

# MilkoScan FT2

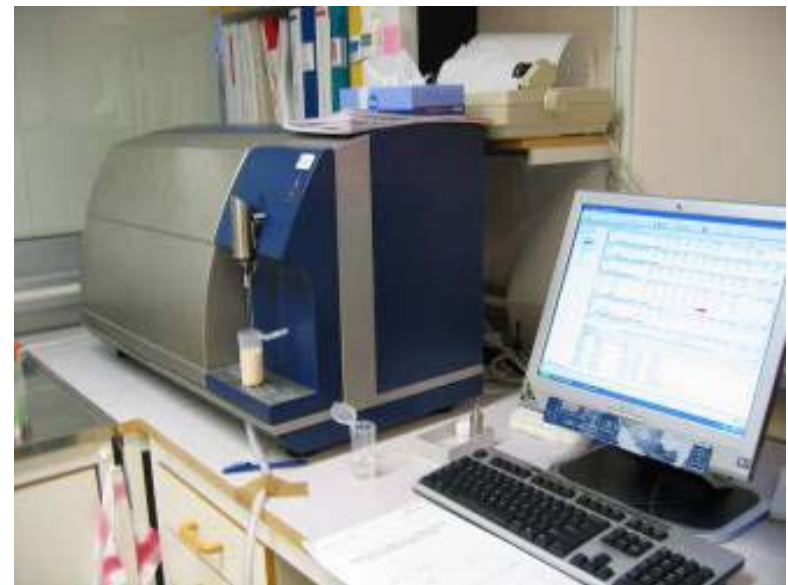
- state of the art dairy analyser



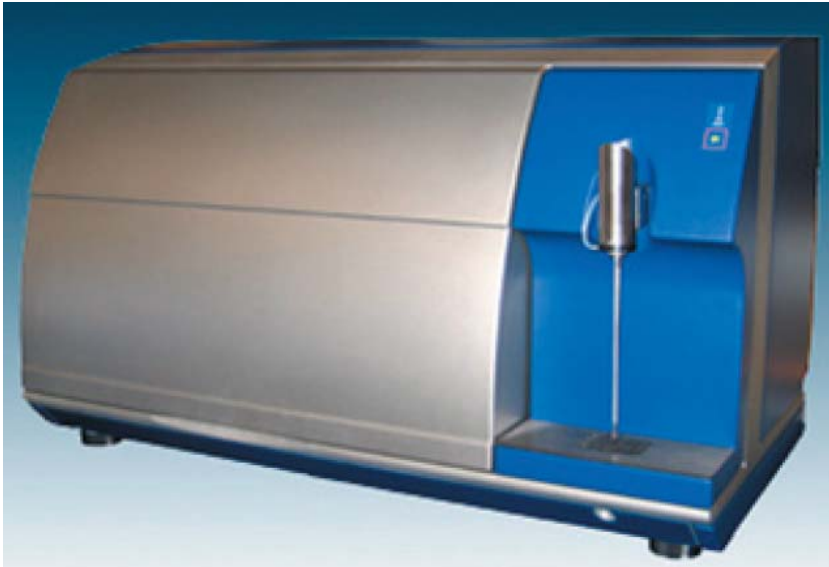
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Product Manager, FOSS  
05 October 2006

# Based on more than 10 years FTIR experience

- ❖ **1995:** FOSS launches MilkoScan FT 120 – a quantum leap in analysis of dairy products – a versatile optimisation tool.
- ❖ **2006:** With almost 2000 MilkoScan FT 120 in the field - FOSS takes another giant leap launching MilkoScan FT2.



# MilkoScan FT2: High-lights



We have placed instruments in Australia, France, Italy, Germany, Spain, USA and trials going on in many other countries.

❖ **All unique** MilkoScan FT120 features are transferred – including global database.

❖ **Flow-system**, optics and data handling are substantially improved and new features are added.

❖ **Standardisation** transferable calibrations. Saves calibration adjustments after cuvette change

❖ **The result** is an even better tool for production optimisation and lower operating costs.

# MilkoScan FT2: Unique benefits



## Accuracy

**Better production optimisation** because you can standardise closer to target as the instrument is more **accurate**.

## Robustness

**Faster response** for production control because the instrument is **water proof and unsusceptible to vibrations** – and hence can be placed in the production area.

