

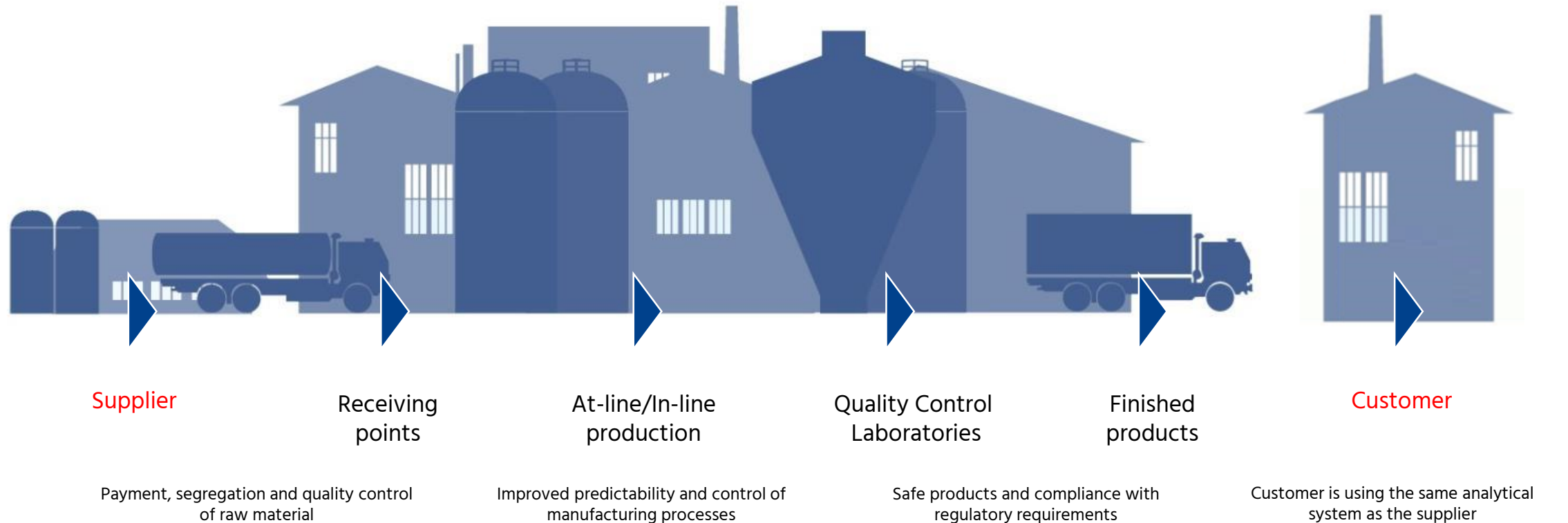
IN-LINE ANALYSIS OF FLOUR

Martin Andersson, Application Specialist, FOSS

HOW WE ADD VALUE

FOSS

"We deliver rapid, reliable and dedicated analytical solutions for routine testing to allow for fast decisions on how to **maximise value** of production of agricultural food products"



