TOUT POUR LE GRAIN

IAOM Eurasia SEPT. 2024
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WHO ARE WE ?

Tout Pour Le Grain (TPLG), based in France South Est of Paris, is a **65 years old company** and was the **first** in Europe to introduce the **automated sampler** instead of manual sampling of the trucks.

With that, **TPLG went International**, now is present in **60 countries**, all major grain producing regions, including Europe, Black Sea, Southern Africa, Latin America, Australia, China… with more than 5000 references

TPLG is now positioned as the grain sampling expert which helps for a representative sample to value.

OUR DNA

Expertise & Innovation : TPLG advises & designs to imagine your sampler of tomorrow with even more automation. Our customers are our samplers designers.

Reactivity & adaptation : being a family owned company help to a fast decision, and our designer experts are servicing customers directly. We have standard models, but any of them can be adapted to your configuration.

Proximity : a well establish network of local partners will look carefully at the implementation site and adapt, suggest, report to us for a dedicated design with tailor-made support, but also install according to all safety measures and propose proactive servicing & maintenance.

Quality : we value our samplers into the Premium market, with high thruput, automation at receival point, robustness and reliability .

The science of sampling…

Some Basics

1. The commercial value of a batch relies on the results of the analyses at grading
2. The analyses are carried out on a sample
3. The sample must be representative
4. The sampling must therefore be carried out rigorously and comply with minimum rules
5. The sampling standards set these rules precisely
6. The standards, depending on their status, are recognized nationally or internationally
7. The contract must define the sampling method

Reference standards

The ISO 24333 standards cover the same subject: sampling of cereal batches

The ISO 24333 standard is internationally recognized as the reference method

This is also approved method -ISO 24333 standard- for the detection of fusarium mycotoxins

Work in progress : ISO/CD 18390 Cereals and cereal products - Sampling - Simplified routine method

Oilseeds & Meal

The ISO 21293-21294 in motion or static. Just renewed

INTERNATIONAL STANDARD

ISO 24333

First edition
2009-12-15

Reviewed and confirmed in 2018

Cereals and cereal products — Sampling

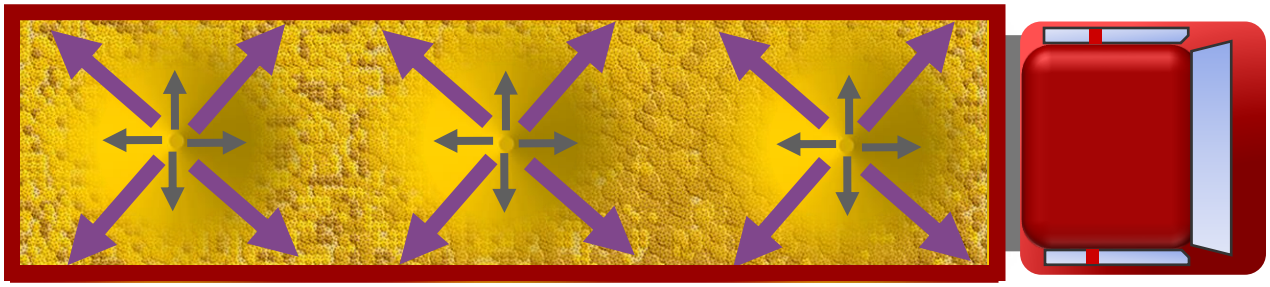
ISO 24333:2018

Cereals, pulses and milled products
Sampling of static batches

This is a general standard, and covers all aspects of sampling:

- "***Samples should be as representative*** *as possible from the lots from which they are taken*"
- "*…as the composition of a lot is seldom uniform, a* ***sufficient number of increments*** *shall be taken and* ***carefully mixed****, thus giving a bulk sample from which the laboratory samples are obtained*"
- "*…the lot should be sampled* ***over its entire depth****…*"

- **Irregular distribution during loading**



- **Settlement during transit**

- **Deliberate tampering with load**

"…as the composition of a lot is seldom uniform, a sufficient number of increments shall be taken and carefully mixed, thus giving a bulk sample from which the laboratory samples are obtained"
ISO 24333:2018

Static grains

- Unit sample mass : 400 g to 3 kg
- Minimum number of unit samples : Mechanical and manual methods

Sampling of static bulk grain (mechanical sampling systems recommended) **in trailers or lorries, wagons, ships or bulk tankers, silos or warehouses**				
Size of lot or sub-lot m	**Range of mass of increment**[a]	**Minimum number of increments**[b]	**Minimum mass of laboratory sample for contaminants**	**Minimum mass of laboratory sample for other analyses**
$m \leqslant 15$ t	400 g to 3 000 g	3 sampling points	For ochratoxin A and aflatoxins: 10 kg For pesticides, heavy metals, dioxins: 1 kg For other contaminants[c]: 3 kg	1 kg to 3 kg according to the analytical requirements
$15 < m \leqslant 30$ t		8 sampling points		
$30 < m \leqslant 45$ t		11 sampling points		
$45 < m \leqslant 100$ t		15 sampling points		
$100 < m \leqslant 300$ t		18 sampling points		
$300 < m \leqslant 500$ t		20 sampling points		
$500 < m \leqslant 1\,500$ t		25 sampling points		
Per lot or sub-lot of 1 500 t		25 sampling points		

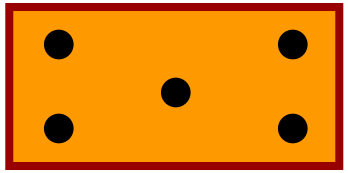
[a] If taken mechanically, the mass of the sample can be appropriate to the equipment.

[b] For grain bulks of great depth, a sample taken every 2 m over a sampling height corresponds to one increment. Repeat the procedure as many times as necessary.

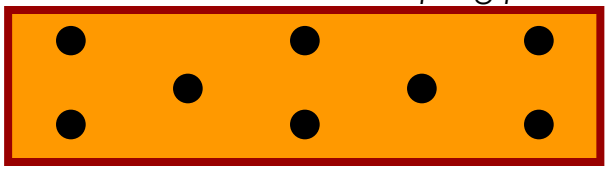
[c] Other contaminants like DON, fumonisins, zearalenone; for the determination of DON, the mass of laboratory sample can be 1 kg.

Suggested patterns for sampling from rail or road wagons, lorries, barges or ships…

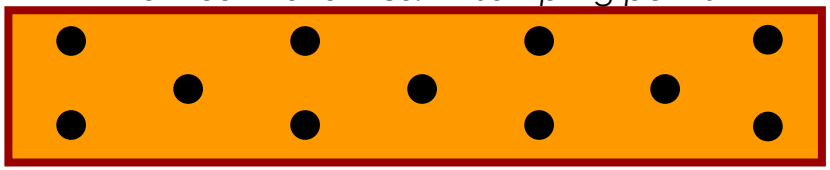
Up to 15 tonnes: *5 sampling points*



From 15 - 30 tonnes: *8 sampling points*



From 30 - 45 tonnes: *11 sampling points*



"Samples should be as representative as possible from the lots from which they are taken"