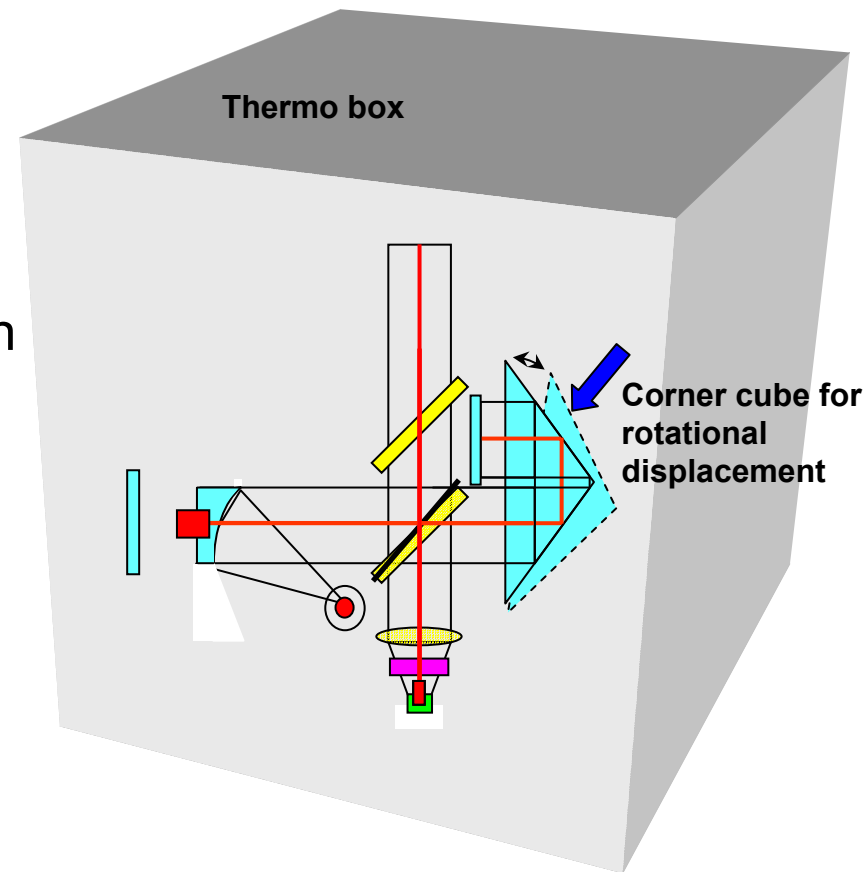
## Strong flow system

**Labour savings** because of less need to dilute samples due to the new stronger pump.

**Reduced cost of ownership** because of less frequent repair due to the new more robust flow system.

# Accuracy

- ❖ Better optics, with **better accuracy** specs.  
MilkoScan FT2 accuracy specification on milk is 0.8 % CV (on FT120 it is 1 % CV).
- ❖ Better **production economy**, as products can be standardised closer to limits.
- ❖ **New application possibilities.**



# Example: Higher value of ownership



## The value of better measuring accuracy

Example: Standardising powder milk

Fat: 3.5 %. Protein: 3.5 %

Today's target: 3.573 %

New target with FT2: 3.559 %

Saved fat and protein: 0.014 % = 0.14 g per litre processed.

If the plant produces milk powder from 300.000 litres per day this corresponds to a daily saving of 42 kg of protein and 42 kg of fat, corresponding to 12.600 kg per year of each component.

**The annual profit in this example is approx. 100.000 EUR.**

# Robustness



- ❖ An excellent tool for production optimisation as it is unsusceptible to **vibrations**, and has wide a **temperature** tolerance and **splash proof** cabinet.
- ❖ Can be placed in production environment closer to control point, thus giving **faster response** time.
- ❖ Can be **used 24hours per day** – not just when lab is open.
- ❖ Measures more **accurately** - even in a harsh environment.





ZERO



# Strong flow-system



❖ A **strong flow-system**, allowing undiluted analysis of very viscous products such as yoghurts, sour cream\*, ice cream, whey cream, milk and whey concentrates.

❖ This saves **operator time** and ensures **faster and more accurate** results.



❖ A **robust flow-system**.

