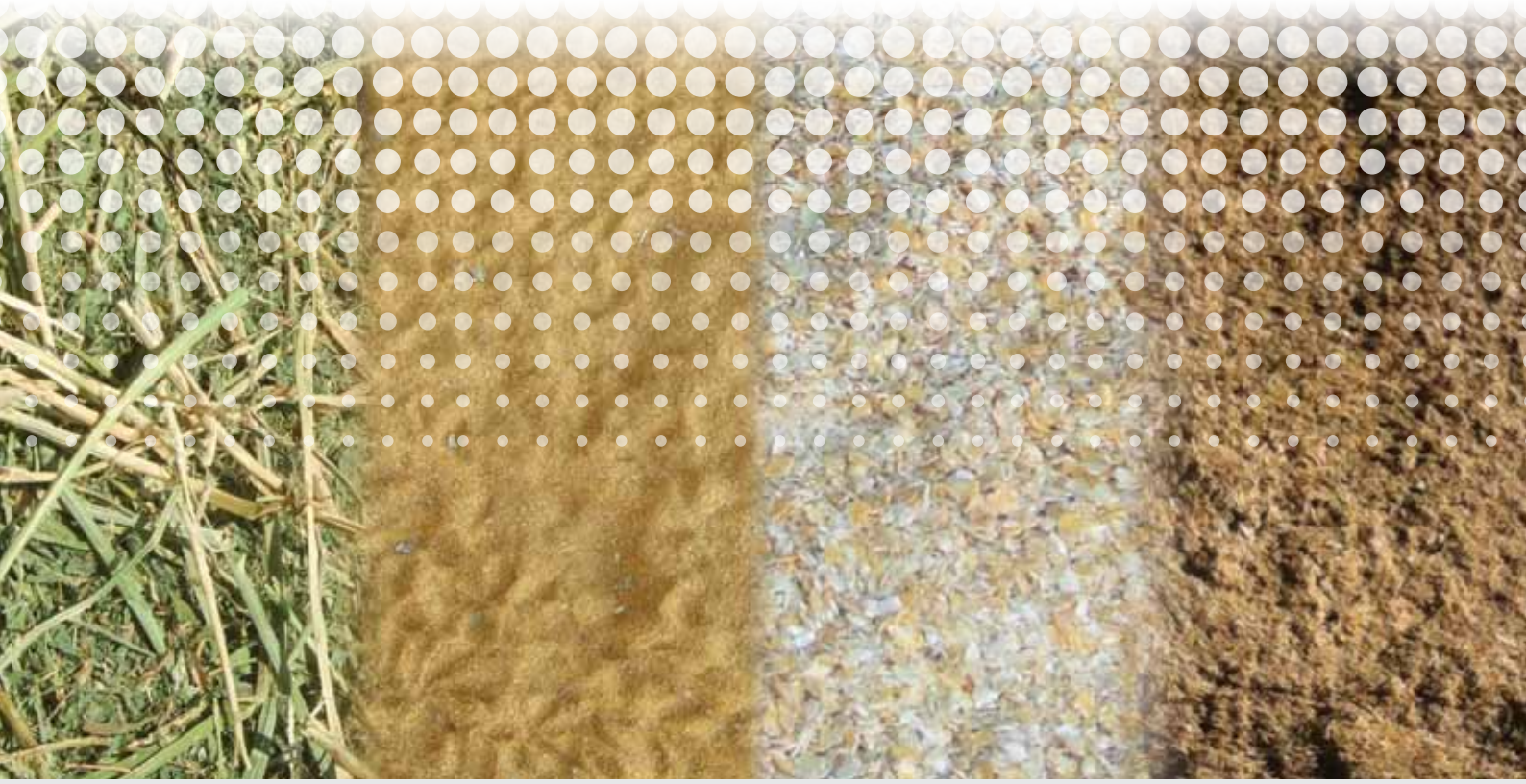
dinamica generale®
Electronic Solutions & Sensors



Harvester-Combine

Quality Forage with
Real Time Analysis

Forage Wagon

Accurate Weighing and Analysis
for a perfect traceability

AgriNIR™ Analyzer

NIR PORTABLE Analyzer for
forages, grains and fresh forages

X-NIR™ Analyzer

Hand held NIR Analyzer

Feed Mixer

High tech WEIGHING INDICATOR
and accurate LOAD CELLS

Biogas

Check the quality of your
ingredients to produce more energy

NIR EVOLUTION

Keep your analyzer always up to date!