Manual Methods

- **Single aperture**

- **Multi-aperture with/without compartments**

- **Multi-aperture with sequentially opening slots**

Manual Methods : Drawbacks

- **Health, safety & hygiene**

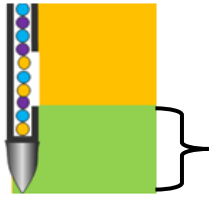
Strains, falls, injuries & death

Contamination of the worker

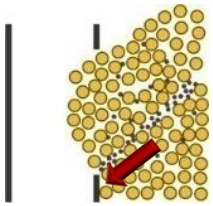
Contamination by the worker

- **Accuracy**

Layers



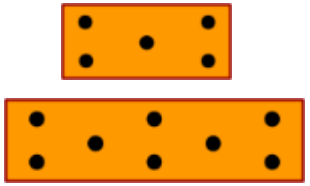
Poor bottom layer sampling



Avalanche effect

- **Consistency & Speed**

Need to sample to bottom of load



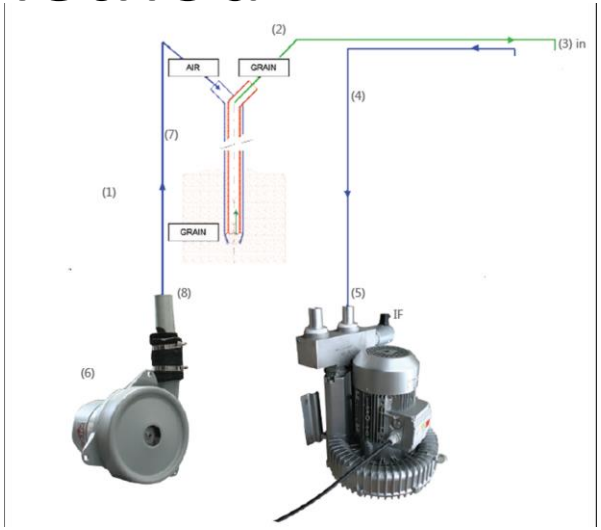
Multiple samples required

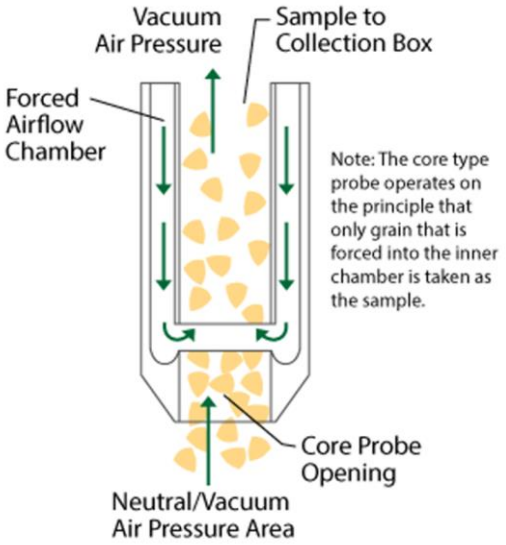
Sample transfer time

Need for mechanical method

- **Improved safety for operator**
- **More accurate sampling… fairer to the user and producer**
- **Quicker multi-point sampling**
- **Greater consistency, from one sample to another**
- **Greater consistency from one operative to another**
- **NO DISPUTES**
- **With latest sampling technologies : The Bi-tube spear**

Thanks to its air suction and blowing system at its base, the bi-tube spear allows a core sampling of the grain





Important: A neutral pressure/vacuum must be achieved at the core tip opening in order to maintain sample accuracy (see details in section 2.4: Adjustments).

Devices for sampling @TPLG

STATIC

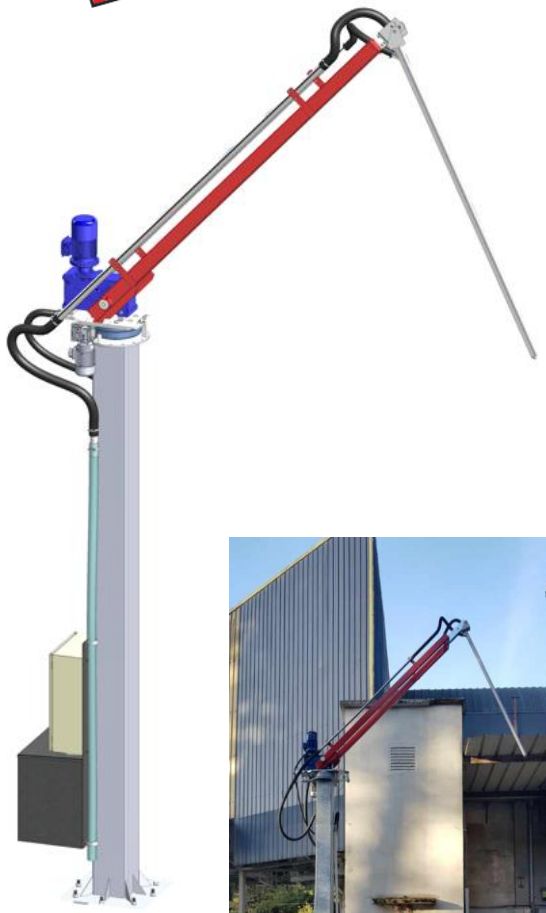
1. FALCON GYROSCOPIC
2. COBRA
3. PHAETON & CAMELEON
4. RECEPTION & SARASOFT

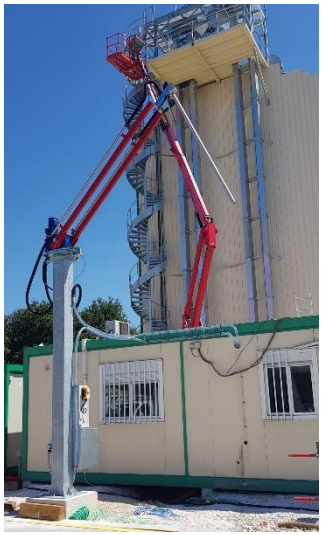
IN MOTION

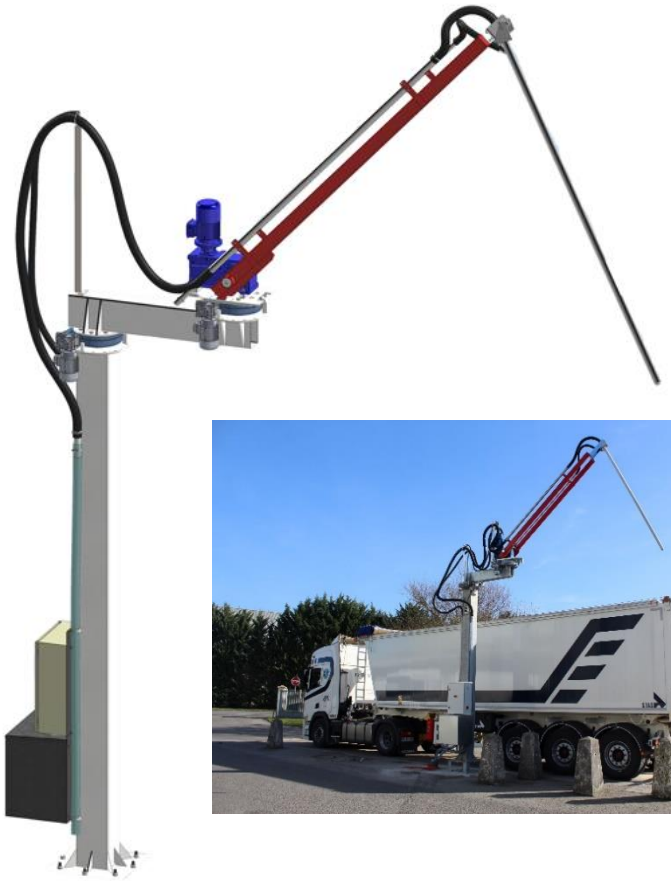
6. MOUSTICK
7. LYNX
8. HORNET

1. FALCON STD & GYROSCOPIC

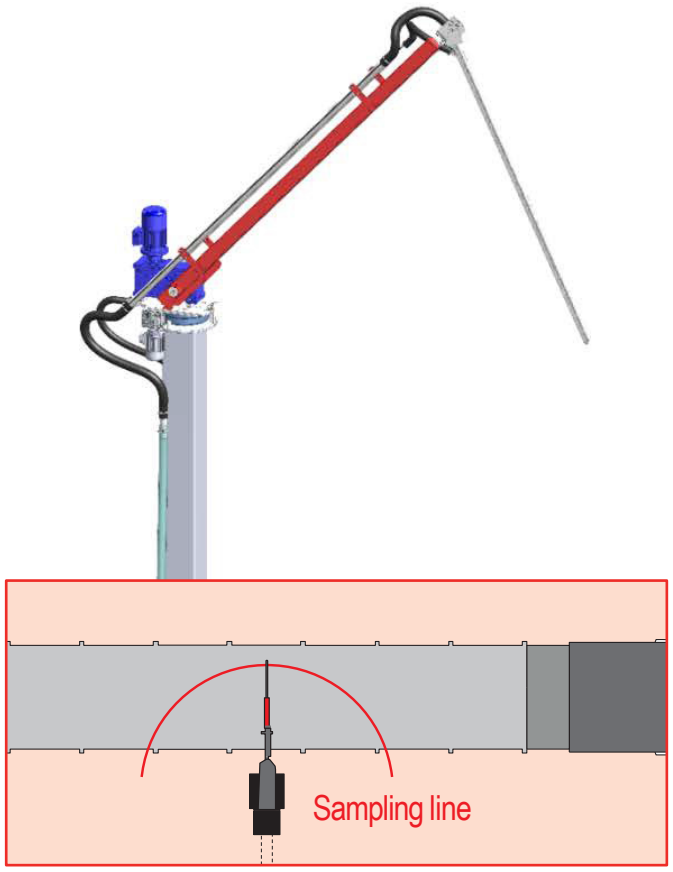
Over 3500 references all around the world!