NEAR INFRARED SOLUTIONS FROM FOSS

FOSS

- Hit the target
- Understand your yield

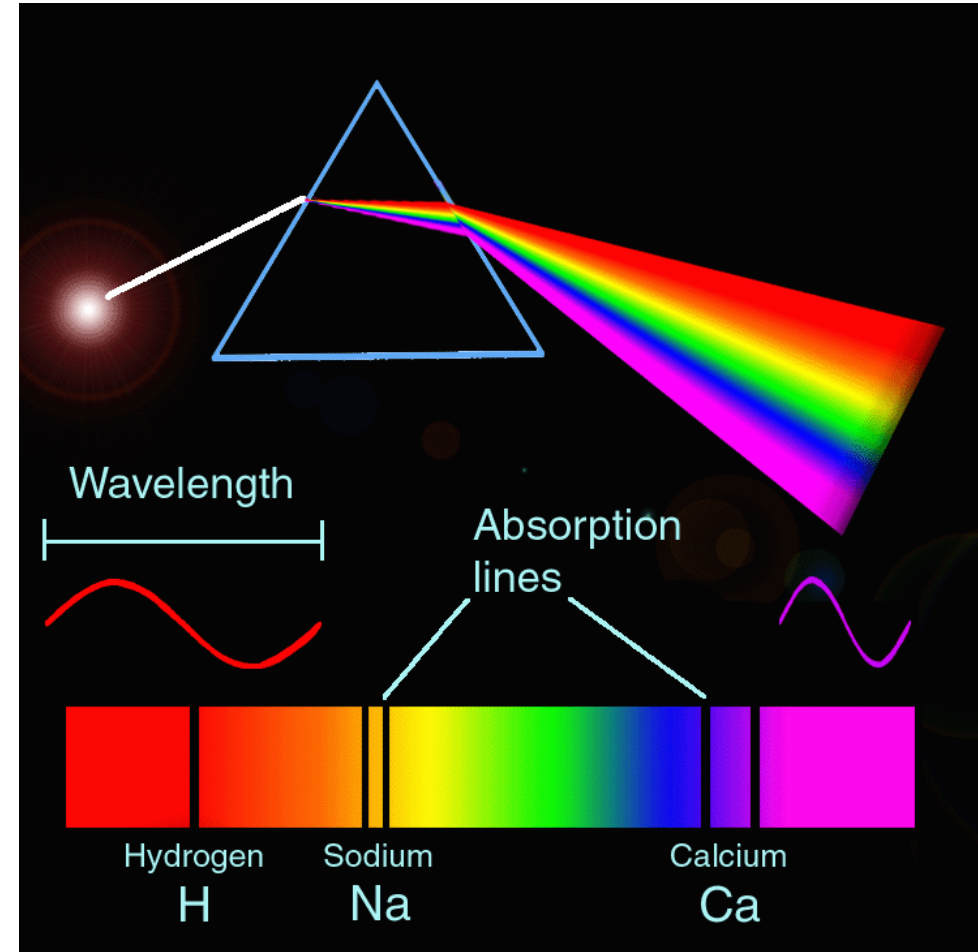
- Traceability
- Fair trade

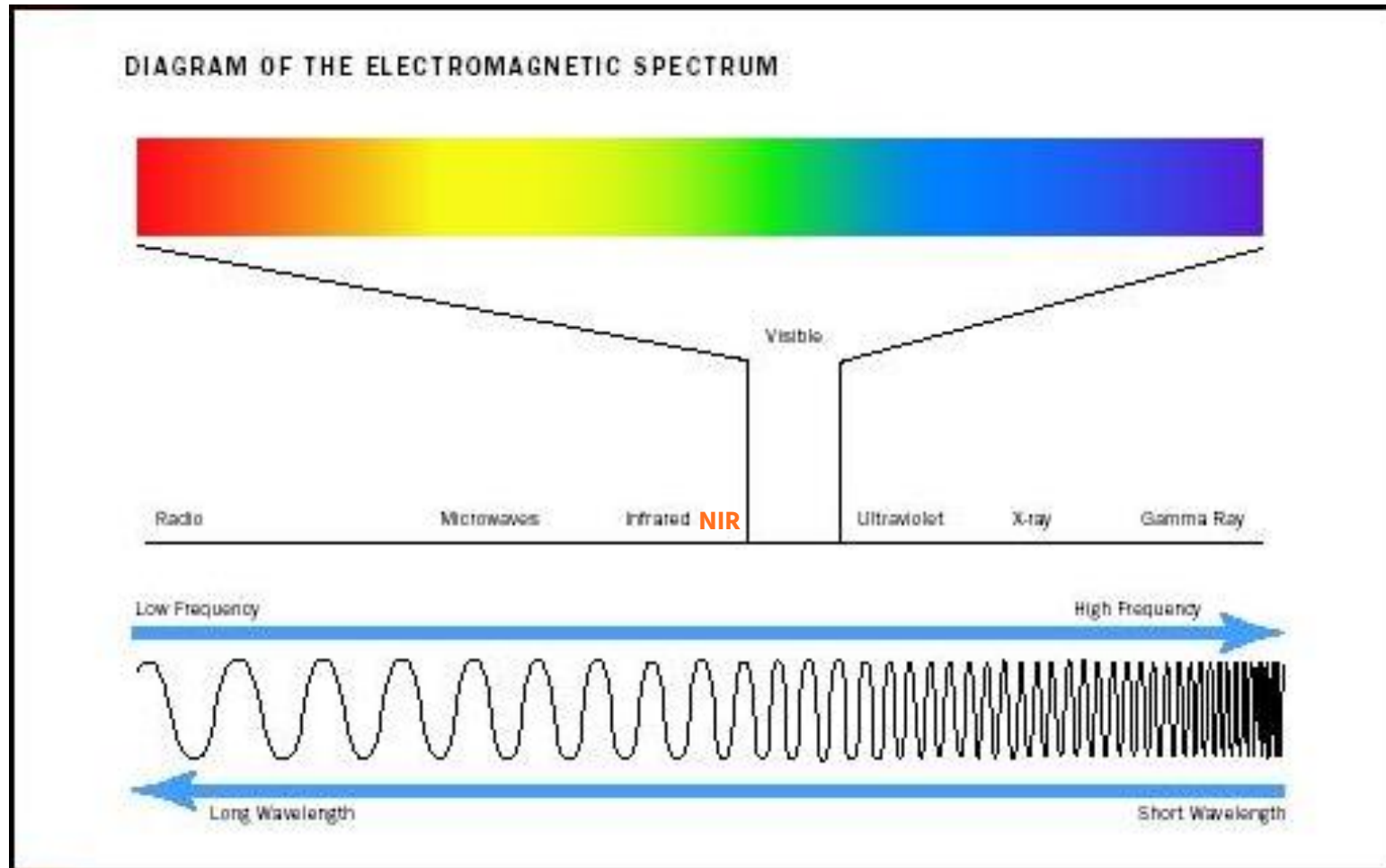


SPECTROSCOPY

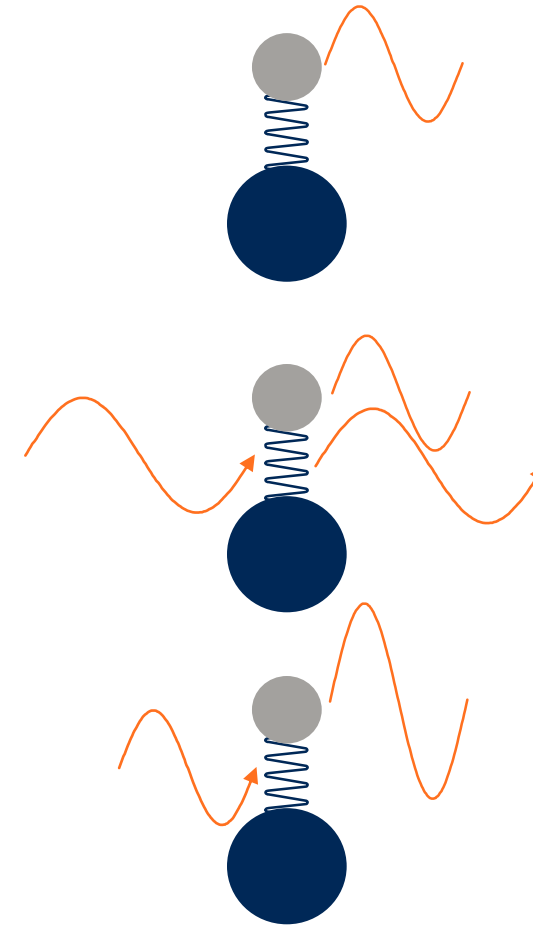
Chemical analysis using near infrared: How?

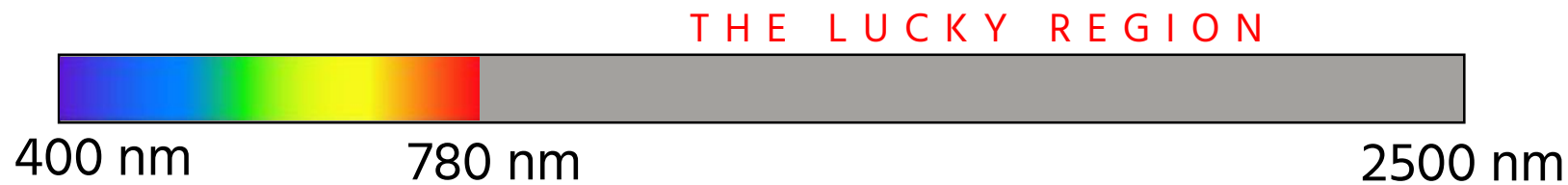
- Spectroscopy is the study of absorption of near infrared light (energy) by molecules
- Near infrared ranges from 780 – 2500 nm
- It is a part of molecular spectroscopy where interaction between light (energy) and matter (molecules).





- Atoms vibrate with a frequency specific to the molecular bond
- When light hits the vibrating bond, it is just passing through when it does not match the frequency
- When light hits the bond with a matching frequency, the light is absorbed and the vibration intensifies
- Organic bonds absorb NIR light.



