the interferometer, power supply. It is mounted using a clamp, giving maximum flexibility to the customer, in terms of installation method.





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 and tested
- 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

Technology	Fourier Transform Infrared Spectroscopy (FTIR)
Calibration	Milk: Fat, protein, lactose, total solids and solids non fat (SNF)
Calibration range	0 - 6 % fat 3 - 13 % protein 3 - 6 % lactose 9 - 20 % total solids 9 - 18 % solid non fat
Accuracy	Fat, protein SEP: 0.05 % Total solids, SNF, lactose SEP: 0.10 %
Repeatability (Sr)	Fat, protein: 0.015 % Total solids, SNF, lactose: 0.05 %
Product temperature	2 - 8 °C or 2 - 40 °C
Analysis time	7 sec. Average result is flexible e.g. 30 seconds or number of samples
Protection class	IP66
Water supply (if ambient temp. ≥ 30 °C)	Temperature: 2 - 25 °C Flow rate: 12 - 60 liters per hour Connection: 3/8"
Pressurised air	In accordance with ISO 8573.1: 2010: solid particle Class 2, Humidity Class 2, Oil Class 1 Flow 300 liters/hour Connection: ID4/OD6 PU hose
Electrical supply	1 phase, 100-240 VAC $\pm 10\%$, 50-60 Hz 300W
Humidity	< 93 % RH
Pipe dimension	Equal or greater than, DN 50, OD 2 1/2", IPS2 or ISO 60,3
Pipe pressure	Max. 10 bar static
Ambient conditions	5 - 30 °C (without water cooling) 5 - 43 °C (with water cooling)
Vibration level of Varinline Access Unit interface	Maximum level: 0,35 grms between 200-2000 Hz. Sensitive frequency ranges: 380-460 Hz and 700-750 Hz. The rms value should not exceed: 0,02 grms
CIP temp	Up to 95 °C
Dimension	WxHxD: 255 x 485 x 353 mm
Weight	Cabinet: 24.3 kg Probe: 12.5 kg
Network connections	LAN - Ethernet Cat. 5e 4 x 2 x 26 AWG
Hygiene conformance	3-A sanity standards, EHEDG

Standards and approvals

MilkoStream™ FT is CE labeled and complies with the following directives and regulations:

Directives:

- Low Voltage Directive 2014/35/EU
- Electro Magnetic Compatibility Directive 2014/30/EU
- Waste Electrical and electronic Equipment (WEEE) 2002/96/EC
- Packaging and packaging waste directive 94/62/EC

Regulations and legislations (within EU):

- REACH Regulation (EC) No. 1907/2006 (EU Chemical legislation)
- EU Regulation (EC) No. 1935/2004 (materials and articles intended to come into contact with food)
- GMP Regulation (EC) No 2023/2006 (good manufacturing practice for materials)
- EU Regulation (EU) No. 10/2011 with amendments & No. 1282/2011 (on plastic materials and articles intended to come into contact with food)

CE marking directives has been verified through following harmonized standards:

- EN/IEC61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use (General requirements) (LVD, product standard)
- IEC/EN 61000-6-1 Generic immunity standard. Residential, commercial and light industry
- IEC/EN 61000-6-2 Generic immunity standard. Industrial environment
- IEC/EN 61000-6-3 Generic emission standard. Residential, commercial and light industry
- IEC/EN 61000-6-4 Generic emission standard. Industrial environment
- IEC/EN 61326:2013 Electrical equipment for measurement, control and laboratory use
Immunity: Basic immunity and Industrial locations
Emission: Class B equipment

Other:

- FDA 21 CFR 177 (Indirect food additives: Polymers)
- FCC Title 47 Part 15, Subpart B, Class A (Rules and regulation unintentional electronic radiators)
- National Deviations with reference to UL61010-1 (USA safety requirements for electrical equipment for measurement, control and laboratory use)
- National Deviations CAN/CSA-C22.2 NO. 61010-1-12 (Canadian safety requirements for electrical equipment for measurement, control and laboratory use)

IMPROVE YOUR MILK STANDARDIZATION BY MORE THAN 20% WITH REAL-TIME MILKOSCAN RESULTS

- Move your fat and protein targets closer to specification by reducing production variation by more than 20%
Gain new insight with a measurement every seven seconds from the new Patented Dynamic Diamond probe™ (the world's first true and only in-line FTIR analyser)
- Get in-line measurements with MilkoScan performance (comparable to individual measurements from gold standard MilkoScan FT 120, MilkoScan FT1 and MilkoScan FT2 instruments)
- Avoid the need for sample bypass flow system with high maintenance cost
- Control standardization continuously and reduce the need for buffer tank solutions

QUICK TO INSTALL, HIGH UP-TIME, AND LOW COST OF OWNERSHIP

- Get up and running quickly with ready-to-use calibrations
- Enjoy top in-line performance day in, day out with robust design and automatic 'CIP' compatible cleaning
- Link up to the internet for remote surveillance and predictive maintenance from instrument experts
- Exploit analytical data by interfacing to PLCs and Scada systems

PARTNER WITH THE GLOBAL LEADER IN DAIRY IN-LINE ANALYSIS

- Rely on a supplier offering 60 years experience in analytical excellence and an installed base of 1000s of instruments
- Gain support from a global network of more than 200 customer support engineers
- Take advantage of the industry's most innovative product development program setting new standards in dairy production yield and quality



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