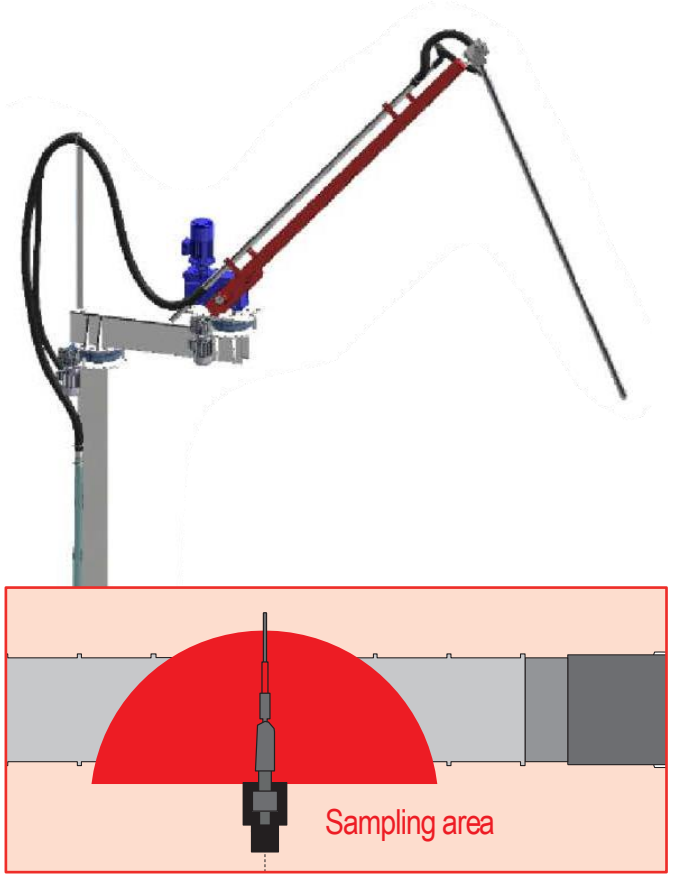






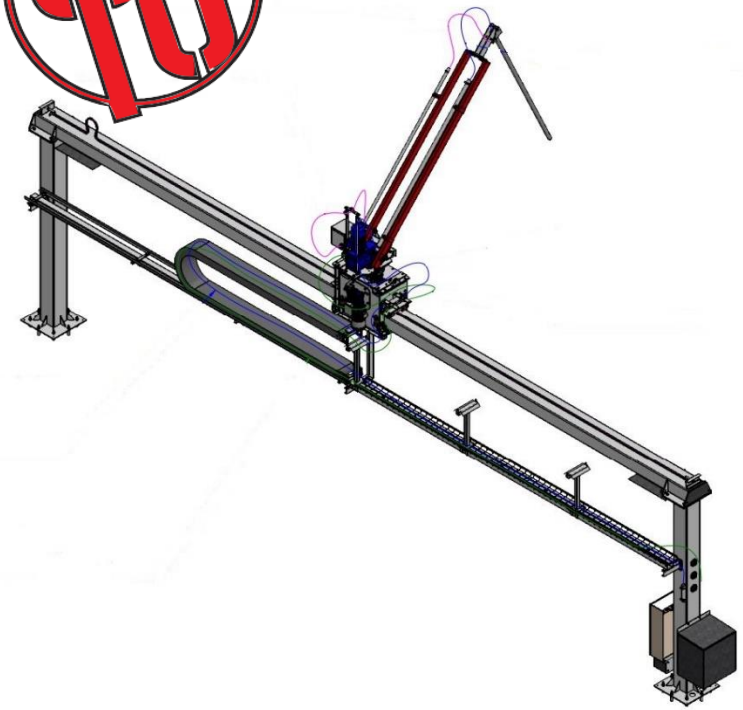
FALCON



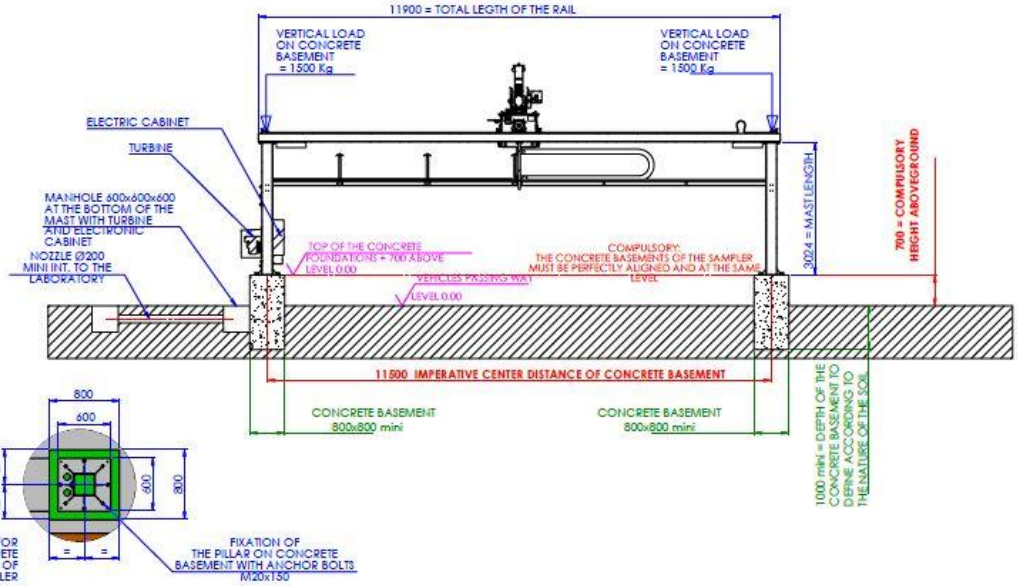


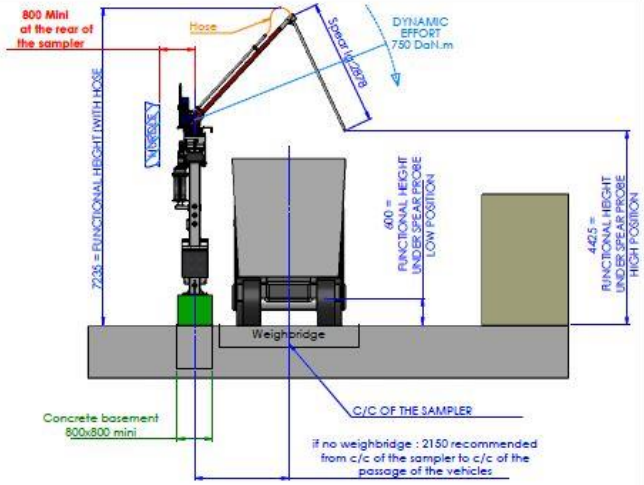
Gyro is a sampler covering a wider area, represented on largest handling sites in all countries!

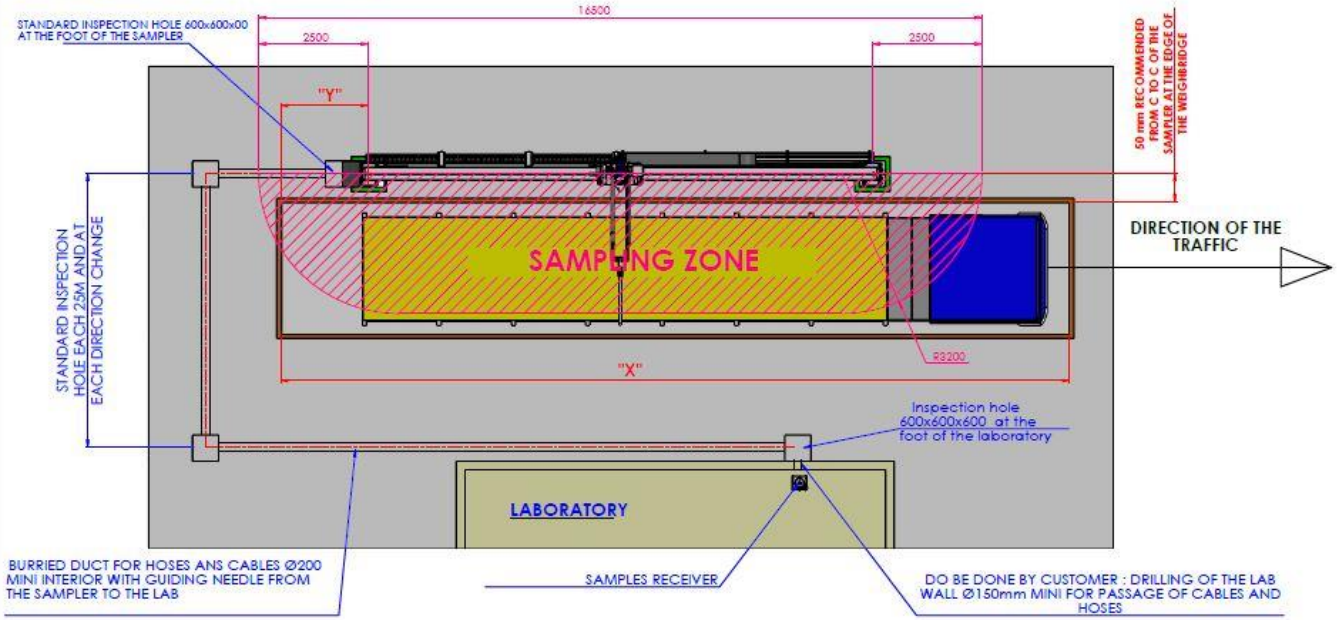
2. COBRA



- **Covers** the **entire length** of the trailer
- Flexible sizes 6, 12, 16, 20, 24 meters
- Complies with the sampling standard ISO 24333
- Smoothness, precision, safety, & speed
- Touch-screen control pannel