NIR solutions

Harvester-Combine

Accurate Weighing and Analysis
with specific Software for a perfect traceability

THE PRODUCT

NIR Analyzer installed directly on the forage harvester able to analyze in real time the Humidity or Moisture (dry matter), Starch, Crude Protein, ADF, NDF, Ash and Crude Fat of the chopped material.

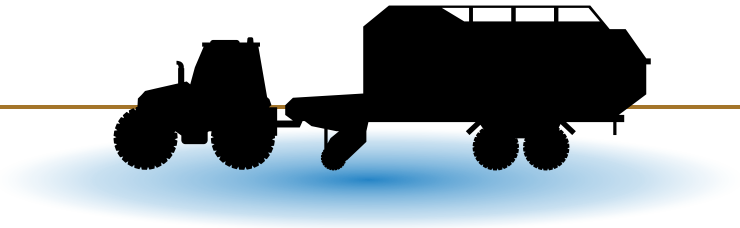
WHY SHOULD DINAMICA GENERALE BE YOUR CHOICE?

Analysis performed during the harvesting and in real time, defining the real quality of the material chopped.
Negotiating the price by quality not only by quantity means increase your profits.

THE SYSTEM

INDICATORS

Kit NIR ON BOARD
Complete Kit with Scanner and Indicator
for the accurate analysis of the harvested material



Forage Wagon

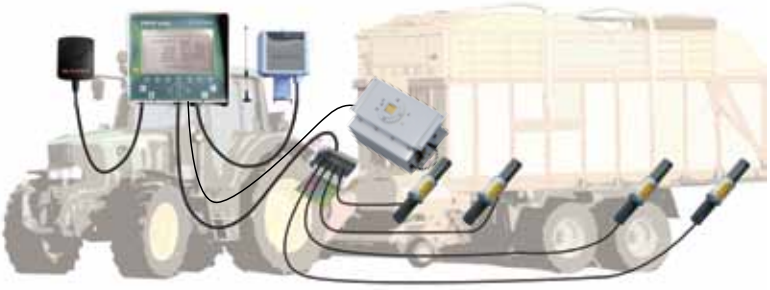
Accurate Weighing and specific Software for a perfect traceability

THE PRODUCT

A complete system for the control of the Forage Wagon during the Harvesting phase.

WHY SHOULD DINAMICA GENERALE BE YOUR CHOICE?

- A complete system for the optimal control of the forage wagon.
- Full traceability of your harvesting: from the field to the truck all data stored in an easy software.
- No more guess or time consuming operations: all your data available in real time.



THE SYSTEM

	BASIC	MEDIUM	HIGH
INDICATORS			

LOAD CELLS

ACCESSORIES for high version

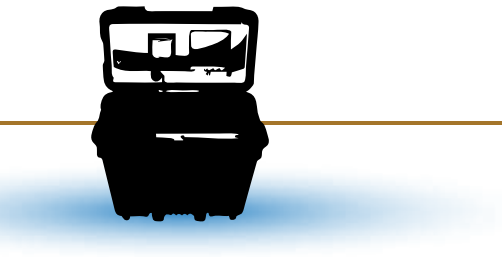
FIELD trace

Software for managing data

GPRS Modem

GPS antenna

Complete KIT with NIR scanner



IMPROVED ACCURACY

AgriNIR™

NIR PORTABLE Analyzer for forages, grains and fresh forages

THE PRODUCT

AgriNIR™ is a portable NIR analyzer for forages and grains that quantifies the percentage of Humidity or Moisture (dry matter), Starch, Crude Protein, ADF, NDF, Ash and Crude Fat of the plant material being analyzed in seconds.

WHY SHOULD AgriNIR™ BE YOUR CHOICE?

- Checking forage DM in field to determine the right time to harvest
- Control of the quality of feed inventory
- Monitor forage variability
- Check the quality of feed purchased
- Recipes adjustment based on AgriNIR™ predictions
- Monitor the consistence of TMR and delivery
- Evaluate statistic and historical data of feed composition
- Quick ROI thanks to multiple uses in field and in farm of the machine

VALIDATION

- The following universities: University of Padua (Italy), Department of Animal Science in 2007, University of Cracow (Poland), Department of Animal Nutrition in 2008.
- All reference chemical Analysis in USA are conducted by commercial forage laboratories rated A or B by annual NFTA testing (National Forage Testing Association, USA).
- Many Universities studies highlight the accuracy of the product: Purdue University, Cornell University, University of Wisconsin-Madison.