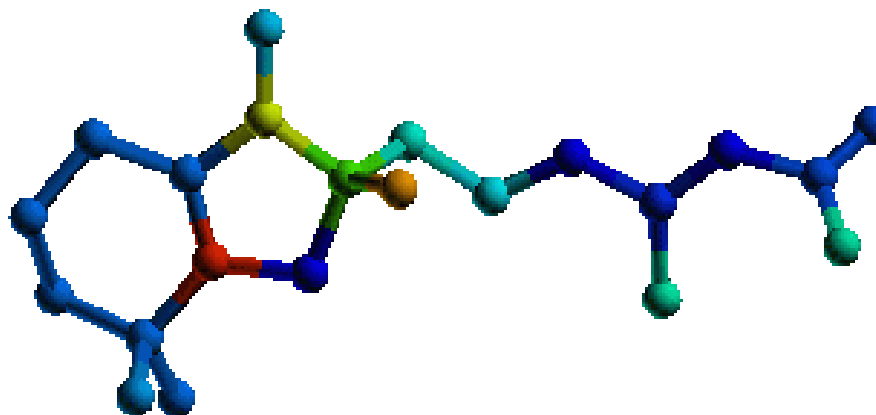


Color & chemical composition
including

-OH

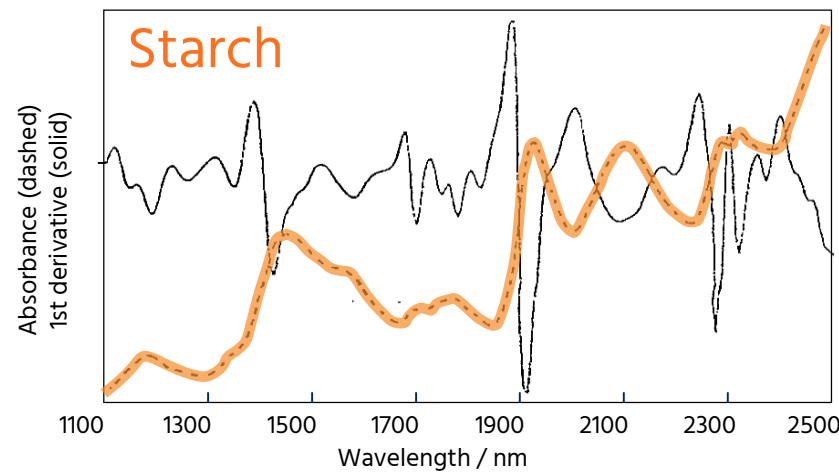
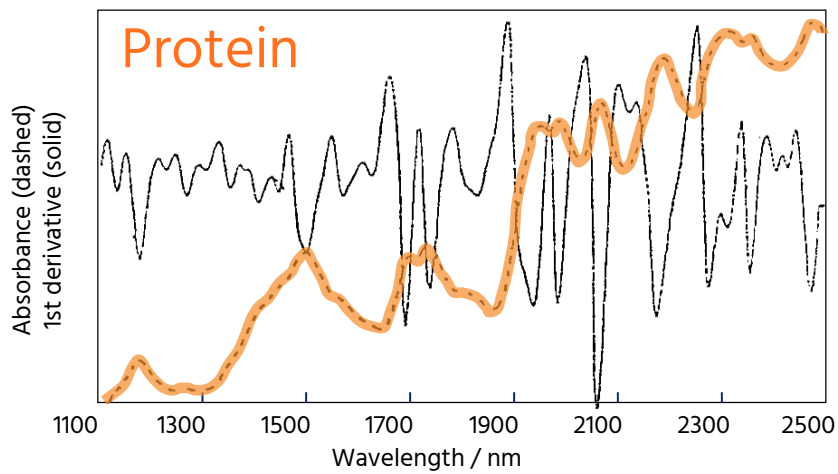
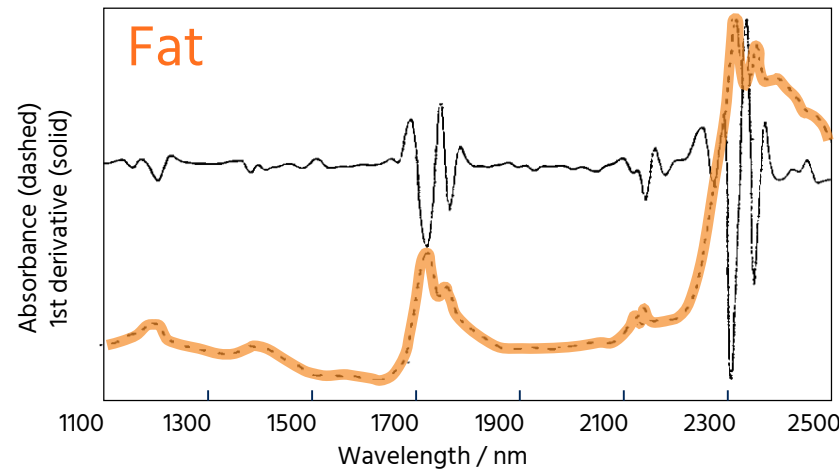
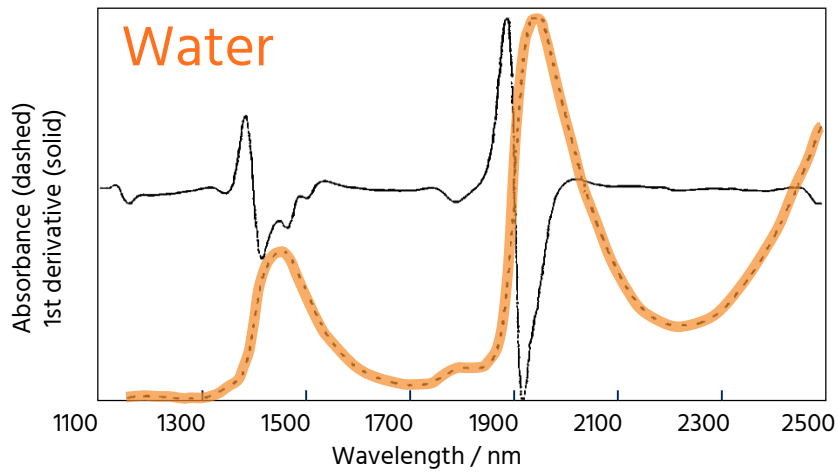
-NH

-CH



CONSTITUENT SPECTRA

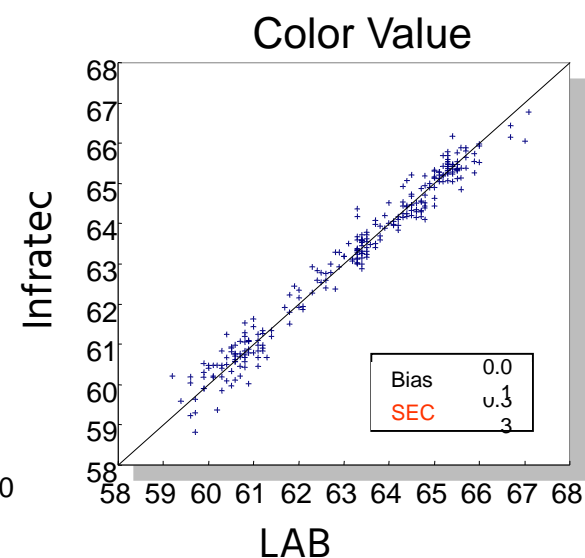
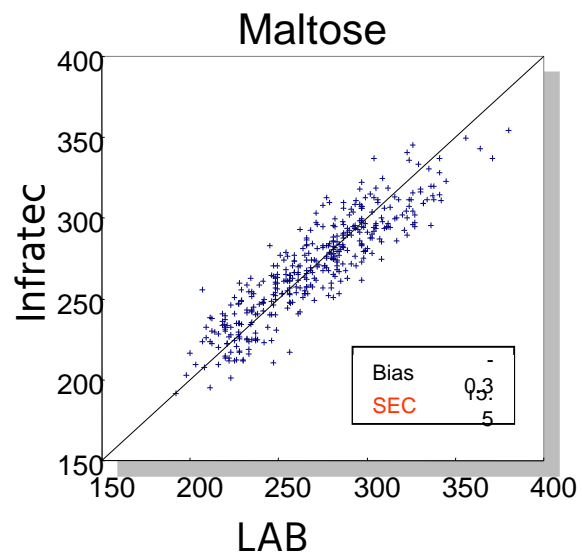
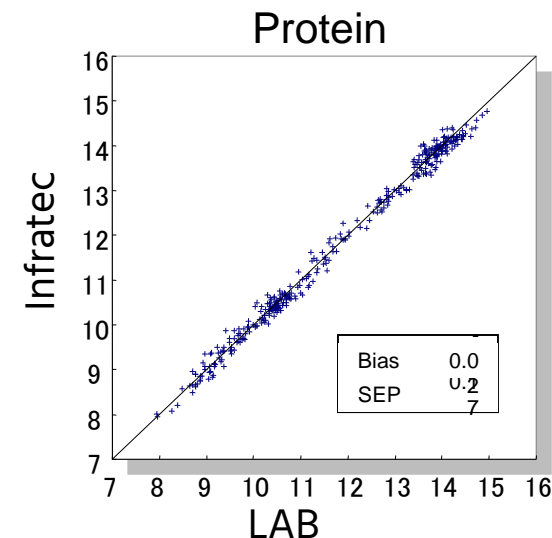
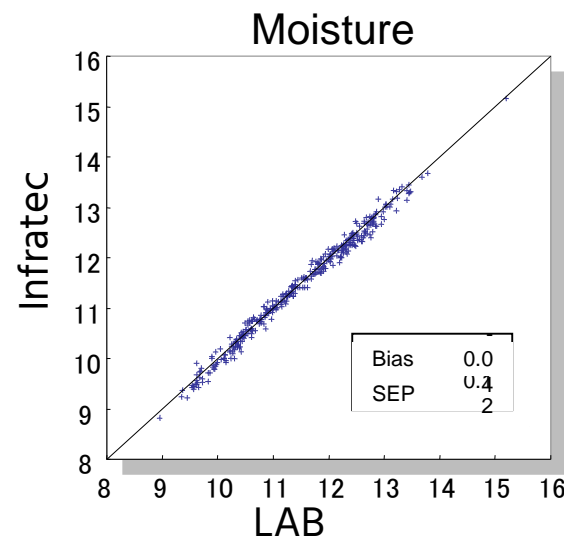
FOSS



FLOUR CAPABILITIES

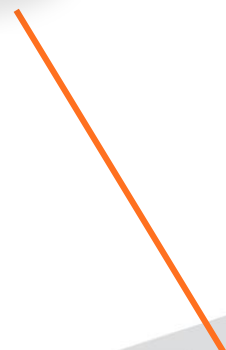
FOSS

- Moisture
- Protein
- Water Absorbtion
- Maltose
- Ash
- Color L (L^* , a^* , b^*)
- Rice Amylose