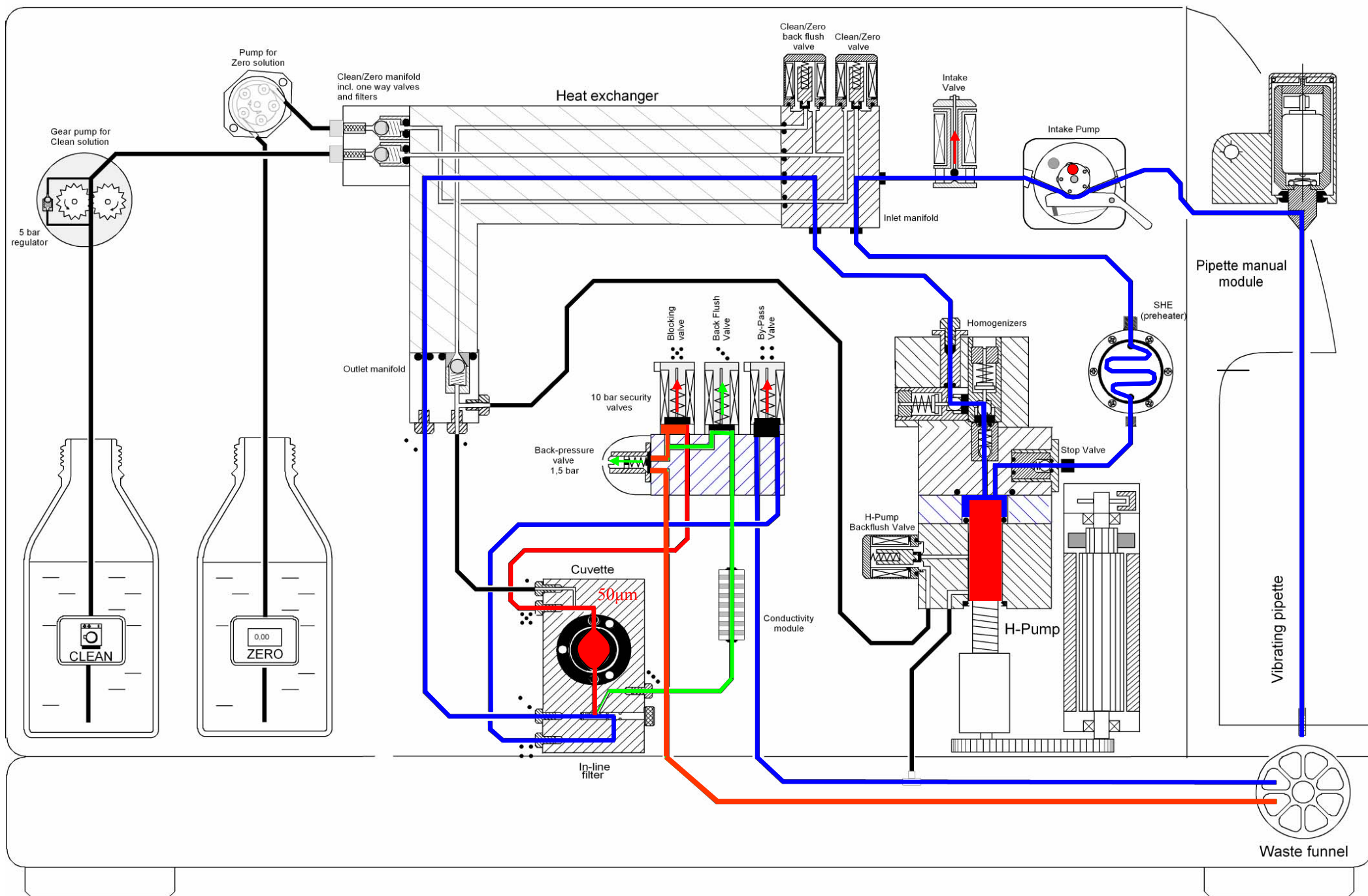
❖ **Less production stops** due to blocked in-line filter, as this is back flushed and doubled in area. Cleaning liquids are pre-heated.