HOW TO USE IT

- Put the material in the sampling cup
- As soos as power is supplied and lamp is stabilized, sample analysis can begin
- Insert the sampling cup into the AgriNIR™
- Start the analysis, and read the result on the display; the analysis results can be printed on ticket or transfered to PC
- More replicates mean more precision

THE SYSTEM

The system components:

- sample holding cup
- NIR light source and detector
- rugged, high capacity computing device
- user Interface with keyboard, display, printer and USB port 110v AC and 12v DC
- AC power cable
- lighter adapter for field use

Optional:

- GSM/GPRS communication mobile
- Connection with SW AgriNIR™ TRACE

TECHNICAL DATA

SIZE

Material
ABS
(compact case, equipment with wheels and extebdable handle)

Dimensions
50 x 30 x 46 cm (approximately 20 x 12 x 18 inches)

Weight
19 Kg (approximately 42 pounds) ABS provides a rugged and sturdy enclosure for measuring components

ACCURACY GUARANTED WITHOUT INITIAL VERIFICATION

Moisture: 1,5%
Starch: 2,4%
Crude Protein: 2,4%
ADF: 2,4%
NDF: 2,4%
Ash: 2,4%
Crude Fat: 2,4%

Thanks to NIR EVOLUTION software, no initial verification is required.

USER INTERFACE

Keys
Soft

Display
LCD 1/4 VGA
Easy to read on-screen instructions make for easy operation.

- bright display 7" 16/9
- protective overlay
- dust cover protection for the display

Language
Programmable in 10 languages, included Chinese

OPERATING ENVIRONMENT

Working temperature
0°C / +40°C (104°F)

Power supply
110 - 220V ac (external power supply included)
9 - 32 Vdc (lighter plug or vehicle battery clips included)

NIR Families VS Nutrients

NIR FAMILIES		NUTRIENTS						
		Maisture	Starch	Crude Protein	ADF	NDF	Ash	Crude Fat
FORAGES	Corn Silage	YES	YES	YES	YES	YES	YES	YES
	Hay	YES	NO	YES	YES	YES	YES	YES
	High Maisture Corn	YES	YES	YES	YES	YES	YES	YES
	Alfalfa Hay	YES	NO	YES	YES	YES	YES	YES
	Grass Silage	YES	NO	YES	YES	YES	YES	YES
	Dairy Cows TMR	YES	YES	YES	YES	YES	YES	YES
	Soybean Flour	YES	NO	YES	NO	YES	YES	YES
GRAINS	Corn Grain	YES	YES	YES	NO	YES	YES	YES
	Wheat Grain	YES	YES	YES	NO	YES	YES	YES
GREEN FORAGES	Green Maize	YES	YES	YES	NO	YES	YES	NO
	Green Grass	YES	NO	YES	NO	YES	YES	YES

The instrument is pre-loaded with NIR calibration curves for 7 NIR Families (Crop Families) and with a total of 44 curves.
Other families or nutrients available on request.