YESTERDAY

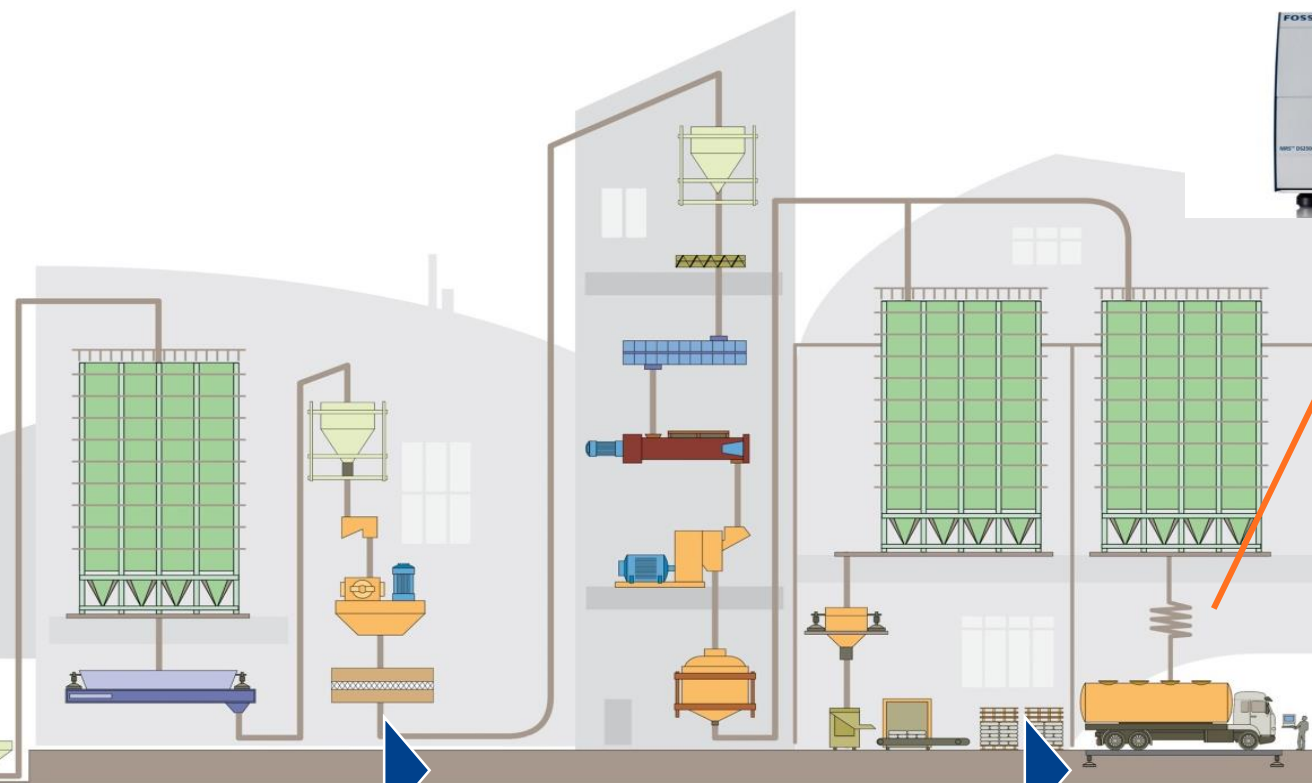
FOSS



Raw material
reception

Quality Control
Laboratories

Supplier's payment, segregation
and quality control of raw material



production

Finished products

Improved control of feed
manufacturing process

Safe products and compliance
with regulatory requirements

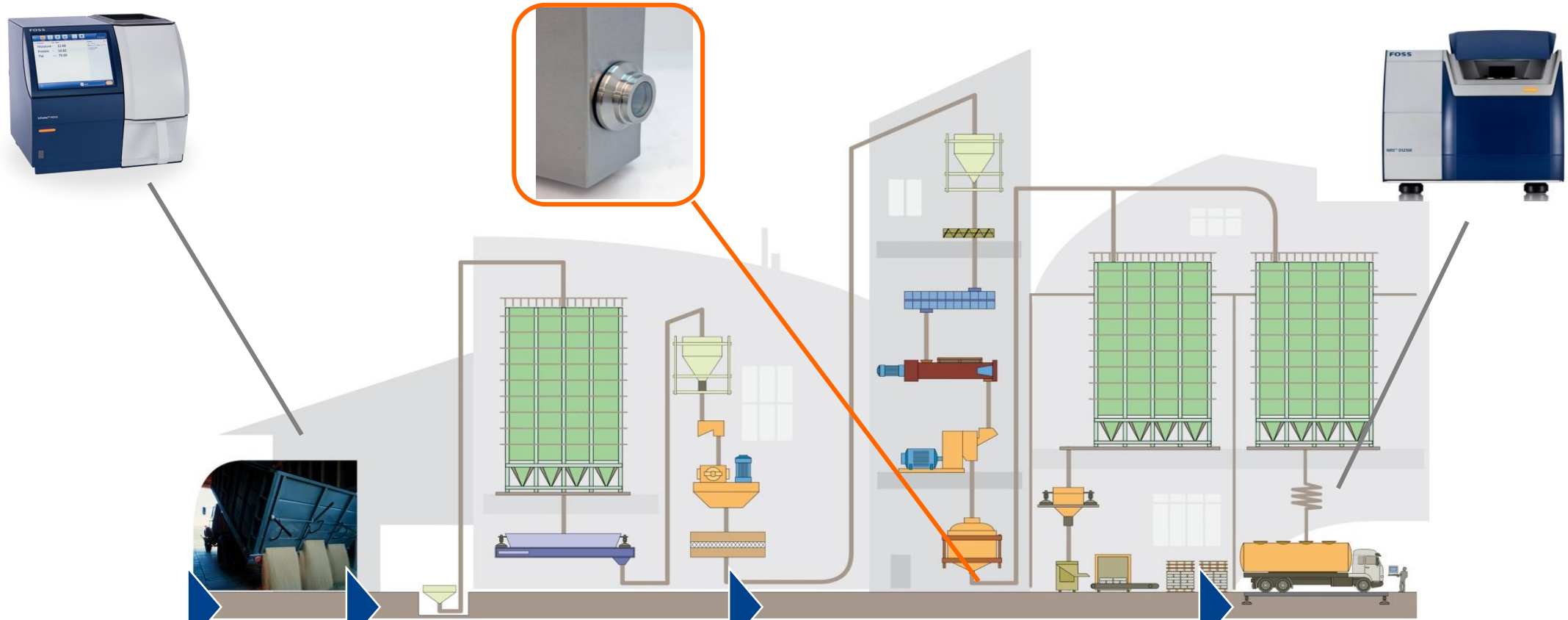
Usually
good...