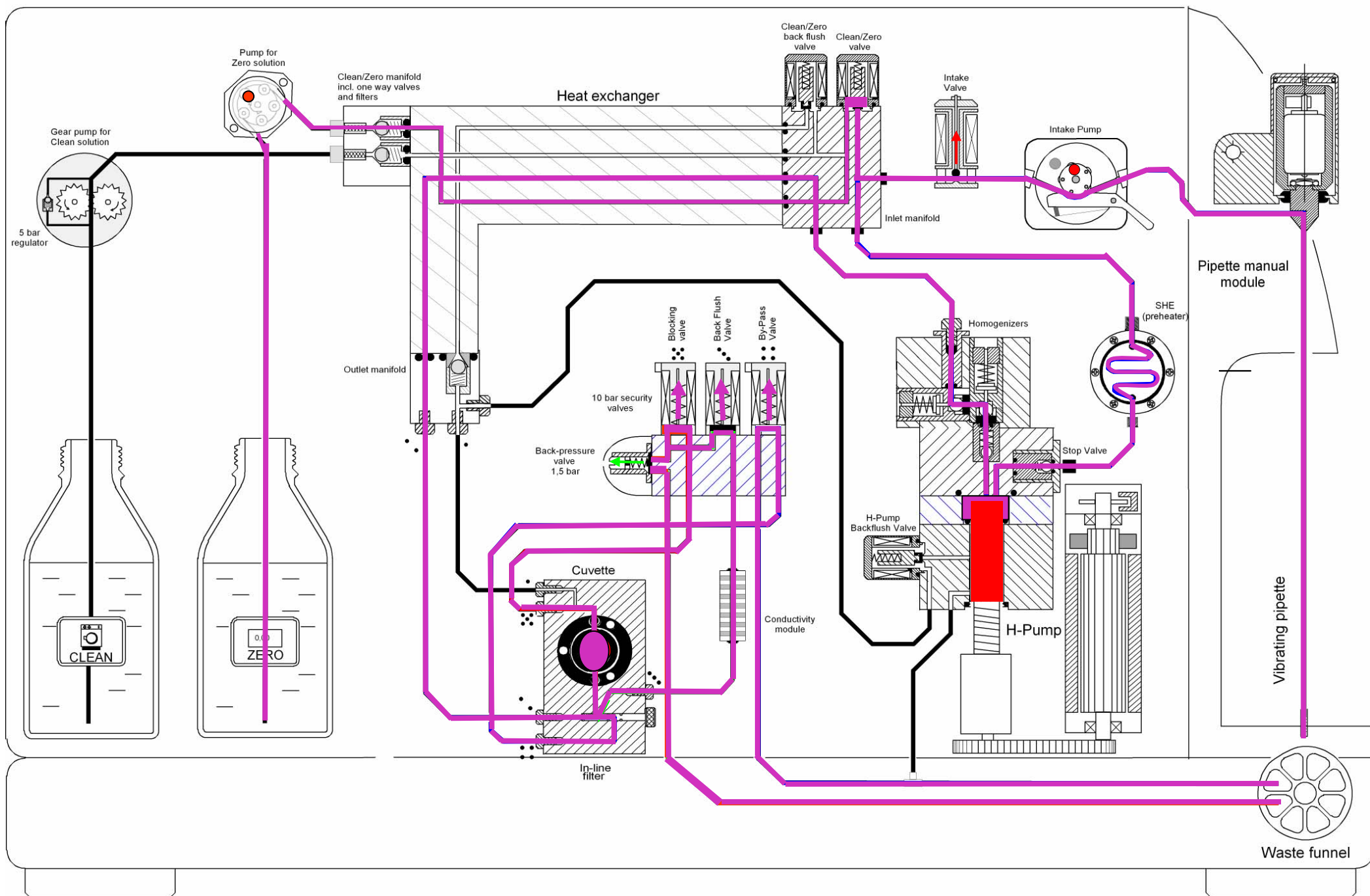
\*38% fat (24.000 CPS)

