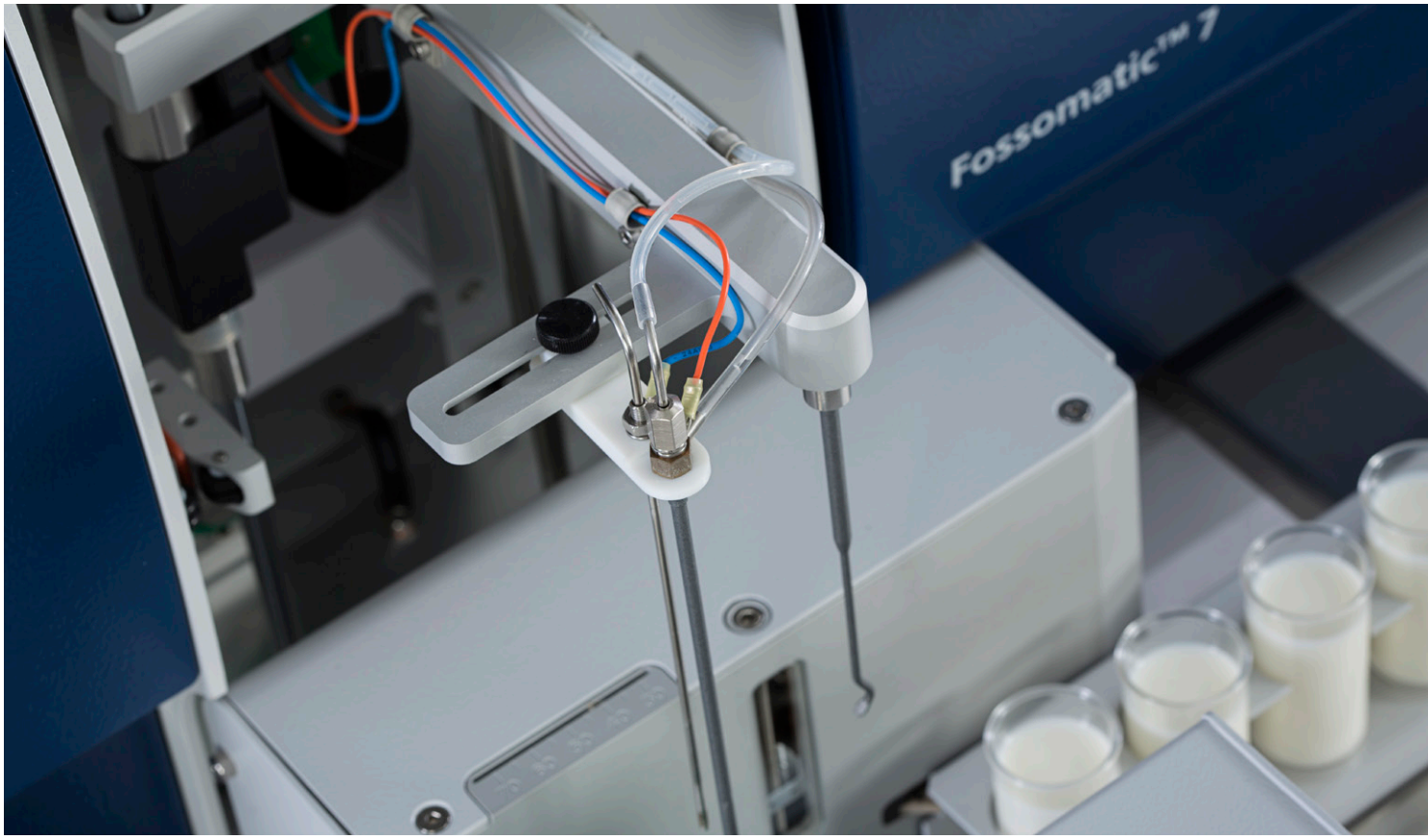
FOSS

Fossomatic™ 7 and Fossomatic™ 7 DC
Somatic cell counting for raw milk testing



The Fossomatic™ 7 and Fossomatic™ 7 DC provide accurate somatic cell counting and differential somatic cell counting capability (Fossomatic 7 DC). Both models handle up to 600 samples per hour and are based on flow cytometry technology that counts somatic cells in compliance with ISO/IDF and FDA/NCIMS standards. Results are delivered simultaneously in six seconds while unique hardware and software features boost proficiency in the laboratory.