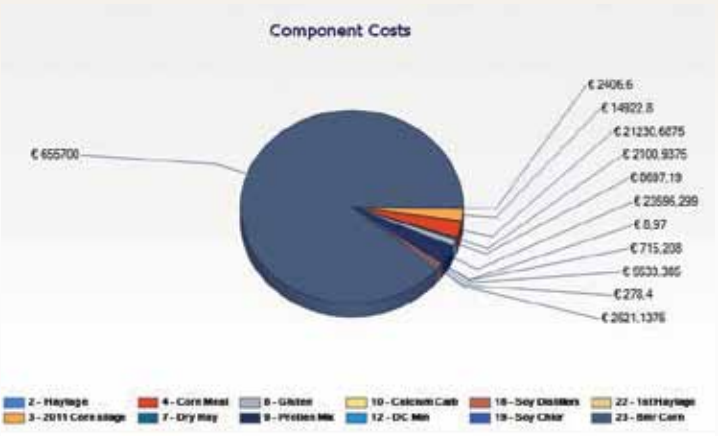
SOFTWARE

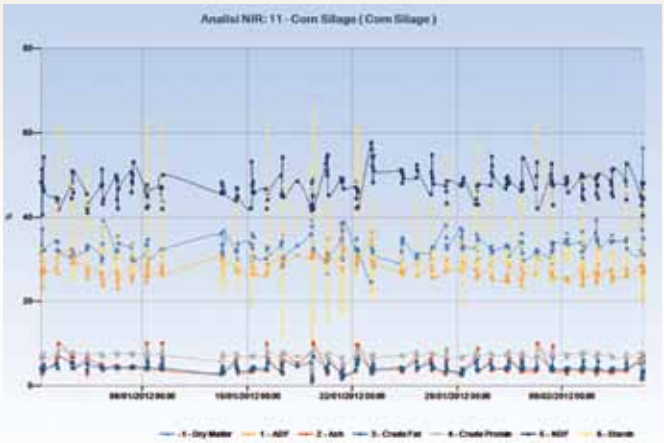
NIR TRACE is a data management software that allow to record organize and show forages and grains NIR analysis:

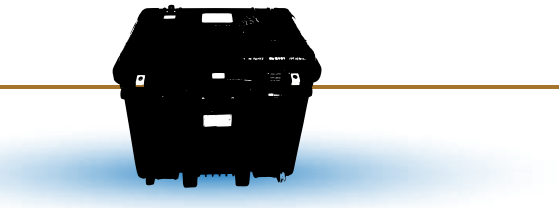
- Data transfer from AgriNIR™ software through USB
- Client data transfer from NIR TRACE to AgriNIR™ and vice versa. Possibility to see client data directly from AgriNIR™

SOFTWARE

- Historical Analysis of AgriNIR™ data
- Possibility to select parameters and make accurate statistics
- PDF and Excel download of all analysis stored in the software
- Possibility to manage many AgriNIR™ with a single software using different IDs
- Creation of graphs, possibility to see different graphs in a single screen







THE PRODUCT

WHY SHOULD NIReverse BE YOUR CHOICE?

THE PRODUCT

X-NIR™ hand held analyzer for forages and grains measures the percentage of Moisture (dry matter), Starch, Crude Protein, ADF, NDF, Ash and Crude Fat of different feeding materials in few seconds.
X-NIR™ enables real time control of your TMR.

WHY SHOULD X-NIR™ BE YOUR CHOICE?

- Real time control of animal feed rations minimizes feed refusal and reduces daily feed cost (less waste = more profits)
- Fully customisable product (more than 50 families available by area)
- Lower management costs due to:
  1. Quick and easy setup
  2. Real time results
  3. No need of consumables to perform analysis
  4. Reliability
- Intuitive. Easy to use
- Lower operating and maintenance costs thanks to few long life components (i.e. rechargeable battery)
- Touch screen interface allows access to all functions with just a few taps

NEW Handheld NIR Analyser.
Feed Analysis Anywhere, Anytime!

QUICK

Never wait to get results. Analysis without sample preparation!

EASY TO USE

From nutritionists to farm staff, everyone can use it!

RELIABLE

Analyse all types of materials from forages to grains to pellets.

AFFORDABLE

Unbeatable price/performance ratio!

THE SYSTEM

- X-NIR™
- Battery charger
- Power supply cable
- Battery (x 2)
- Usb key
- Touch pen
- Spare parts (lamp, glass e gasket set)
- Connection with NIR Trace software

TECHNICAL DATA

CASE SIZE

Material
Polypropylene (compact case)

Dimensions
50.2 x 40 x 18.8 cm

Weight
7,5 kg

USER INTERFACE

Display
Touchscreen 4,3", 480 x 272 resolution

Language
10 languages available

Thanks to NIR Evolution software, no initial verification is required.

NIR Families VS Nutrients

NIR FAMILIES			NUTRIENTS						
			Moisture	Starch	Crude Protein	ADF	NDF	Ash	Crude Fat
	FORAGES	Corn Silage	YES	YES	YES	YES	YES	YES	YES
		Hay	YES	NO	YES	YES	YES	YES	YES
		High Moisture Corn	YES	YES	YES	YES	YES	YES	YES
		Alfalfa Hay	YES	NO	YES	YES	YES	YES	YES
		Grass Silage	YES	NO	YES	YES	YES	YES	YES
		Dairy Cows TMR	YES	YES	YES	YES	YES	YES	YES
		Soybean Flour	YES	NO	YES	NO	YES	YES	YES

3 NIR Families as standard on each instrument to choose among 7 NIR Families (see table above). Pick out additional families within a basket of more than 50 families divided by geographic area.