**But
too
late**

ANALYTICS BEYOND MEASURE

TODAY

FOSS



Raw material
reception

Quality Control
Laboratories

production

Finished products

Supplier's payment, segregation
and quality control of raw material

Improved control of feed
manufacturing process

Safe products and compliance
with regulatory requirements

ANALYTICS BEYOND MEASURE

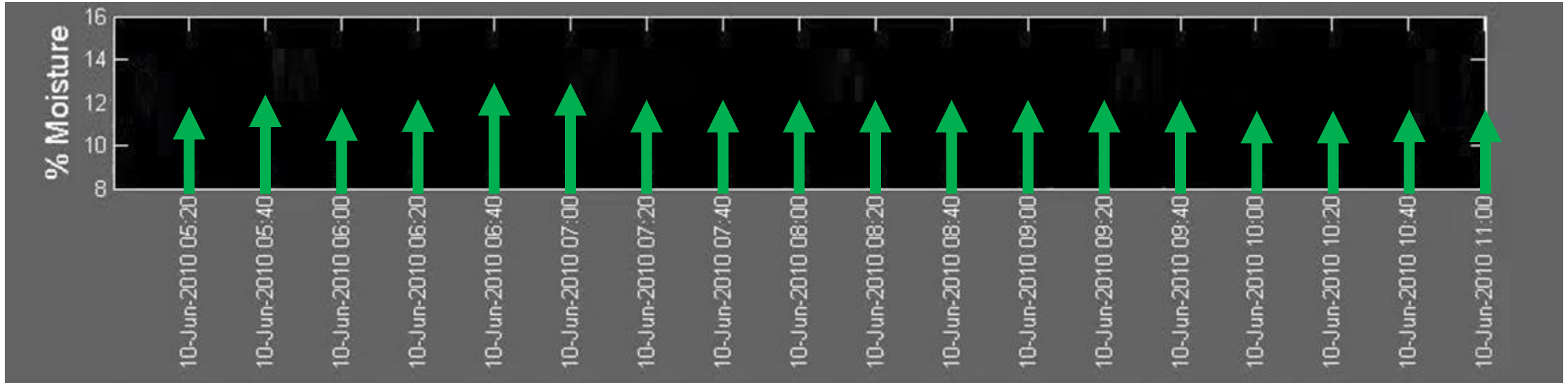
NIR IN-LINE

FOSS



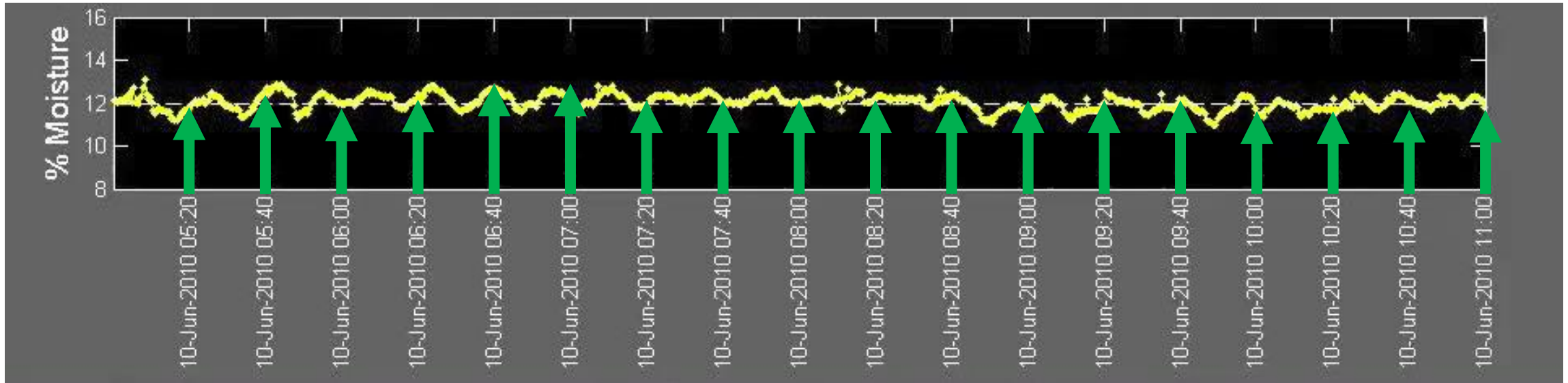
I TAKE SAMPLES. WHY INLINE?

FOSS



I TAKE SAMPLES. WHY INLINE?

FOSS



INLINE CONFIGURATIONS

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1. Windows reflectance

2. Direct light

3. Powder probe



4. Lateral Transmittance probe

PROFOSS POWDER PROBE

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Fine sticky powders

NIR range: 1100 – 1650 nm

- Whole milk powder
- Skim milk powder
- Whey powder
- Infant formula powder
- Caseinate powder
- Starch powder
- Corn/wheat gluten powder



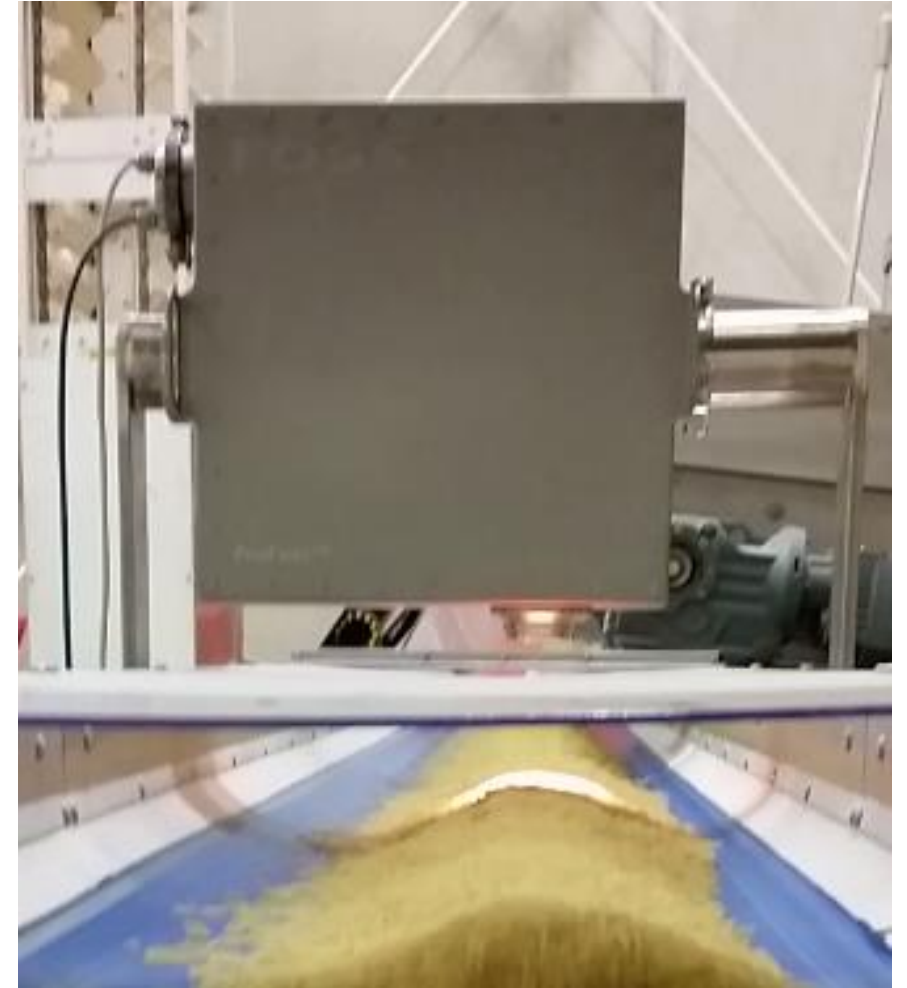
PROFOSS DIRECT LIGHT

FOSS

Solids on open conveyor in reflectance

NIR range: 1100 – 1650 nm

- Feed ingredients
- Feed pellets
- Minced meat
- Pasta
- Chips



PROFOSS LATERAL TRANSMITTANCE

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For liquid & slurries

NIR range: 850 – 1050 nm

- Soy Milk
- Butter
- Mozzarella
- WPC / MPC
- Cream
- Fresh Cheese
- Processed Cheese
- Mechanical Debone Meat
- Wet Pet Food
- **Whole Grain**
- Gluten/starch slurries