TO DEFINE A SAFETY ZONE
-
TO FORBID MAN PRESENCE INTO SAMPLING ZONE
-
TO PROVIDE SIGNS
-
TO PROVIDE GOOD QUALITY CONCRETE ACCORDING TO LOADS AND DYNAMIC EFFORT
-
TO DO THE DRILINGS Ø150mm MINI FOR THE PASSAGE OF THE HOSES AND CABLES

"X" LGT WEIGHBRIDGE	"Y" C/C OF THE SAMPLER TO THE REAR OF THE WEIGHBRIDGE
13.00M	1.00M
14.00M	1.00M
15.00M	1.00M
16.00M	2.00M
17.00M	2.00M
18.00M	2.00M
20.00M	3.00M

Ind.	Date :	Modifications :

COBRA II 4012 STANDARD - PLAN TYPE - Feuille1

CLIENT: REF:

Date : 17/03/2022

TOUT POUR LE GRAIN
Société anonyme au capital de 43 000€
PERCENEIGE 89260
B.P.14 - 2, rue des Jonquilles
Tél. 03 86 88 98 00 - Fax 03 86 88 90 20

Dessiné par : P.FAITOUT
Matière :
Finition :
Poids : kg

A1
Ech. : 1:50
Page 1/1

N° 30738

COBRA

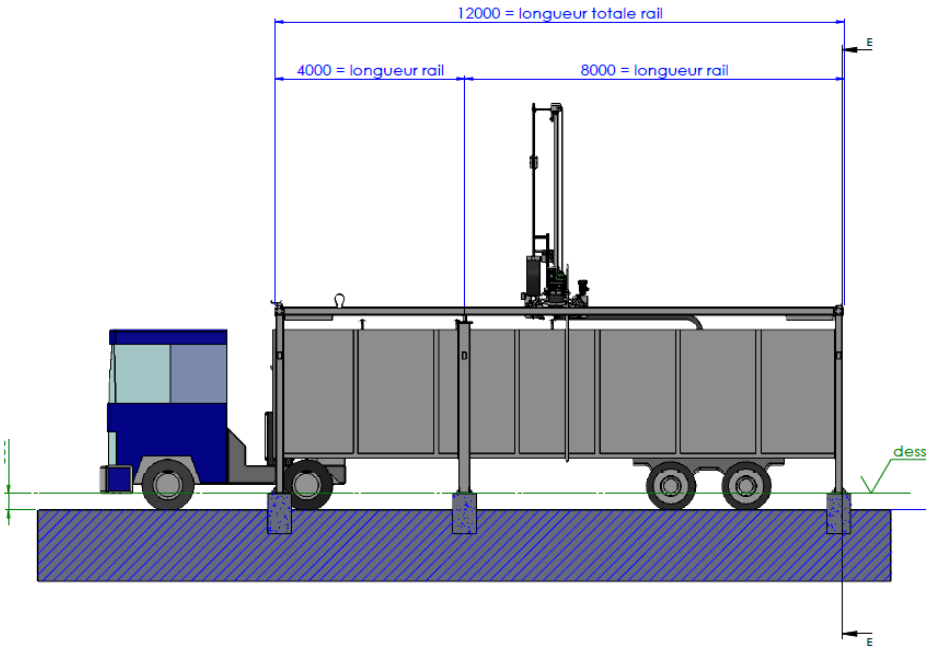
MEXICO

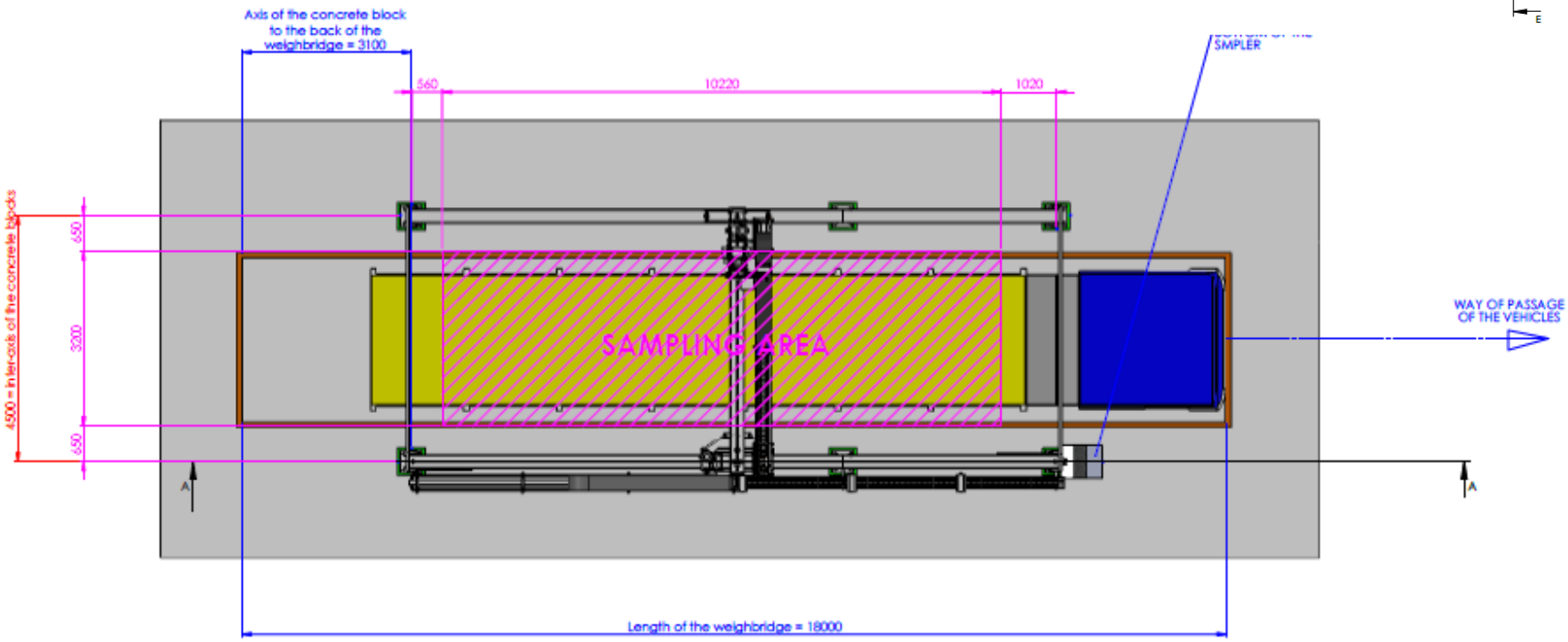