THE SYSTEM

dg precisionFEEDING™ is an innovative system that allows the farmer to distribute a balanced ration to the animals, as determined by the nutritionist, thanks to the analysis of the ingredients used and optimal adjustment of their weight.
The heart of the system is an NIR technology analyser, that is installed directly on the self-propelled mixer or on the frontloader, that predicts the value of the key nutrients* and dry substance contained in each ingredient during the loading phase.
The system recalculates in real time and automatically the weight to be loaded to maintain the nutrient values proposed by the nutritionist.

*Starch, protein, ADF, NDF, ash and total fat are those nutrients.

ADVANTAGES

- The provision day after day of a substantial and balanced ration leads to:
  - An increase in the amount of milk produced
  - An improvement in the quality of the milk
  - An increase in the level of fat and protein in the milk
- Daily management of the ration contributes to:
  - Minimising the amount of waste
  - Correct feeding of the cows while maintaining a balanced and constant nutritional content in the ration
- Providing of the nutritionist with remote access to the management software during rearing allows constant monitoring of the processes of feeding and the immediate implementation of corrective actions.
- A rapid return on investment both measurably and quantifiably, for every company.

PARAMETERS AND FAMILIES ANALYSED

		NIR CHEMICAL PARAMETERS						
		Humidity	Starch	Protein Raw ingredient	Fiber ADF	Fiber NDF	Ash	Ethereal Extract
FAMILIES FODDER	Corn silage	YES	YES	YES	YES	YES	YES	YES
	Hay	YES	NO	YES	YES	YES	YES	YES
	Corn mash	YES	YES	YES	YES	YES	YES	YES
	Alfalfa Hay	YES	NO	YES	YES	YES	YES	YES
	Grass silage	YES	NO	YES	YES	YES	YES	YES
	Unifeed	YES	YES	YES	YES	YES	YES	YES
	Soya-bean meal	YES	NO	YES	NO	YES	YES	YES

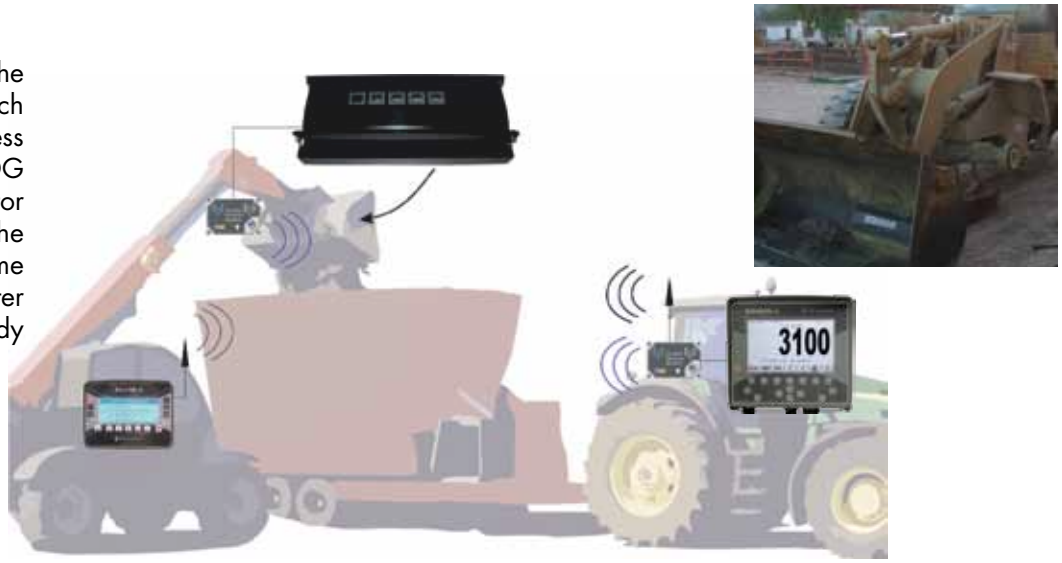
THE APPLICATIONS

SELF-PROPELLED CART

The scanner is mounted on the bucket of the front loader and performs NIR analysis seamlessly during loading of the ingredient, instantly transferring the analysis values to the DG 8000 IC indicator. The indicator recalculates in real time the objective weight of each ingredient according to the weighted average of the dry sustance measured in the different analyses.