Sample	Parameters
Raw milk from cows, sheep and buffalo	Total somatic cell count
Raw milk from cows	Differential somatic cell count

Caption: Up to 600 samples per hour handled with minimal cleaning and maintenance work

7th generation technology improves operations

The latest generation of the proven Fossomatic testing platform offers a number of advantages for the busy laboratory.

With a low working factor of either 100 with the Fossomatic 7 or 300 with the Fossomatic 7 DC, you can rely on the repeatability of results over time. For ease of cleaning and maintenance, the modular design makes periodic maintenance and service easier and an easy to clean sample conveyor without need for compressed air allows fast, effective at the end of a shift.

You can choose manual or automatic reagent mixing and rinse liquid can be refilled without having to stop the instrument.

Offer better service with total and differential somatic cell counting

Take the lead in raw milk testing and stay there. Unique test options such as new differential somatic cell count allow you to give farmers more sophisticated data for improved mastitis management. It is the first high-throughput analyser for simultaneous differential somatic cell count and total somatic cell count

Higher proficiency and less man hours

Besides a smart hardware system, the latest in networking software allows effective control of multiple instruments. Control from a single desktop saves time and ensures identical performance across CombiFoss units regardless of location. Other advantages include:

- Reduced risk of data loss because data is always backed up in one place
- Minimal downtime because upgrades and adjustments are made while instruments continue to run
- More consistent operations because instrument management tasks are performed in one go, reducing the risk of human error

The 7th generation Fossomatic technology

Fossomatic 7 is available in two models: Fossomatic 7 for SCC only and Fossomatic 7 DC for SCC & DSCC. Both models count somatic cells based on recognition of DNA from the cells.

A mixture of milk and staining solution is surrounded by a sheath liquid and passed through a flow cell. In the flow cell, the stained somatic cells are exposed to light of a specific wavelength. The cells then emit fluorescent light pulses at a different wavelength and the pulses are counted and displayed. The design of the flow cell ensures that only one somatic cell is detected at a time.

Fossomatic 7 is based on the widely-recognized Fossomatic FC technology but with new design features for easier maintenance and cleaning and reduced costs of operation. The same reagents are used as with earlier models.

Low working factor for high repeatability of results

The working factor refers to the volume of milk sample in which the somatic cells are counted.

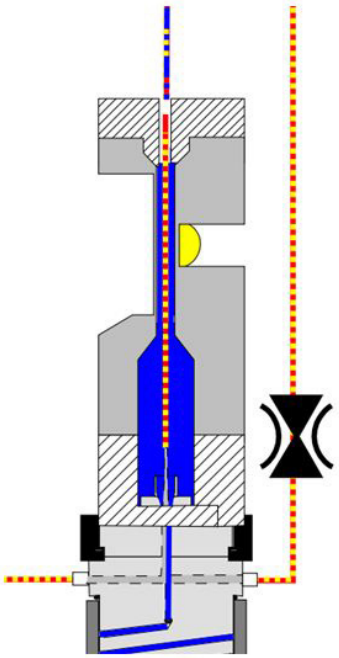
The repeatability (CV) expresses to which degree the analyser is capable of counting the same amount of somatic cells in the same milk sample: the higher the SCC, the better the CV and the lower the WF, the better the CV.

Differential Somatic Cell Count with the Fossomatic 7 DC

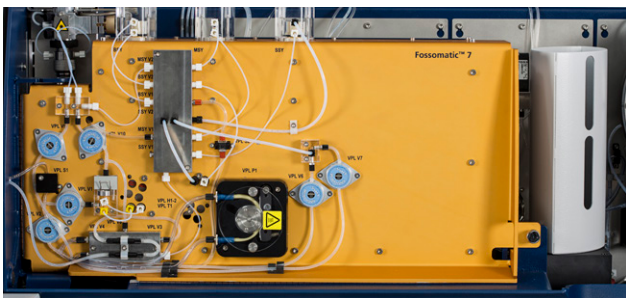
Differential Somatic Cell Count (DSCC) is a new milk testing parameter introduced with the CombiFoss 7 DC analyser. It complements the established test for total number of somatic cells (SCC) pioneered by FOSS in the 1980's.

The Fossomatic 7 DC has several sensors detecting fluorescence signals from milk cells and a new chemistry and an incubation unit. Combined, they enable the instrument to measure DSCC and SCC simultaneously.