RUSSIA

SOUTH AFRICA

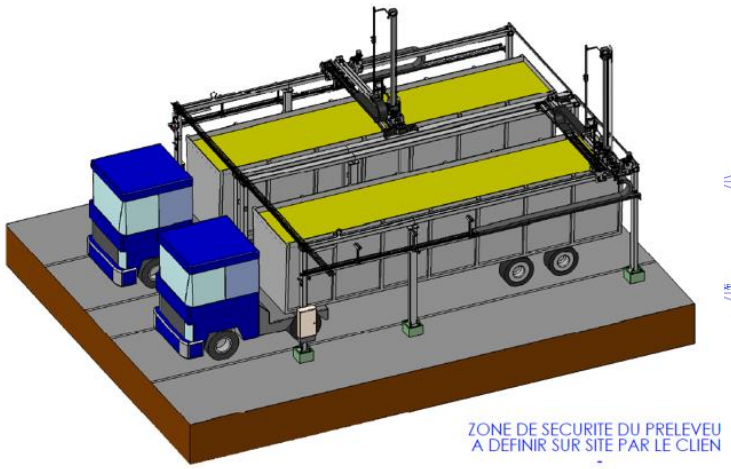
3. PHAETON & CAMELEON

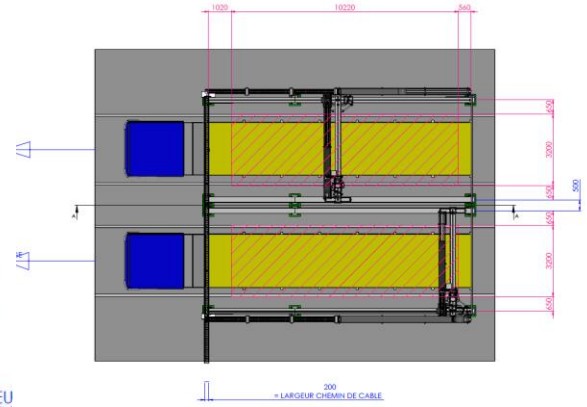
PHAETON

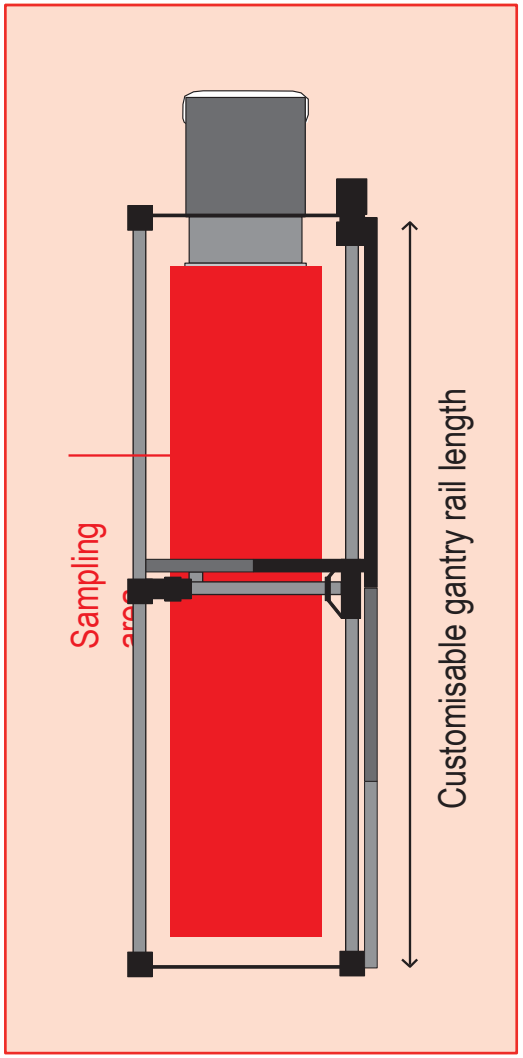

12000 = longueur totale rail
4000 = longueur rail
8000 = longueur rail
E
dess
E


Axis of the concrete block to the back of the weighbridge = 3100
560
10220
1020
SMPLER
4500 = inter-axis of the concrete blocks
650
3200
650
SAMPLING AREA
WAY OF PASSAGE OF THE VEHICLES
A
A
Length of the weighbridge = 18000

PHAETON – 2 moving axis

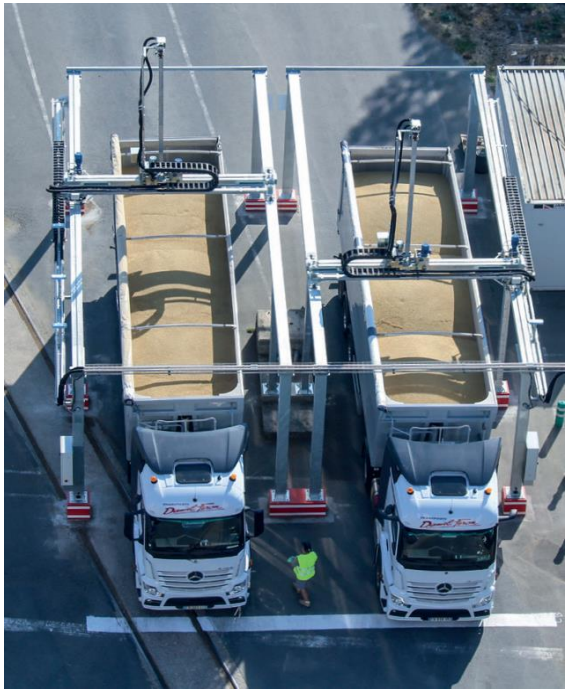




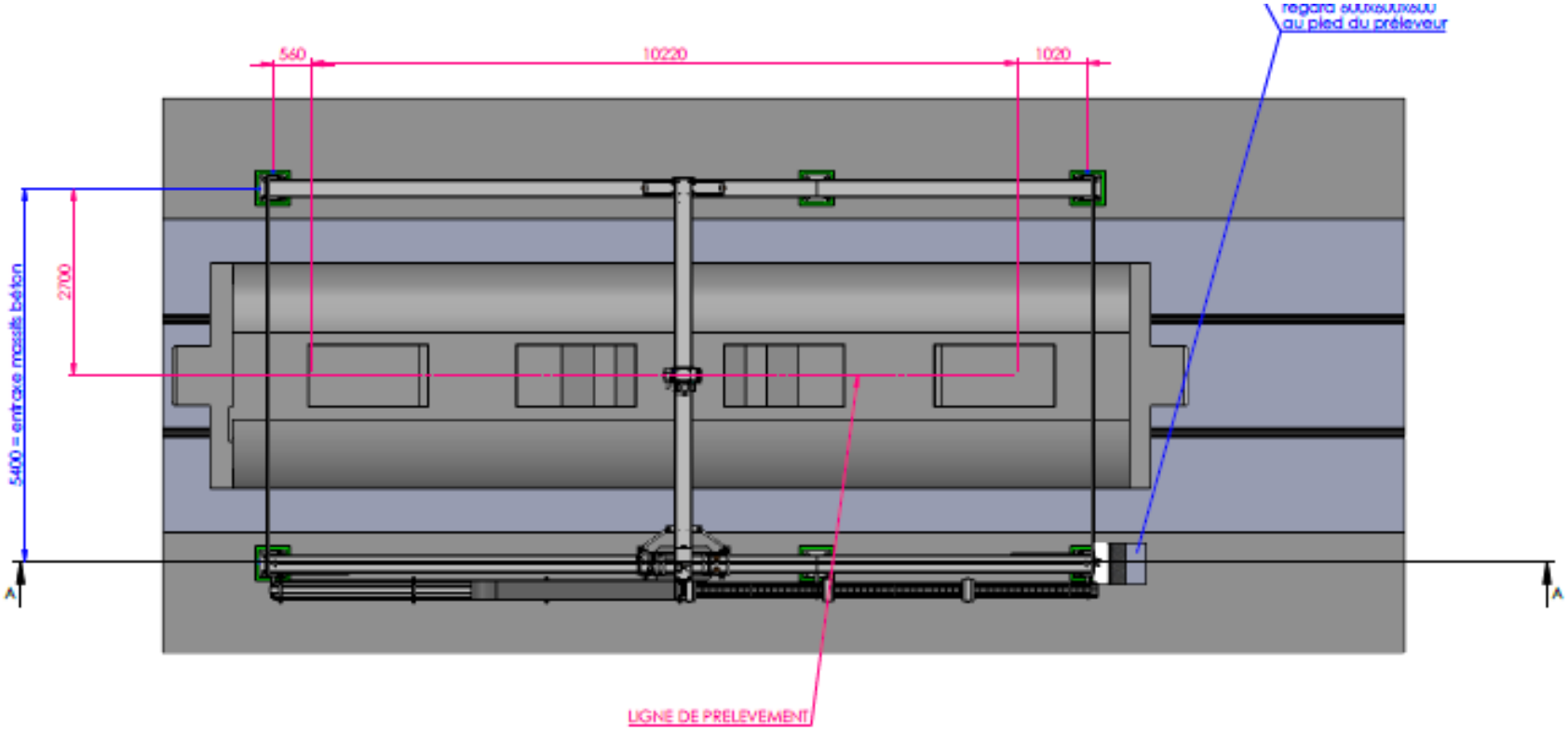


Longitudinal drive gearmotor	1.5 kW
Up/down drive gearmotor	1.85 kW
Base plate	400 x 400 mm
Warranty on mechanical & electrical components	2 years
Electric power	400 VAC + N + E 50 Hz
Turbine power	1.9 kW to 7,5 kW