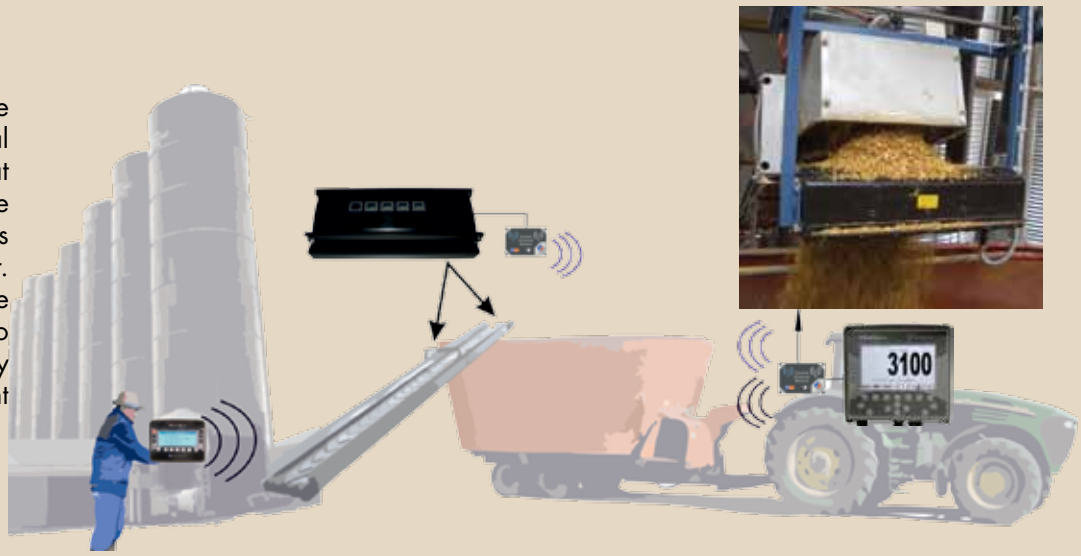
FRONT LOADER

The scanner is installed inside the front loader bucket and for each bucket loaded transfers wireless the analysis values to the DG 8000 IC indicator. The indicator automatically recalculates the objective weight in real time according to the dry matter measured and to what has already been loaded onto the mixer.



AUTOMATIC FEEDING SYSTEMS

The scanner is installed on the belt that carries the individual components into the mixer carat and continuously analyses the material, transferring the analysis values to the DG 8000 IC indicator. The indicator recalculates the weight in real time according to the weighted average of the dry substance measured in the different analyses.



DG 8000 IC

Universal and programmable weighing indicator, ideal to manage the entire farm work process.

CHARACTERISTICS

- Theh possibility of also connecting all the accessories wireless
- Automatic start of the mixing time set
- Management of the Recipes in Kg/lbs or percentage (48 Recipes with a maximum of 24 Components each)
- Management of groups with Recipe association and setting of the daily rations (48 groups of animals each having a maximum of 16 rations per day)
- Fully automated management of the loading and distribution of the ration for rearing with automatic feeding systems
- The management of waste for every group of animals
- Control of working time and costs
- Management of users and operators
- Wireless communication with feeding software for programming of the indicator and the acquisition of data

SOFTWARE

DAILYTMRMANAGER DTM™ IC

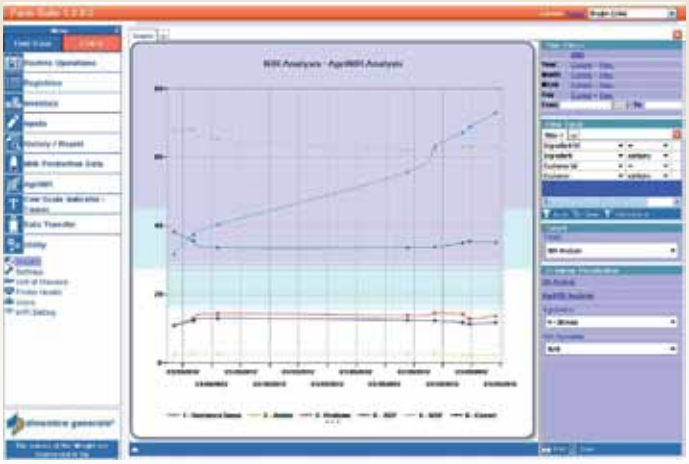
DTM IC is a business process management software for the feeding of livestock which is able to control each task.