ANALYTICS BEYOND



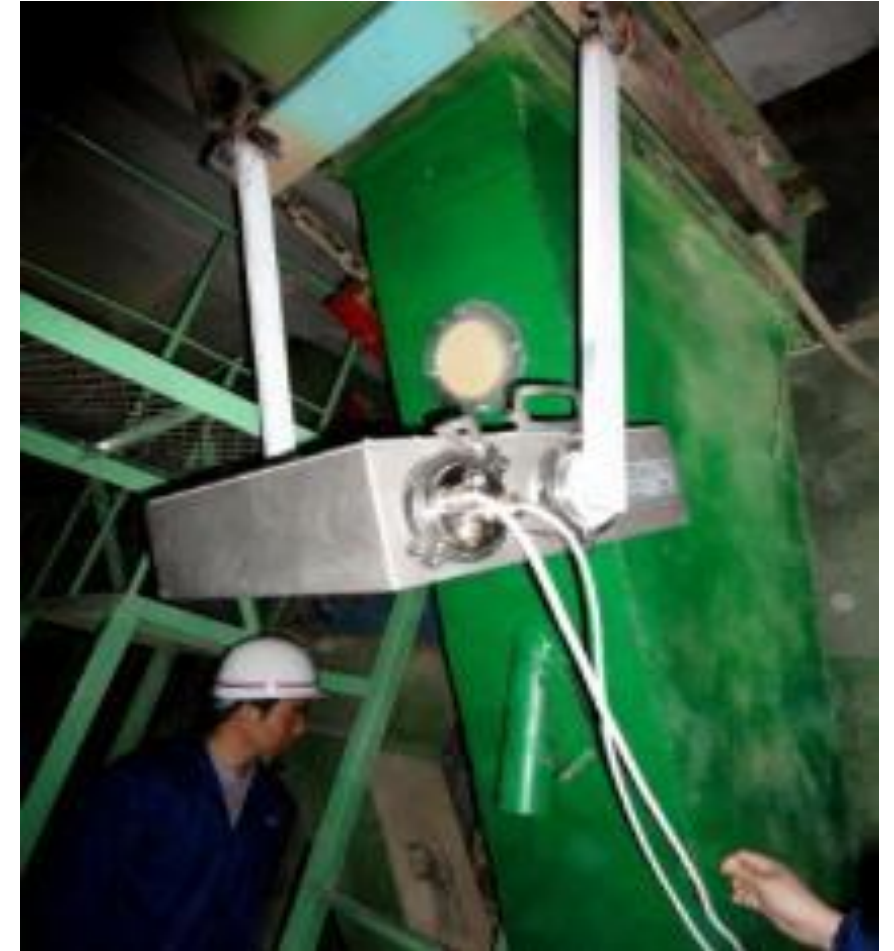
PROFOSS WINDOW REFLECTANCE

FOSS

Fluid Powders

NIR range: 1100 – 1650 nm

- Feed ingredients
- Feed mix
- Feed pellets
- Soy/rape meal
- Whole Wheat
- Whole Corn
- **Flour**
- Cocoa liquor
- Etc.

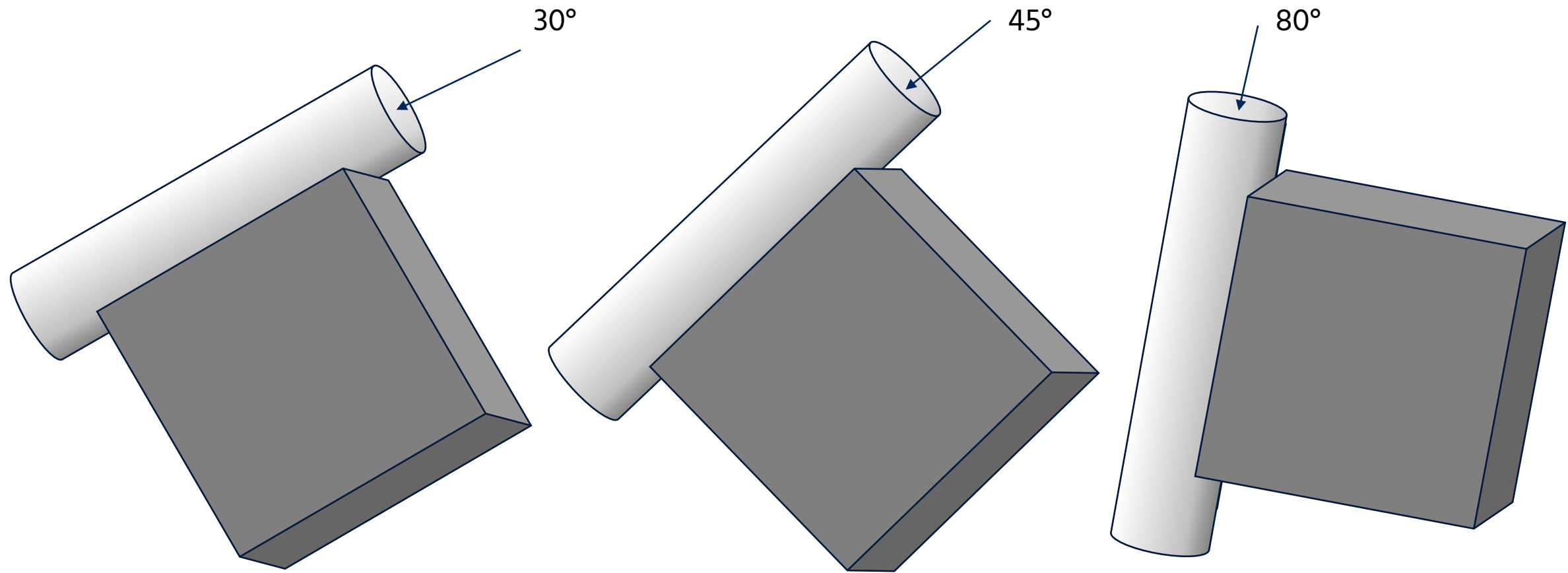






INSTALLATION ANGLE

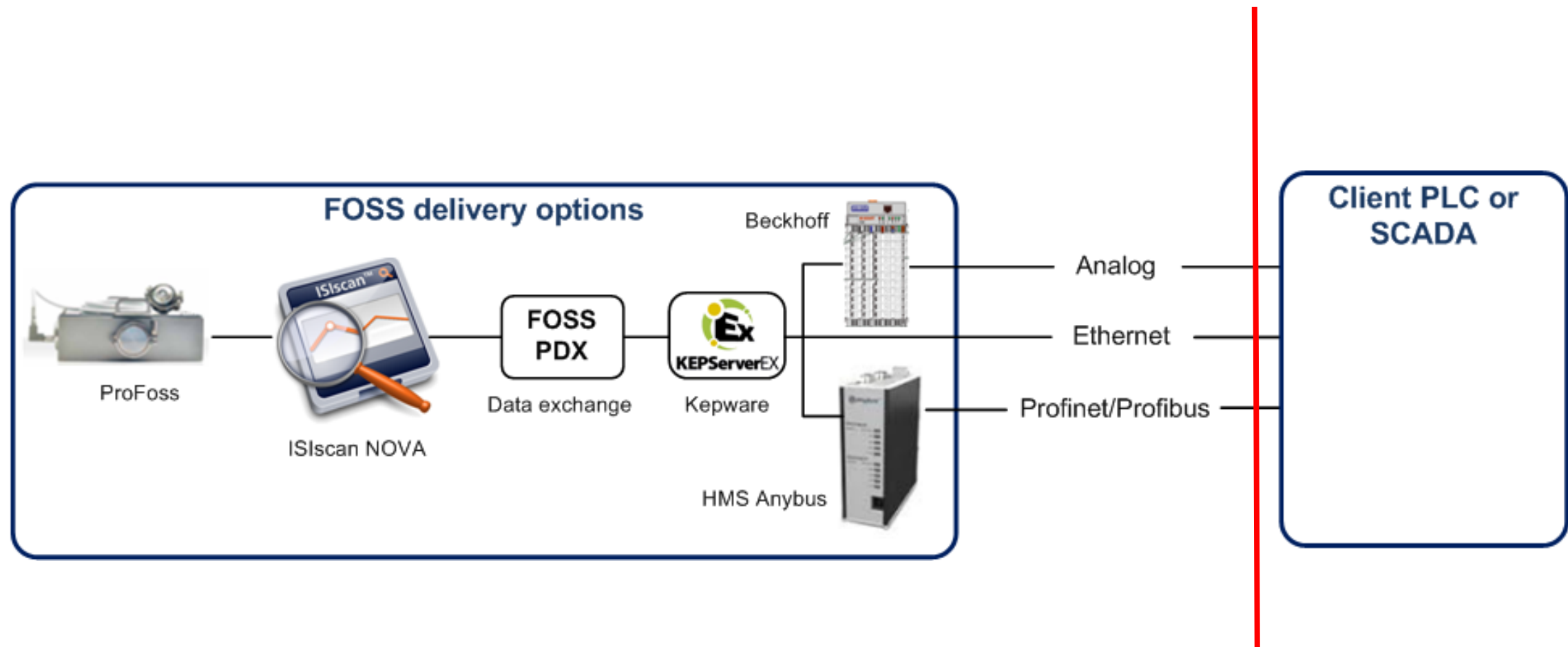
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ANALYTICS BEYOND MEASURE