Cell differentiation refers to the differentiation of immune cells occurring in milk into lymphocytes, macrophages, and polymorphonuclear neutrophils (PMN). These three cell populations play a vital role in inflammatory responses within the mammary gland. In summary, lymphocytes regulate the induction and suppression of immune responses. PMN cells defend against invading bacteria at the beginning of mastitis. Macrophages recognize invading mastitis pathogens and initiate the immune response by starting a massive influx of PMN. Beyond that, macrophages ingest bacteria, cellular debris, and accumulated milk components and carry out tissue repair. While milk from healthy mammary glands contains mainly macrophages and lymphocytes, PMN are the predominant milk cell population in the presence of infection.

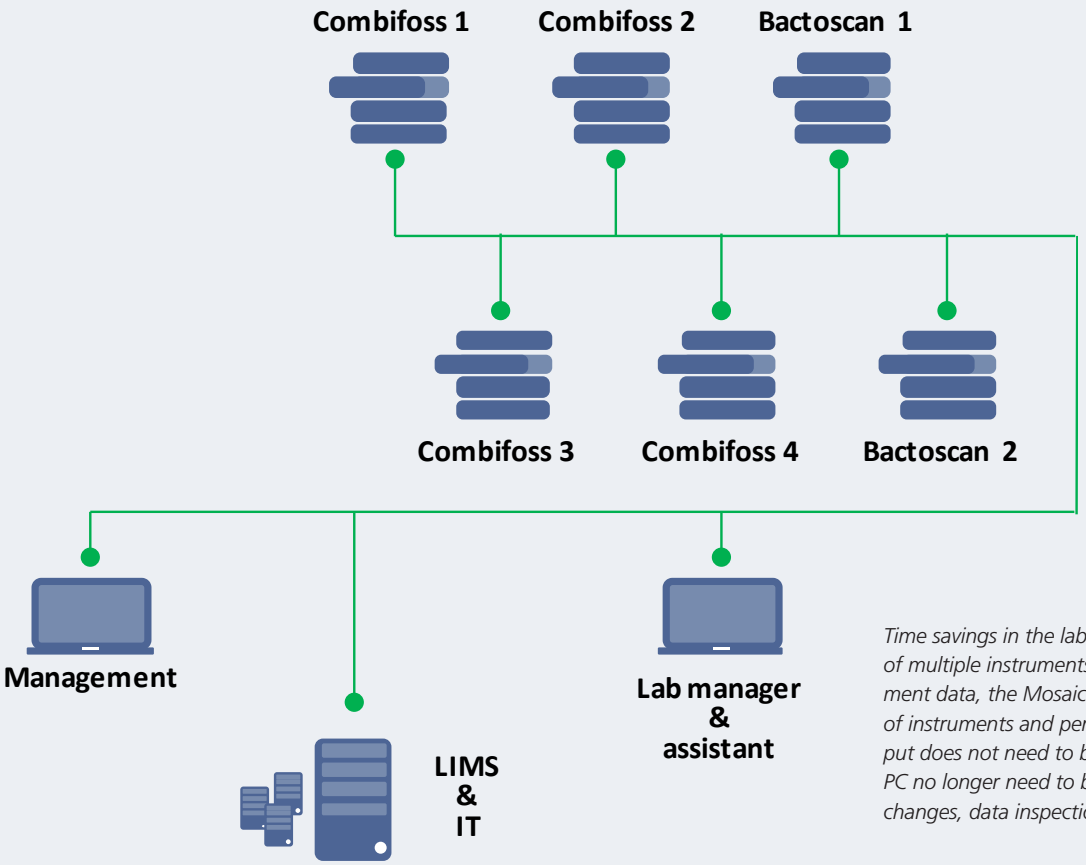


Flow cell schematic diagram



Fossomatic™ 7

Fossomatic™ 7 and Fossomatic™ 7 DC has the new measuring module powered by a laser. Fossomatic 7 DC has several sensors detecting fluorescence signals from milk cells, a new chemistry and an incubation unit. All of them combined enable the instrument to measure DSCC and SCC simultaneously.



Time savings in the laboratory: with central configuration of multiple instruments and central access to all instrument data, the Mosaic software simplifies management of instruments and performance. Plus, sample throughput does not need to be interrupted since the instrument PC no longer need to be accessed for configuration changes, data inspection, data export etc.