PHAETON

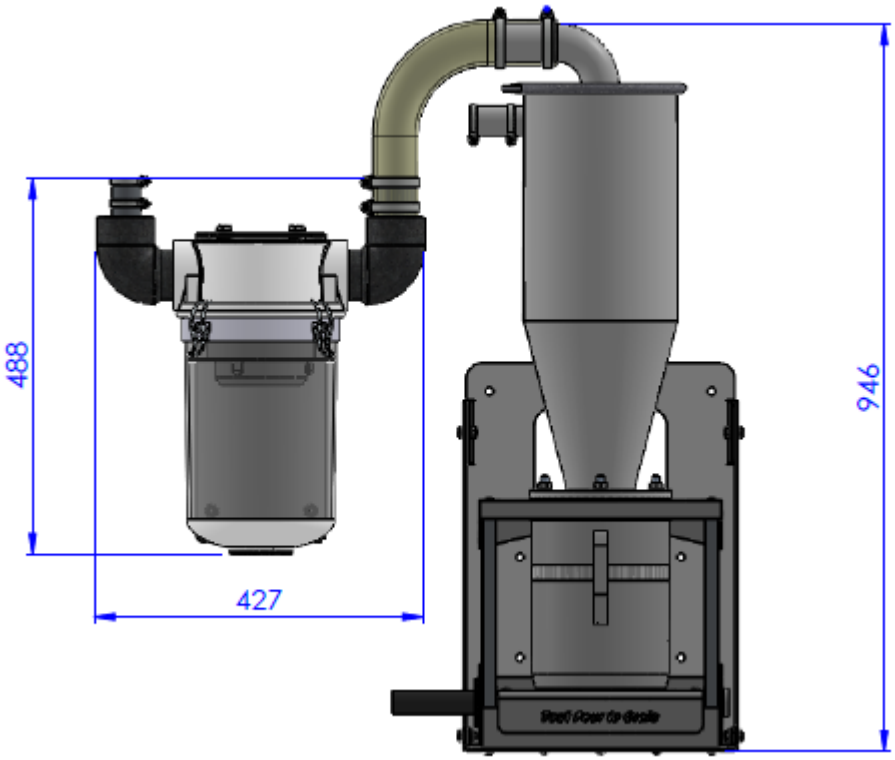


CAMELEON – 1 moving axis



CAMELEON – 1 moving axis

4. Receiver station



Receiver Station with NIR Online

The Cyclo-buro allows the reception of 16 to 20 liters of grain at once against standard 1 liter

The speed variator regulates the flow of the grains while passing by the NIR

The NIR analyses:

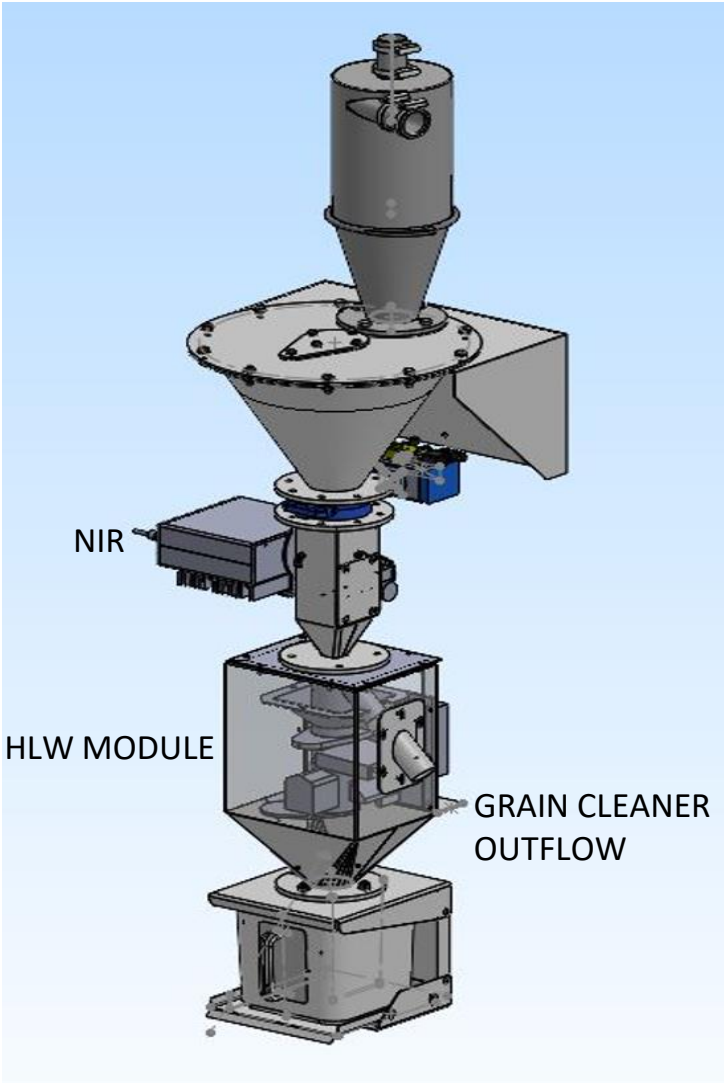
- Protein
- Moisture
- Fat
- Fibre
- Gluten
- Starch
- etc

The HLW module analyses:

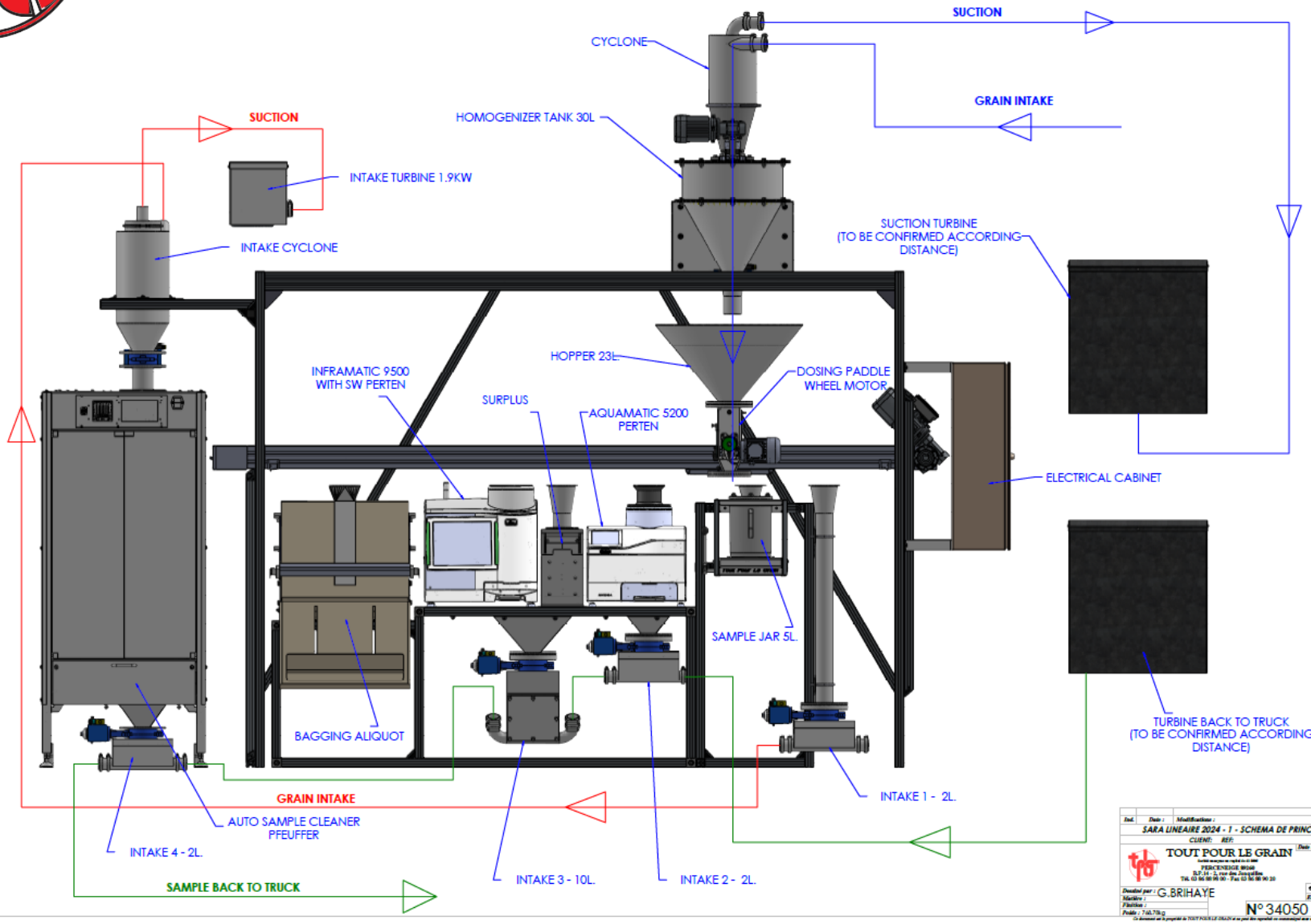
- Specific weight
- Temperature

The GRAIN CLEANER analyses:

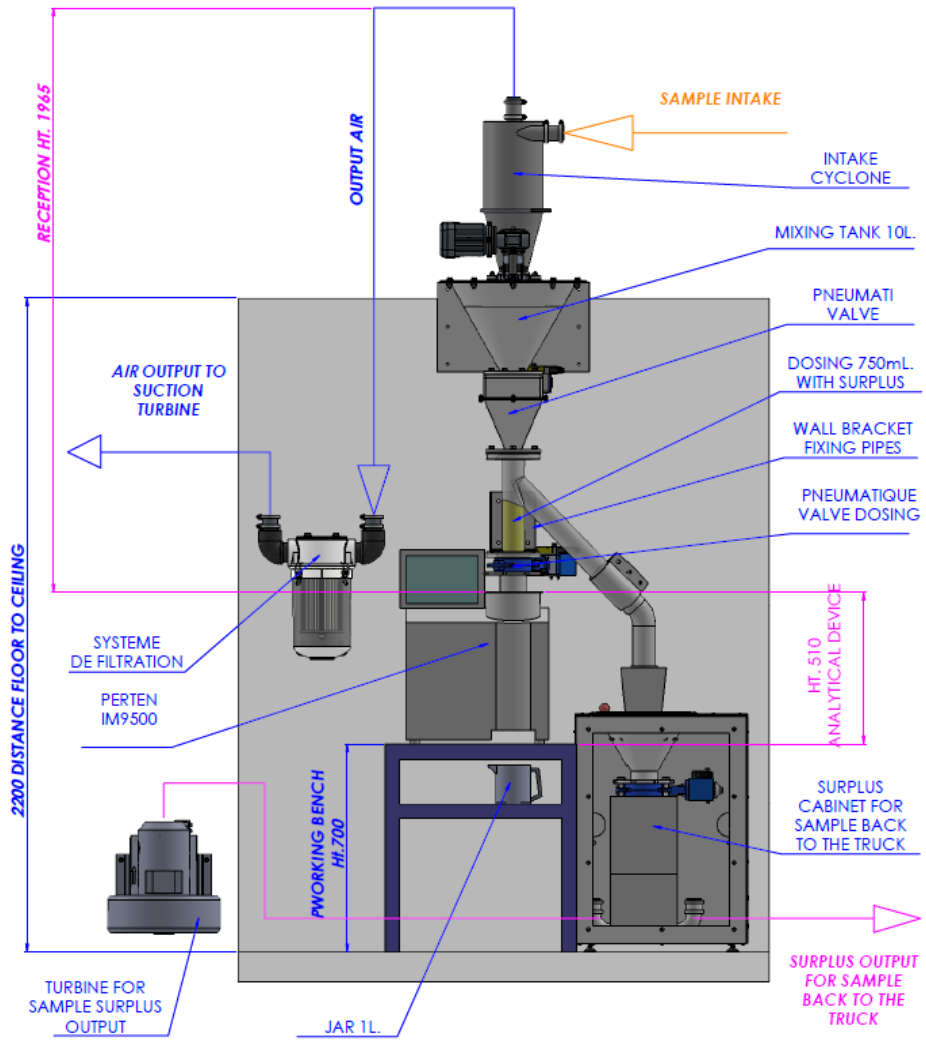
- Level of impurities

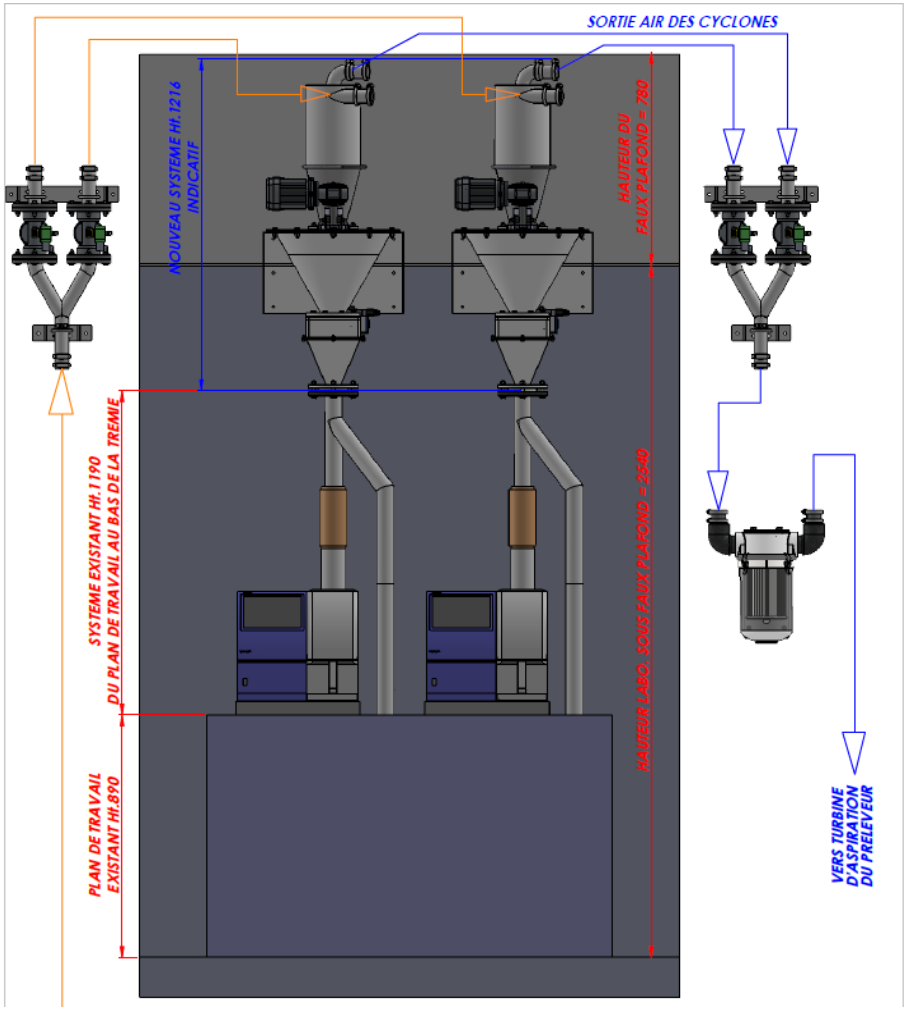


SARA LINEAR NG



SARA light versions



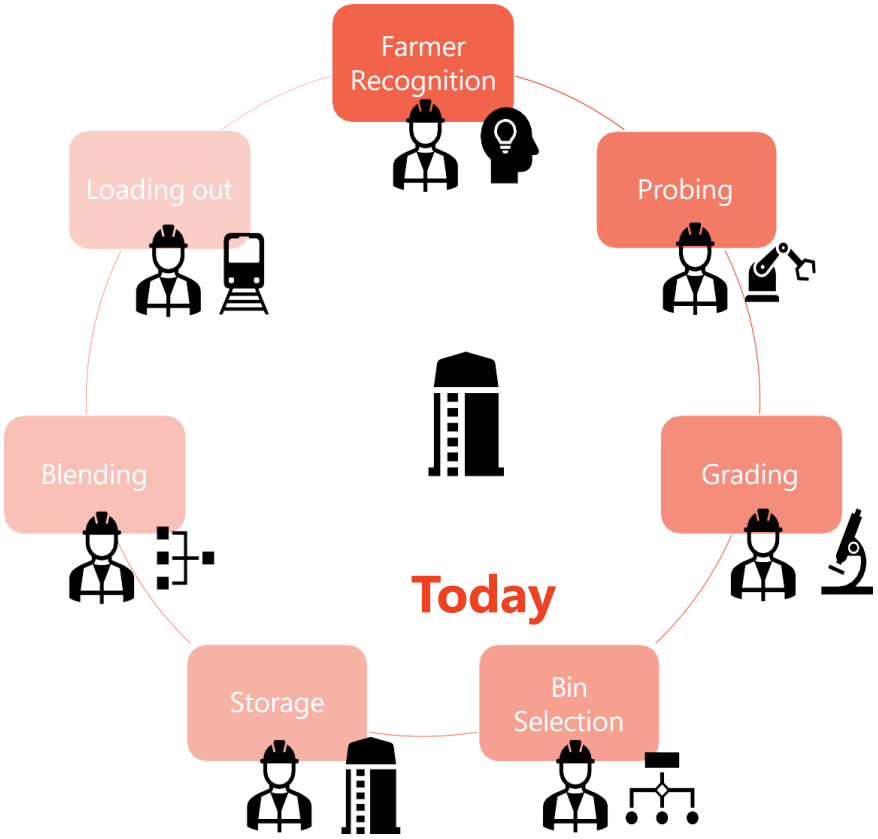


Grain Industry 10 years from now
For a sustainable future using automation

What do we want to achieve?