SOFTWARE COMMUNICATION FLOW

FOSS



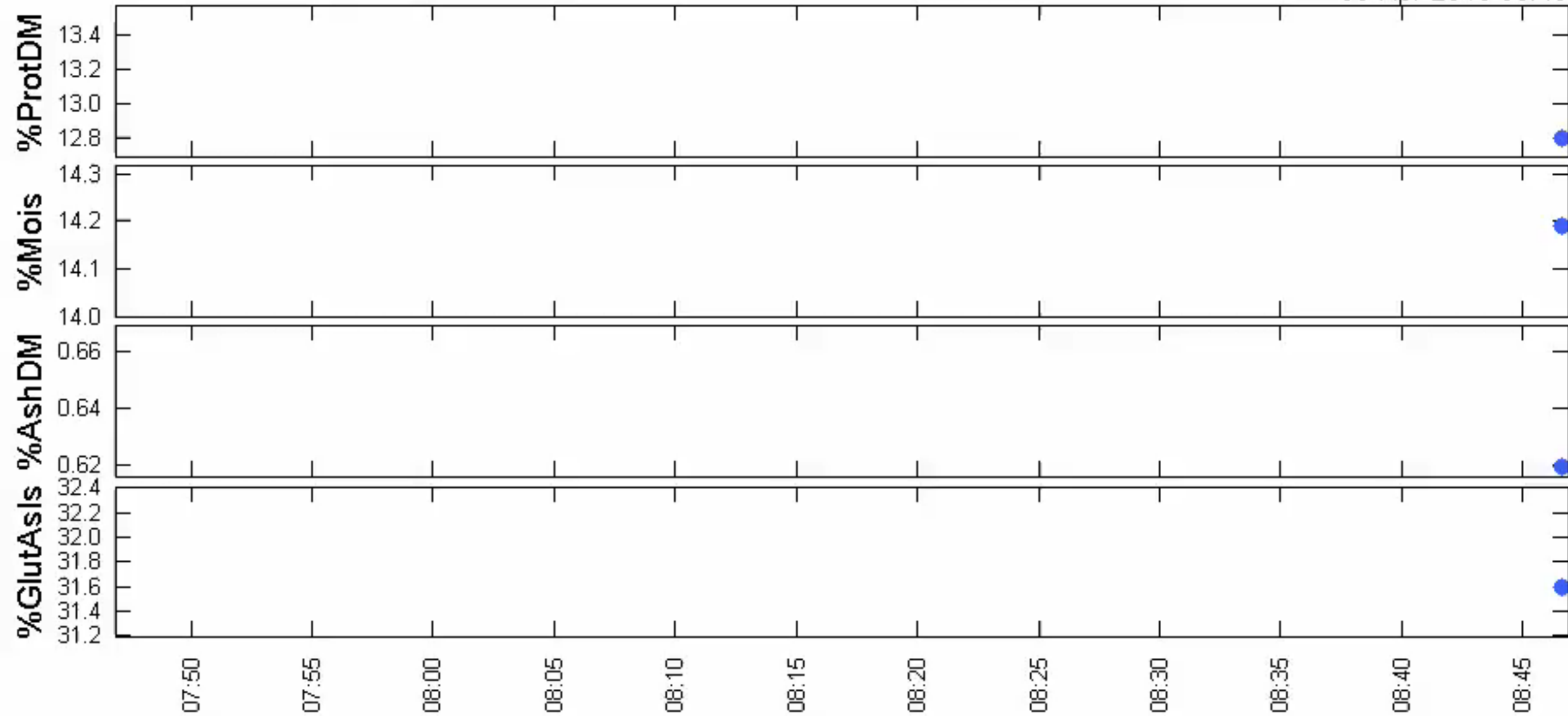
ANALYTICS BEYOND MEASURE

Note: the Kepware license will be needed with ISIsScan Nova and Beckhoff

Limit of responsibility

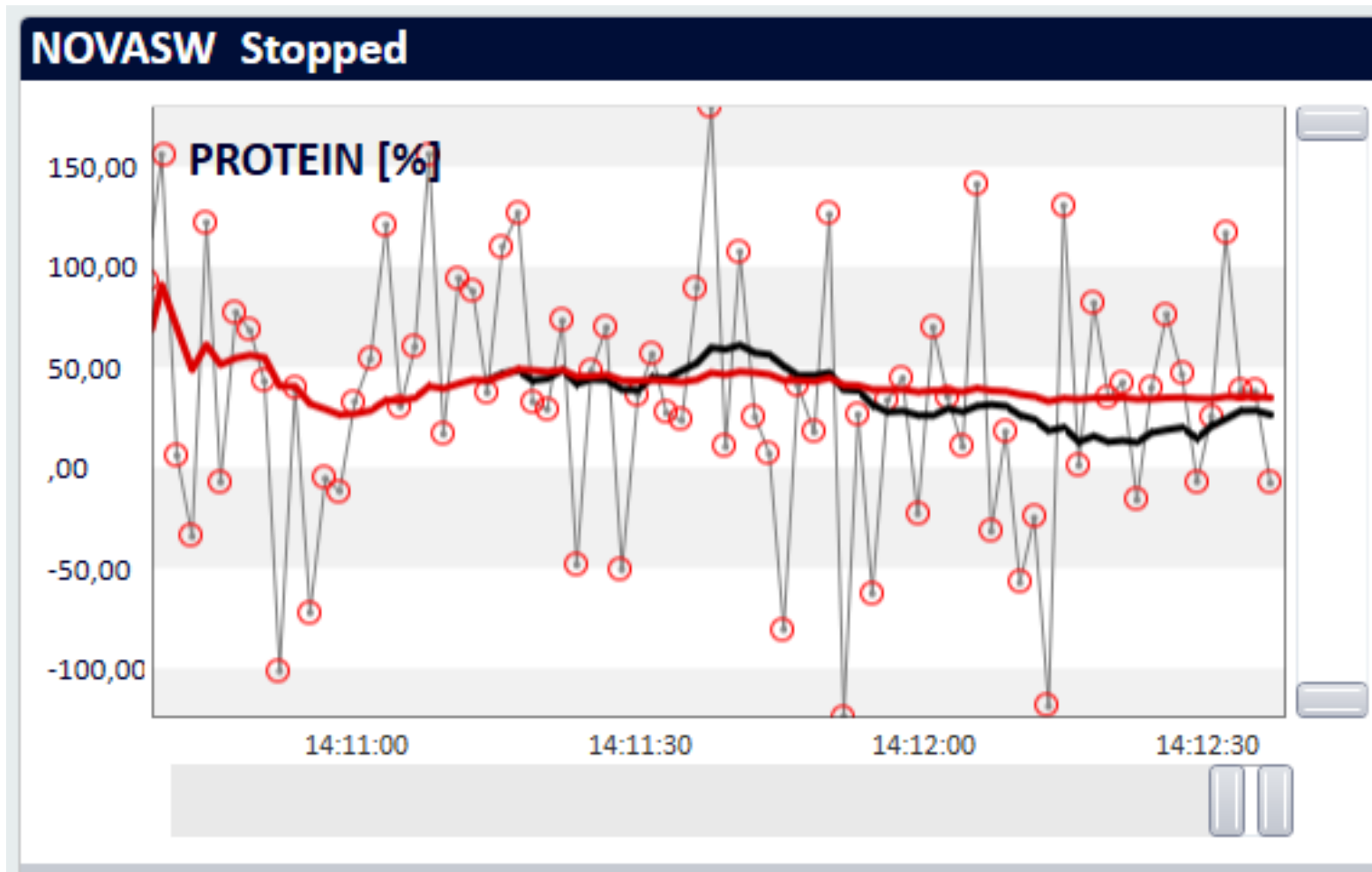
ProFoss Four Milling, APR 2016

08-Apr-2016 08:46



BATCH SUPPORT – SHIP UNLOADING

FOSS



Graph view of noisy measurements with batch average as a thick red line, and moving average as thick black line.