The FOSS approach

For practical purposes the three populations are measured as two population groups: one for Macrophages and another combining PMN and lymphocytes. The DSCC represents the combined proportion of the PMN and lymphocytes in percent. The percentage of Macrophages is 100 – DSCC.

The new DSCC parameter in combination with the total SCC provides a more detailed picture of the actual inflammatory status of the mammary gland. In turn, this opens up the possibility to develop new tools which can help farmers improve mastitis management.

Foss Integrator software

CombiFoss™ 7 is supported by a dedicated Foss IntegratorTM software with an easy-to-use FOSS NOVA interface. Foss Integrator provides a wide range of quality assurance and GLP fea¬tures. Foss Integrator shares the same interface for all CMT instruments.

Mosaic networking software for raw milk testing instruments

Mosiac networking software allows multiple instruments to be monitored and controlled from a single desktop, reducing the cost of ownership of multiple installations and making day to day maintenance tasks such as calibration updates quicker and considerably more convenient. If required, the software can also allow FOSS experts to access data for remote support via the internet.

Sample handling and maintenance

The sample ID system supplied with the CombiFoss 7 is designed to make the job of controlling samples and sample data as simple as possible. It supports both barcode and RFID sample id concepts. A modular design ensures ease of cleaning and maintenance including a sample conveyor that does not require use of compressed air. An intelligent pipette system improves safety by detecting closed lids on samples bottles.

Specifications Fossomatic™ 7 and Fossomatic™ 7 DC

Performance	
Measuring range	0 – 10 mill cells/ml
Performance range	0.1 – 1.5 mill
Repeatability*	CV < 6% 100-299k SCC/ml CV < 4% 300-499k SCC/ml CV < 3% 500-1500k SCC/ml
Accuracy	< 10% relative mean diff. from DMSCC (Direct Microscopic Somatic Cell Count)
Carry-over	< 1% relative usually below 0.4%
Sample types	Fossomatic™ 7: Cow's, goat, sheep and buffalo milk Fossomatic™ 7 DC: Cow's milk

**CV = Coefficient of variation (STDev/AVG) x 100. (STDev = Standard deviation. AVG = Average)*

Application data

Analysis Capacity	100, 200, 300, 400, 500 or 600 samples per hour
Sample intake	2.5 ml (programmable 2.0 – 5.0 ml)
Required sample temperature	30 - 42 °C (86-107.6 F)
Working factor	100 or better*

**Fossomatic 7 DC 300 or better*

Standards and approvals

Fossomatic™ 7 is CE-labelled and complies with the following directives and regulations:

- EMC (ElectroMagnetic Compatibility) Directive 2004/108/EC
- LVD (Low Voltage) Directive 2006/95/EC
- Machinery Safety Directive 2006/42/EC
- Regulation (EC) 1272/2008 on classification, labelling and packaging of substances and mixture, CLP (EC)
- WEEE Directive 2002/96/EC
- Packaging and packaging waste Directive 94/62/EC
- REACH 1907/2006/EC

Fossomatic technology complies with:

- AOAC
- ISO 13366-2 / IDF 148-2:2006
- Laser approval (FDA), IEC 60825-1
- EURL/Microval (validation pending)
- FDA NCIMS

Fossomatic 7 as part of the CombiFoss 7

OFFER BETTER SERVICE WITH 19 PARAMETERS FROM A SINGLE SAMPLE IN SIX SECONDS, INCLUDING NEW DIFFERENTIAL CELL COUNT (DSCC)

- Give farmers better data for mastitis management with the first high-throughput analyser for simultaneous differential somatic cell count and total somatic cell count
- Avoid time and cost of separate equipment with one rapid analysis of up to 19 parameters in six seconds
- Build new business by offering advanced tests such as ketosis screening, free fatty acid profiling and untargeted adulteration screening

MORE RESULTS AT LESS COST WITH 7TH GENERATION COMBIFOSS TECHNOLOGY

- Achieve high uptime with new flow system technology including a diamond cuvette (backed by 10 year guarantee)
- Trust in reliability of results, whether running at 100 or 600 samples per hour
- Make cleaning easier and quicker with new modular sample conveyor

HIGHER PROFICIENCY AND LESS MAN HOURS WITH THE LATEST IN INSTRUMENT MANAGEMENT SOFTWARE

- Save your feet and save time by controlling multiple instruments from your desktop
- Avoid downtime by making upgrades and adjustments while instruments continue to run
- Perform operations in one go to reduce risk of human error and keep all data backed up in one place

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