# MilkoScan FT2.

## Sample intake

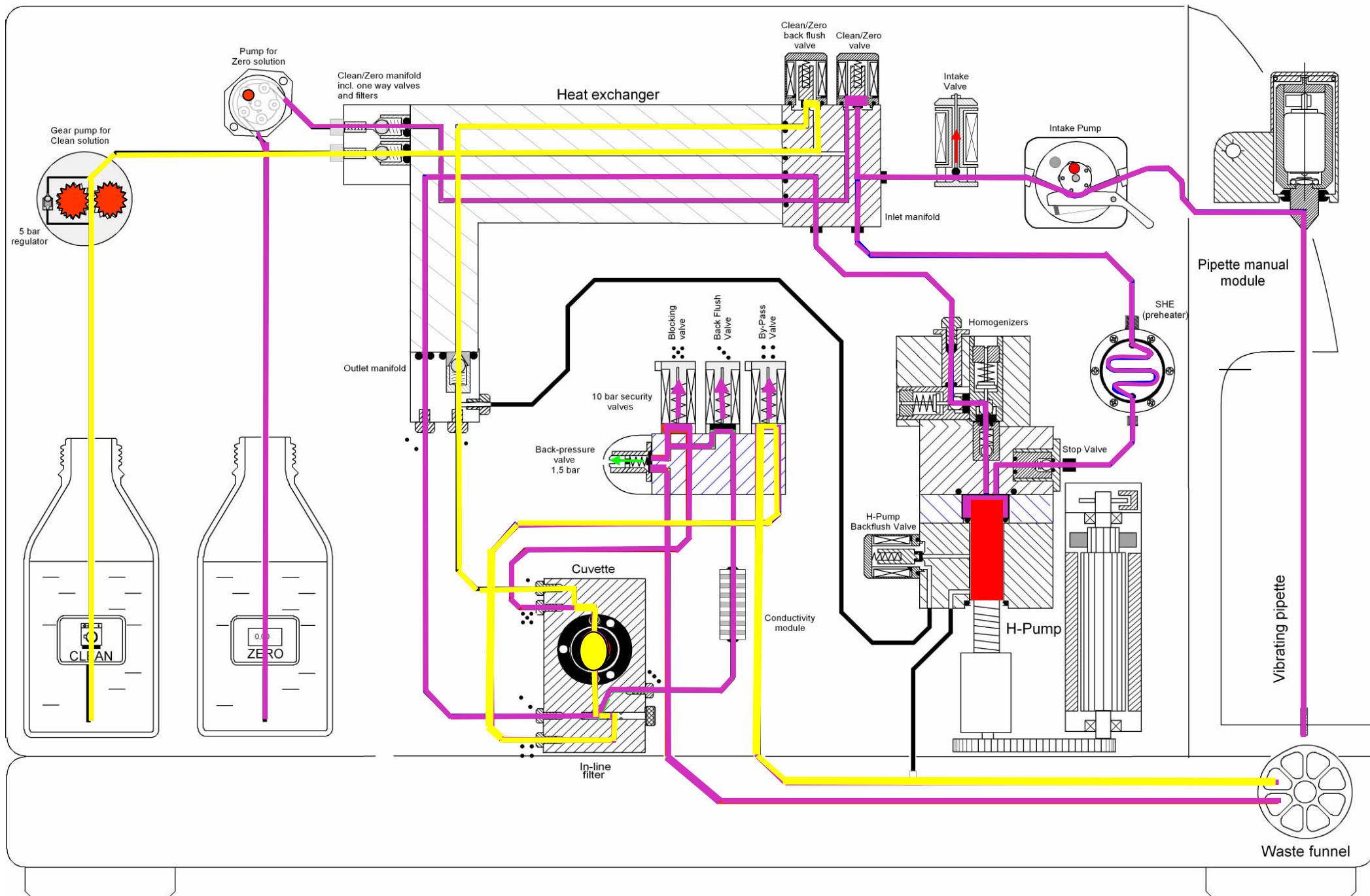


# MilkoScan FT2. Zero/Clean/Backflush



# MilkoScan FT2.

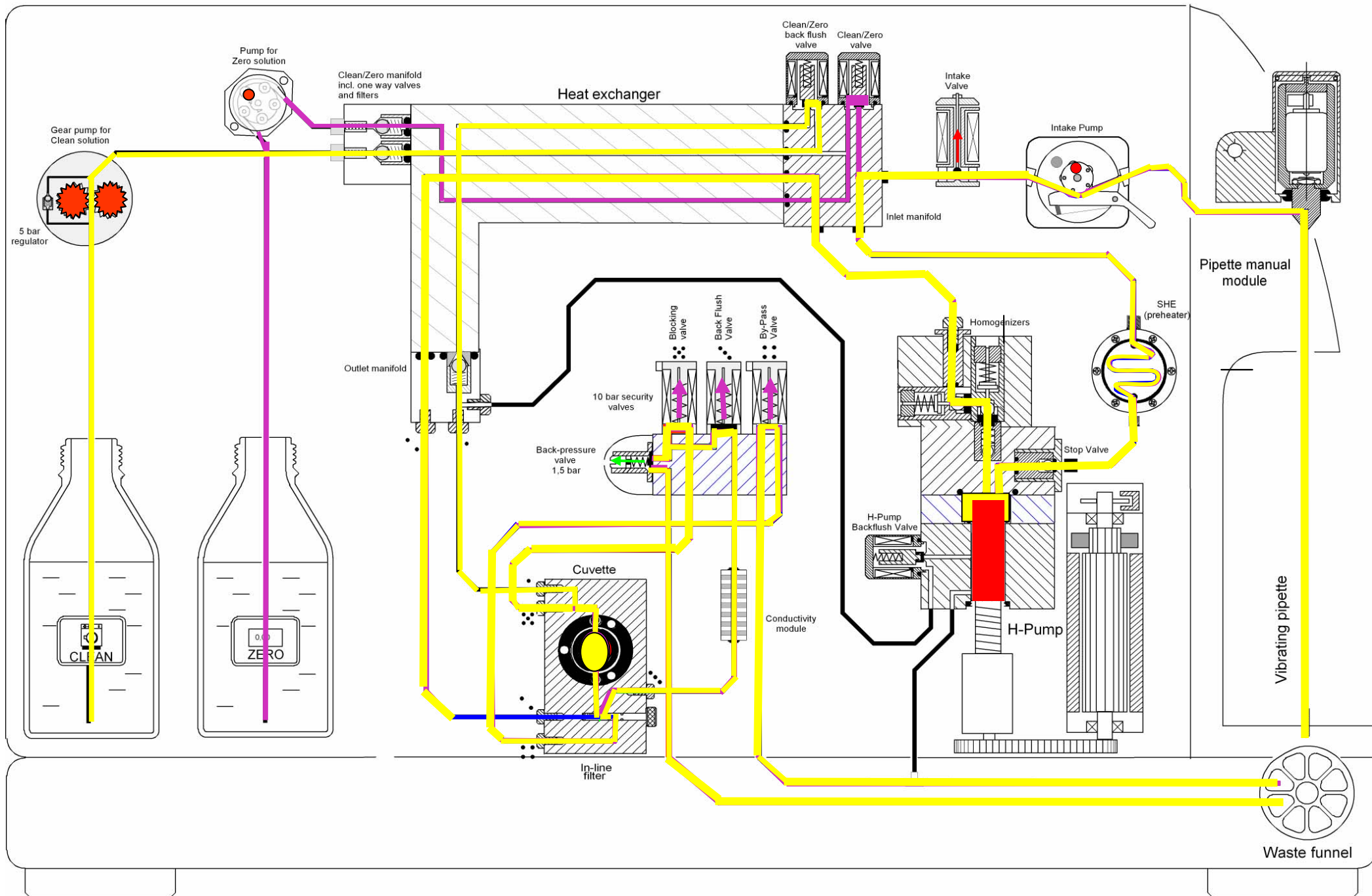
## Zero/Clean/Backflush





# MilkoScan FT2.

## Zero/Clean/Backflush



# Foss Integrator: Common SW platform



FT2 SW is based on FOSS' future common SW platform FOSS Integrator.

- ❖ Addition of new features and bug fixing released 3 times per year.
- ❖ Future proof with regard to new Windows versions.
- ❖ Flexible report designs (Crystal Reports).
- ❖ New features
  - Custom tailored user platform
  - Re-prediction
  - Spectra always saved

The screenshot displays the Foss Integrator software interface. On the left, there is a 'Sample Registration' pane with a tree view of sample types including Measurement, Concentrated milk, Concentrated whey, Cream, Dessert, Hard Cheese, Infant formula, Milk, Quark, Soft Cheese, Soy milk, Sugar solution, Unfermented yoghurt, Whey, and Yoghurt. The main area shows 'Results' for an active workstation from 19-06-2006 12:26:21. It contains two tables: one for 'Cream' and one for 'Milk'. Each table has columns for Info, Profile, ID, #Sub, Fat, Protein, Lactose, TS, SNF, and FFA. Below these, there is a 'zero-setting' table with columns for Profile, ID, #Sub, Fat, Lactose, Protein, and TS. At the bottom, there is a 'Jobs' table with columns for Name, Total, Type, and Profile.