Result



Graph



Calibration



Care



ProFoss3
Measuring
Cream

ProFoss1
Measuring
Cream

ProFoss4
Measuring
Cream

ProFoss2
Measuring
Cream

ProFoss3 Measuring

Fat [None]

40.04

TS [%]

47.83

New interface

Cream

2/6/2019 10:45:13 AM



ProFoss3



Cream





Result



Graph



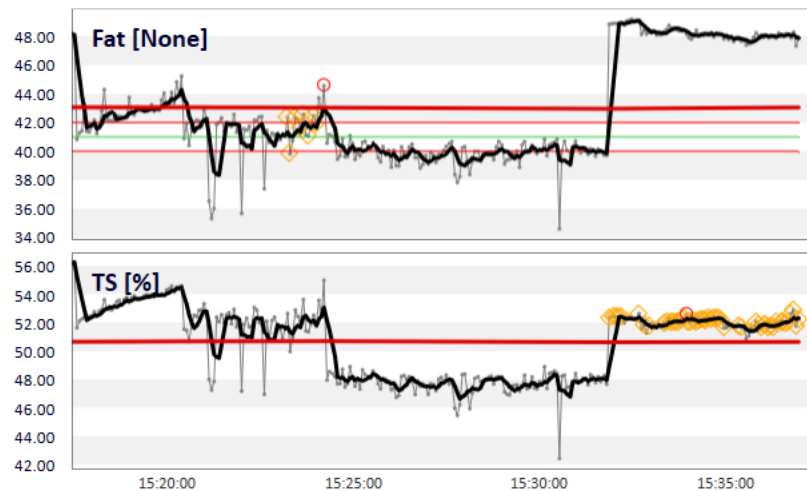
Calibration



System

ProFoss3
Measuring
CreamProFoss1
Measuring
CreamProFoss4
Measuring
CreamProFoss2
Measuring
Cream

ProFoss3 Measuring



Current
Result: 47.84
Average: 47.89

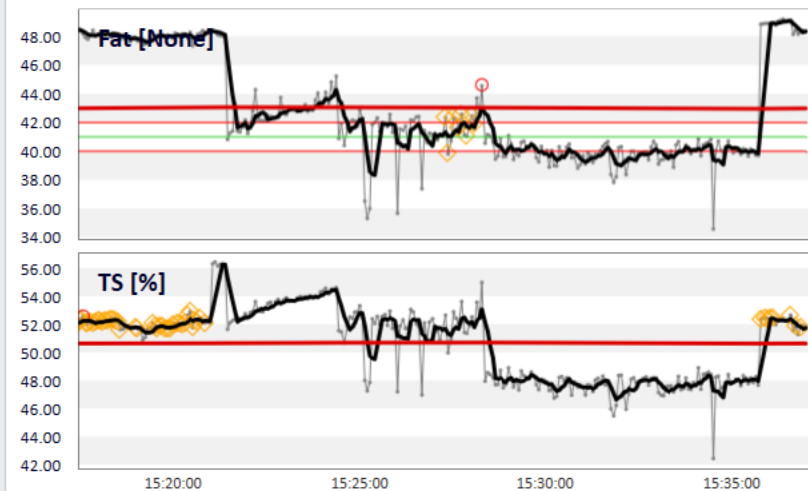
Current
Result: 52.26
Average: 52.32

3:36:58 PM

Cream

2/6/2019 3:36:58 PM

ProFoss1 Measuring



Current
Result: 48.37
Average: 48.33

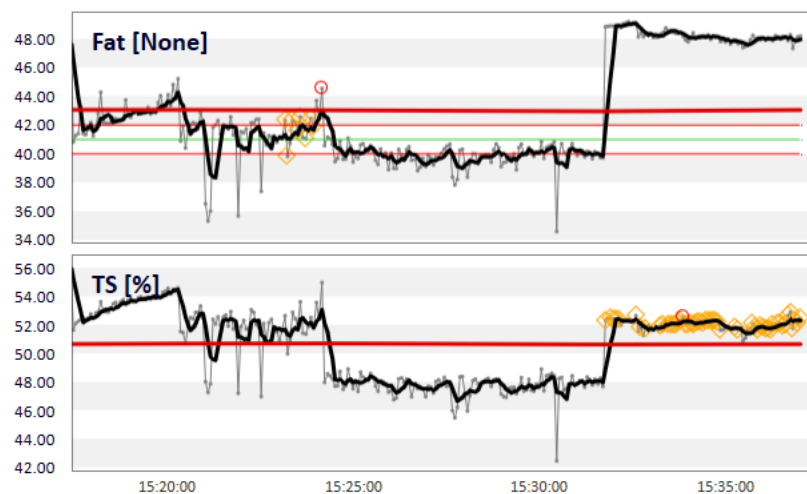
Current
Result: 51.82
Average: 51.72

3:36:59 PM

Cream

2/6/2019 3:36:59 PM

ProFoss4 Measuring



Current
Result: 48.20
Average: 47.96

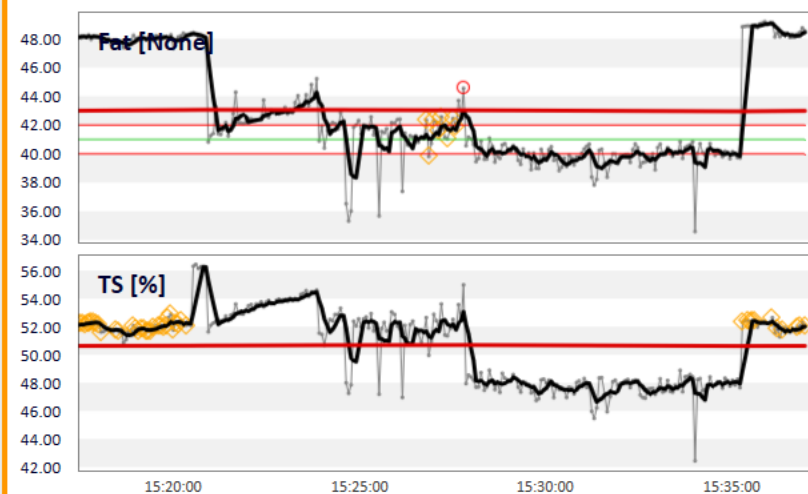
Current
Result: 52.46
Average: 52.30

3:37:01 PM

Cream

2/6/2019 3:37:01 PM

ProFoss2 Measuring



Current
Result: 48.56
Average: 48.44

Current
Result: 52.05
Average: 52.00

3:36:58 PM

Cream

2/6/2019 3:36:58 PM



ProFoss2



Cream



OUR DIGITAL ANALYTICAL SOLUTIONS

FOSS



DIGITAL PRODUCTS

FOSS

FossManager (Pro)



1. Instrument management
2. Instrument downtime,
3. Back up sample data and instrument data

FossAssure



4. Monitoring and optimizing instrument performance
5. Securing basic Standard Operation Procedures are followed
6. Maintenance plan for your instrument

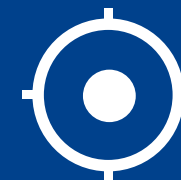
FREE 90 days trial

FossAssure Pro



7. Calibration accuracy on your instrument
8. Optimizing samples for reference analyses
9. Documentation for audit trail?

FossCalibrator (Pro)



10. Best possible performance for all your samples
11. ANN
12. Complete backup and auto-documentation

FREE 90 days trial

IS IT THE PROCESS OR THE INSTRUMENT?



Jennifer Robinson,
VP of Corporate Quality
Assurance

"A challenge I have often encountered is that when you are working within the plant, and the instrument seems to be working OK, then everyone is happy. However, when you start getting out of spec results, you get challenged. Is it the process or the instrument?"

With FossAssure, we can point to and demonstrate that the instrument is not the source of the issue. It gives peace of mind because I know that someone with the right education is keeping an eye on the instruments and how they are running."

FOSS

THANK YOU