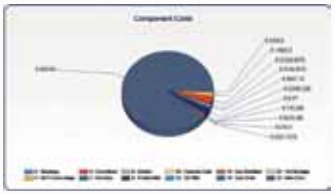
Key features:

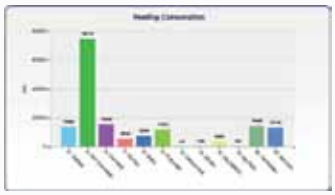
- Management of inventory and procurement: inventory history and consumption forecasts, optimal planning of purchases
- Accurate control of ration cost, dry matter ingested and refused
- Detailed reports and graphs for statistical control of the feeding process
- Multiple selection of components to rapidly write and modify the recipes
- Detailed analysis of all the parameters for each component of the recipe
- Calculation of feeding efficiency ratio (quantity of milk per head per day/quantity of dry substance ingested per head per day)

Wi Fi™

CLOUD DTM™







THE FILIGRANA PROJECT

Dinamica Generale has participated in the FILIGRANA national research project together with several research institutes and Italian universities. Among the objectives of the project:

- improvement of the qualitative aspects of milk intended for the production of PDO Grana Padano cheese;
- the use of innovative technologies in order to maintain the ration constant , in line with the provisions of the nutritionist.

In the course of the experiment, the 8 breeding farms in northern Italy, used the dg precisionFEEDING™ system for over 6 months. The companies were divided into groups in order to ensure, for each company, the activation and exclusion of the equipment. During the project the following results were measured:

- an increase in the efficiency of ingestion measured with an improved average gross operating margin of **€ 3,8cent/Kg** milk;
- a reduction in the risk of imbalances in the rations related to rainy events;
- an improvement of health conditions resulting from analysis of the blood parameters and from the index of mastitis in the milk.

Farmers' words

"[…] the benefits gained over the course of these months thanks to the use of the dg precision FEEDING™ system [impact on different aspects of herd management]:

- constancy in ingestion of the herd;
- constancy of the food refused in the trough;
- quantity/quality of the milk produced;
- general state of health of the herd. "

Farm Luppi Alberto and Carlo
Bagnolo San Vito – Mantova

FILIGRANA PROJECT DATA

Ration Cost		
Herd	200	
	Without dg precisionFEEDING™	With dg precisionFEEDING™
Cost Ration/day	€ 7.04	€ 6.96
Daily Ration Cost	€ 1,408	€ 1,392
Monthly Ration Cost	€ 42,803	€ 42,316.8
Monthly Savings	€ 487	

Milk Sales Revenues		
Milk Price (€/kg)	€ 0.44	
	Without dg precisionFEEDING™	With dg precisionFEEDING™
Average daily milk production per head*	29.96 Kg	32.5 Kg
Daily milk production per herd	5992 Kg	6500 Kg
Daily revenue	€ 2,636.48	€ 2,860
Increase Revenue/Day	€ 223.52	
Increase Revenue/Month	€ 6,795	

Total Monthly Margin Increase	**€ 7,282**

*Average of cows in production and dry cows

Biogas Applications

Check the quality of your ingredients
to produce more energy

THE PRODUCT

Weighing unit or complete weighing system for Biogas plant in order to control the material loaded in the digester. The system integrated with the NIR sensor can recalculate the weight to have, in real time, the exact value of the organic substance.

AUTOMATIC WEIGHT ADJUSTMENT

Using Dinamica Generale complete system, you get an optimal view of the biomass state before it is thrown into the digester and this means to obtain the maximum efficiency of the biogas plant.

THE SYSTEM

NIR Analyzer installed on board
to analyze the material during the laoding phase

SELF-PROPELLED SOLUTION

FRONT LOADER SOLUTION

NIR Analyzer installed on the digester entrance
to analyze the real value of the biomass

ON-LINE SOLUTION

Every installation is customized in
function of the BioGas plant!

Keep your analyzer always up to date!

NIR EVOLUTION SOFTWARE

Using this new service tool, you will have your machine always updated with the last software and firmware versions.