Info	Profile	ID	#Sub	Fat	Protein	Lactose	TS	SNF	FFA
Cream	c7	1	35.03	2.18	2.78	41.80	6.34		
Cream	c7	2	35.00	2.19	2.78	41.72	6.33		
SD	Cream	c7	0.023	0.006	0.001	0.061	0.006		
Mean	Cream	c7	35.02	2.18	2.78	41.76	6.33		
Cream	c8	1	39.32	2.12	2.57	43.49	5.65		
Cream	c8	2	39.40	2.11	2.57	43.61	5.66		
SD	Cream	c8	0.056	0.010	0.002	0.083	0.004		
Mean	Cream	c8	39.36	2.12	2.57	43.55	5.66		
Clean completed									

Info	Profile	ID	#Sub	Fat	Protein	Lactose	TS	SNF	FFA
Milk	7m	1	3.54	3.47	4.41	12.95	9.49	0.609	
Milk	7m	2	3.56	3.47	4.41	12.95	9.48	0.637	
SD	Milk	7m	0.012	0.002	0.000	0.004	0.003	0.01...	
Mean	Milk	7m	3.55	3.47	4.41	12.95	9.48	0.623	
Milk	8	1	0.25	3.44	4.68	9.93	9.63	0.261	
Milk	8	2	0.25	3.45	4.69	9.96	9.65	0.272	
SD	Milk	8	0.007	0.012	0.010	0.022	0.016	0.00...	
Mean	Milk	8	0.25	3.45	4.68	9.95	9.64	0.277	
Milk	9m	1	4.02	3.43	4.28	13.25	9.33	0.808	
Milk	9m	2	3.97	3.45	4.28	13.21	9.34	0.885	
SD	Milk	9m	0.031	0.008	0.002	0.028	0.004	0.05...	
Mean	Milk	9m	3.99	3.44	4.28	13.23	9.33	0.846	

Profile	ID	#Sub	Fat	Lactose	Protein	TS
Zero	zero-setting	1	0.00	-0.00	-0.01	0.00
Zero	zero-setting	2	0.00	0.00	-0.00	0.02
Zero	zero-setting	3	0.00	0.00	0.00	-0.01
Zero	zero-setting	4	-0.00	0.00	0.00	-0.00
Zero	zero-setting	5	-0.00	-0.00	0.00	-0.02
Mean			-0.000	-0.000	0.000	-0.000

Name	Total	Type	Profile
Info			



# Foss Integrator: QA & GLP




❖ Unique **QA features** in accordance with GLP.

❖ All **events are logged** so that any result can be traced with respect to e.g. calibration used and who operated the instrument.

❖ Individual **user codes** give access only to relevant parts of the SW.

❖ Results are accompanied by **limits (on results and SD of replicates)** as well as **outlier** detection (Global H).

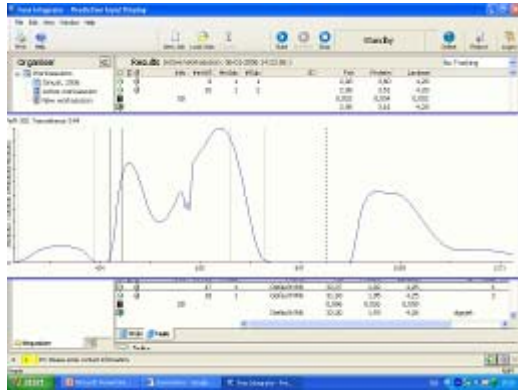


Info	Profile	ID	#Sub	Fat
Concentrated milk	Concentrated milk	458	1	11,37
Concentrated milk	Concentrated milk	458	2	11,44
SD Concentrated milk	Concentrated milk	458		0,047
Mean Concentrated milk	Concentrated milk	458		11,41

❖ Easy export of results to LIMS or Microsoft Office ( e.g. Excel).