Labor shortage	The labor shortage is severe in rural areas where the most of grain elevators are located.
Knowledge succession	Grain elevator managers are aging and knowledge succession to next generations is necessary to maintain the quality of the operations.
Operational mistakes	Human errors occurring at grain elevators narrows the trading margin.
Safety	The elevator operations require our operators to work at heights and late at night.
Environnemental footprint	High requirement to reduce carbon footprint

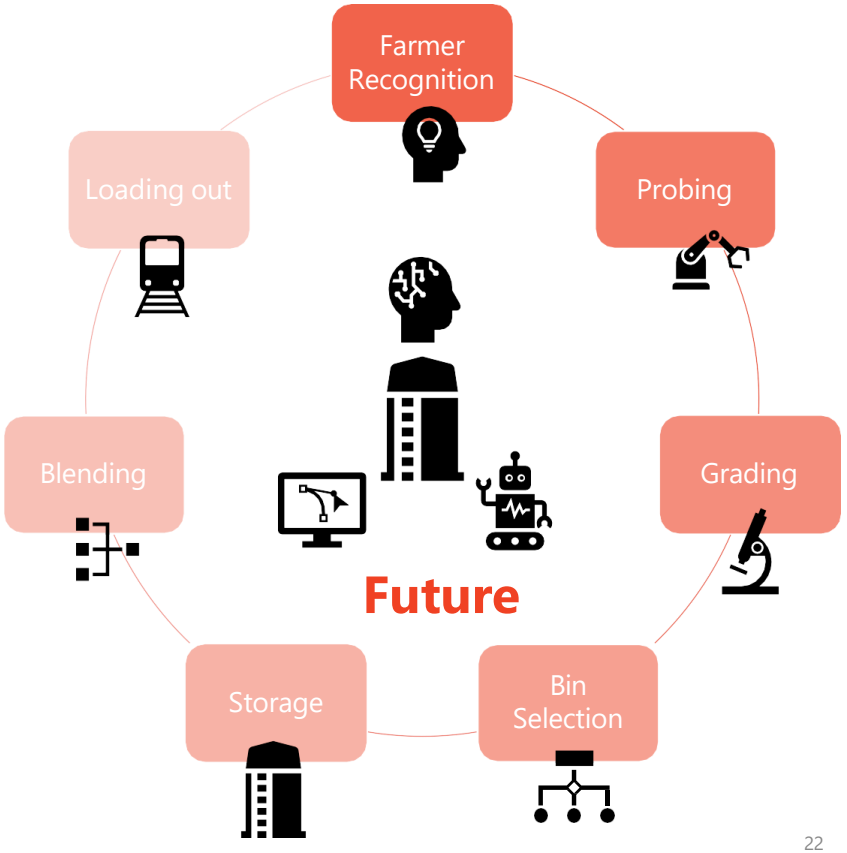
What we do today..



Farmer Recognition	Facial recognition / Non digital CRM
Probing	Manual Handling
Grading	Personnel intervention
Bin Selection	Dependent on personal experience
Storage	Inaccurate Inventory management No quality control measure
Blending	Executed through individual knowledge
Loading out	Operating locomotive. Shuttle lid opening closing

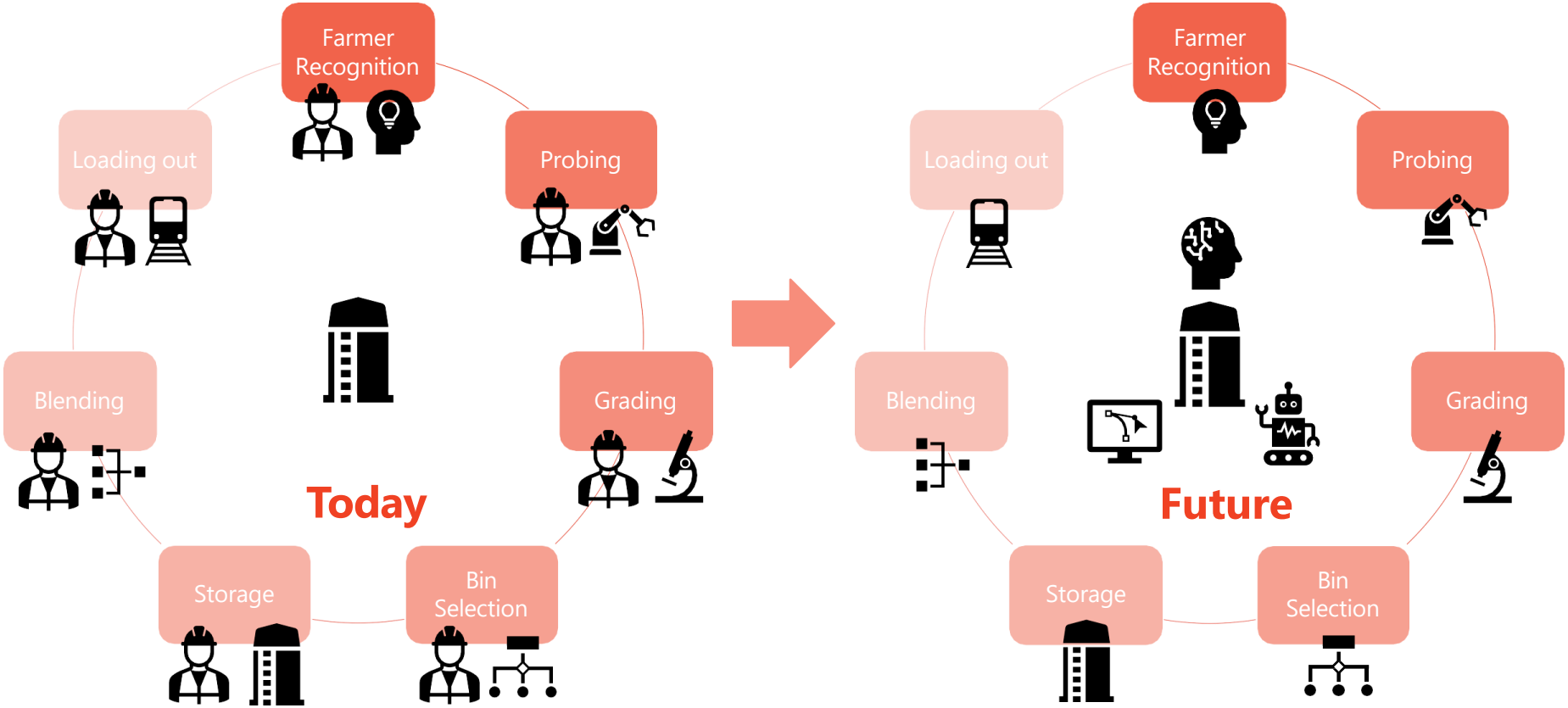
What will happen in future..

Farmer Recognition	RFID / Camera Imaging recognition
Probing	Self Probing utilizing sensor controls
Grading	Sample flows into analyzer directly, the grading results are integrated to the accounting / inventory system
Bin Selection	AI analyzes the quality trend and offers the most efficient bin segregation.
Storage	Sensors can tell accurate inventory and grain flow dynamics inside silo bins
Blending	The designed algorithm to run the best blending scenario.
Loading out	Autonomous locomotive and automatic lid opening/closing.



Using Advanced Sensor Technologes, Data Analytics and Artificial Intelligence (AI), Robotics and Autonomous Vehicles, Blockchain for Supply Chain Transparency: from the farm to the fork & Remote Monitoring and Control

Digital Transformation



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