This software, cloud-based, is able to:

- Determine if the machine works with the most updated calibration curves;
- Update the calibration curves of each machine whenever necessary
- Update the firmware of the machine

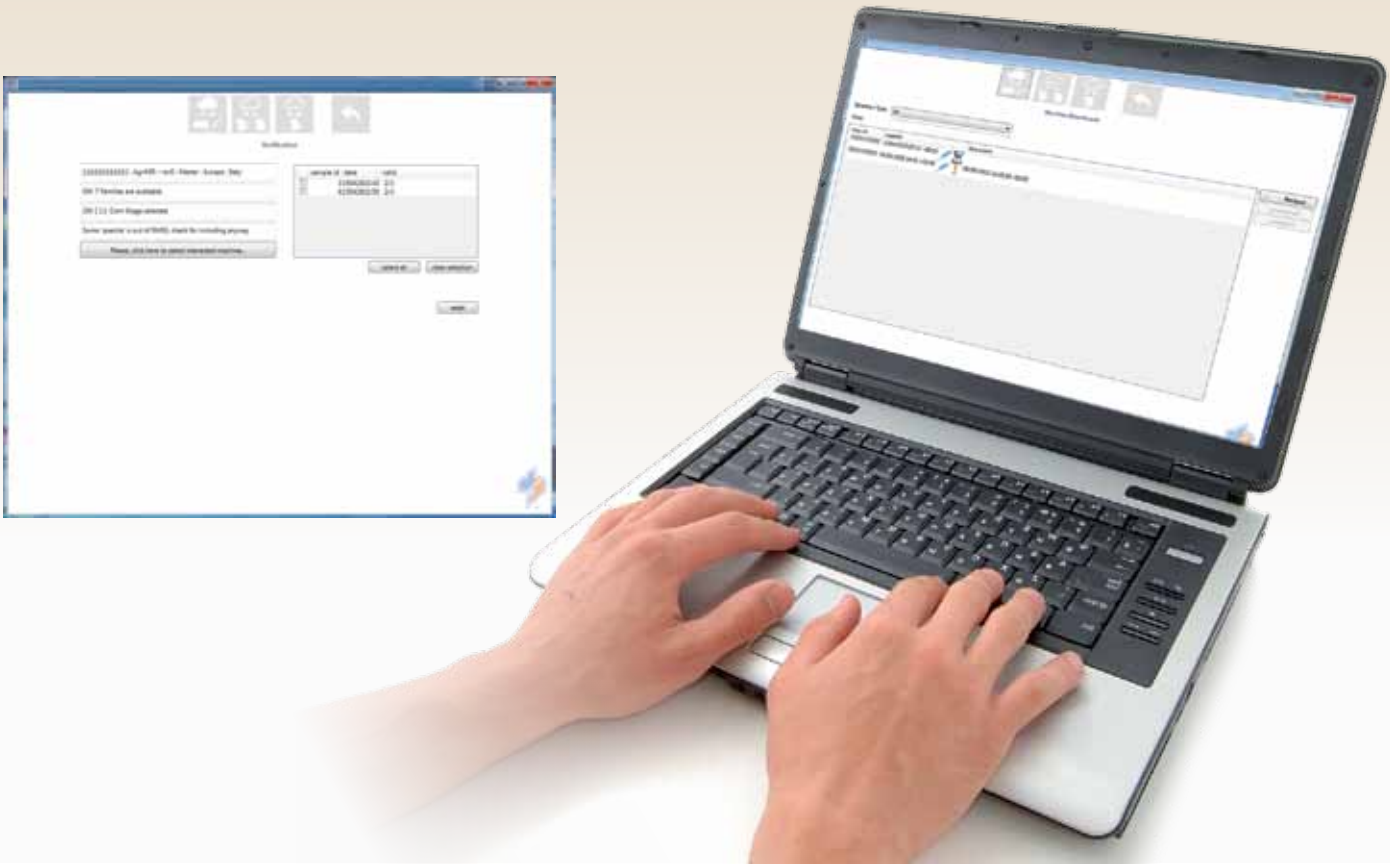
This service is included in the service contract (free for the first year).

NIR EVOLUTION

ACCURACY STEPS

Each user has the access to his database in order to see the status of his machine.

Thanks to the introduction of this new innovative service, Dinamica Generale is able to create a process that gives you the accuracy you need.



QUALITY AND CERTIFICATIONS*

ISO 9001:2008 ISO 14001:2004 ISO 13485:2012

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*obtained from Dinamica Generale S.p.A.