# Calibrations

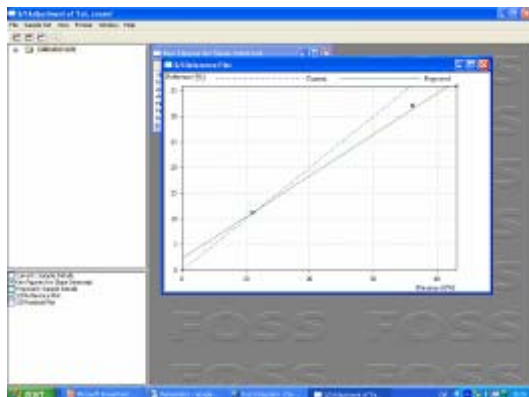


❖ All FOSS FT120 data are transformed to FT2 format and combined with new FT2 data – most with **better accuracy**.

❖ Customer **FT 120 calibrations can be transformed** to FT2 format. WinISI can combine old FT120 data with FT2 data, making new and better FT2 calibrations.

❖ **WinISI** can create entirely new calibrations for import into FT2.

❖ Milk (with e.g. casein, FFA) and cream calibrations are included in standard configuration. Optional calibrations are **bundled in 3 packages**.



# Application packages

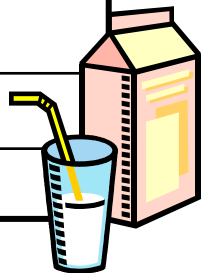
- ❖ **Milk & Cream – included in the standard package**
  - ❖ *Milk, Cream, Concentrated milk, Infant formula*
- ❖ **Yoghurt & Fermented products**
  - ❖ *Fermented products, Juice/honey, Quark*
- ❖ **Dessert & Ice cream**
  - ❖ *Dessert, Juice/honey, Sugar in water*
- ❖ **Cheese & Whey**
  - ❖ *Whey, Concentrated whey, Cheese*



# Milk application performance

Comparison of the MilkoScan FT2 and the MilkoScan FT 120 milk calibration

Component	MSC FT2 A (rel)	MSC FT 120 A (rel)	MSC FT2 R (rel)	MSC FT 120 R (rel)
<i><b>Fat</b></i>	0.56	1.05	0.08	0.25
<i><b>Protein</b></i>	0.61	1.40	0.10	0.17
<i><b>Lactose</b></i>	0.54	0.86	0.08	0.22
<i><b>Total solids</b></i>	0.52	0.56	0.08	0.14
<i><b>Solids non-fat</b></i>	0.49	0.72	0.13	0.18
<i><b>FPD</b></i>	0.38	0.60	0.12	0.38
<i><b>FFA</b></i>	19.75	20.22	5.10	NA
<i><b>Density</b></i>	0.08	NA	0.004	NA
<i><b>Casein</b></i>	1.69	NA	0.34	NA



# Improved performance on FPD by conductivity module



❖ Integration of conductivity sensor for better accuracy in determination of freezing point.



❖ FT2 can be used to **screen all incoming milk** tankers and only suspect samples need confirmation in cryoscope.

# Testimonial from Campina: The trial



Parallel test between MilkoScan FT2 and MilkoScan FT 120

Site: Campina, Heilbronn, Germany

Test period: 14 days

Operators: 4 persons

Tested products:

- ❖ Milk – raw and processed
- ❖ Cream
- ❖ Yoghurt without flavour
- ❖ Custard mix

# Testimonial from Campina



## Conclusion on parallel test:

- ❖ Robust and smooth overall design of MSC FT2
- ❖ MSC FT2 have lower reagent consumption than MSC FT 120
- ❖ The MSC FT 120 calibrations were transferred into MSC FT2 and used right away after S/I adjustment
- ❖ The pumping capacity of the MSC FT2 is amazing. Hundreds of viscous yoghurt samples were analysed daily without sample preparation.



# What's so great about MilkoScan FT2?



**FT2 offers higher value:**

❖ **Better production optimisation** because you can standardise closer to target as the instrument is more **accurate**.

❖ You can provide instant responses for production control because the instrument is **water proof and unsusceptible to vibrations** – and hence can be placed in the production area.



# What's so great about MilkoScan FT2?



## FT2 offers lower cost:

- ❖ **Labour savings** because you do not have to dilute samples due to the new stronger pump.
- ❖ **Reduced cost of ownership** because you will not need frequent repair due to the new more robust flow system.

# MilkoScan FT2

*- Closer to the limit*

