dinamica generale®
Electronic Solutions & Sensors

Harvester-Combine
Quality Forage with
Real Time Analysis

Forage Wagon
Accurate Weighing and Analysis
for a perfect traceability

X-NIR™ Analyzer
Daily feed analysis for everyone

AgriNIR™ Analyzer
Your own lab on-the-go

NIR *trace*

NIR trace
Keep under control changes in
forage quality over time

NIR EVOLUTION

NIR evolution
Keep your analyzer
always up to date!

Feed Mixer
Total efficiency
for your farm

Biogas
Check the quality of your
ingredients to produce more energy

NIR solutions

THE PRODUCT

NIR Analyzer installed directly on the forage harvester analyzes in real time 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
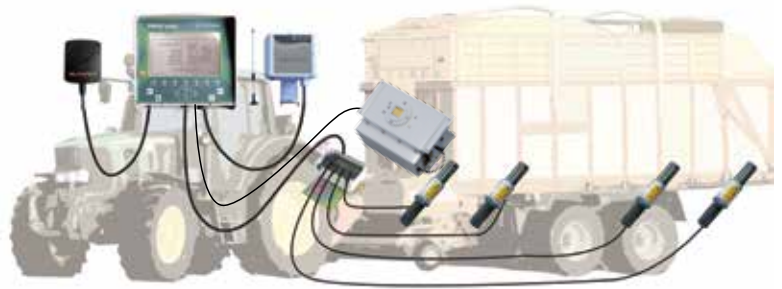
Forage Wagon

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	STAD Connect	11739	
LOAD CELLS			

ACCESSORIES for high version

FIELD *trace*
Software for managing data

GPRS Modem

GPS antenna

Complete KIT with NIR scanner

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 (x2)
- Usb key
- Check cell

Service contract (Included with the purchase of the machine for the first year) with:

- Spare parts
- NIR Trace software
- NIR Evolution software
- 24/7 support service
- Multi-lingual helpdesk

TECHNICAL DATA

SIZE

Material
Polypropylene (compact case)

Dimensions
50.2 x 40 x 18.8 cm

Weight
7,5 kg

NIR Evolution software enables performing initial verification for high-accuracy analysis

ACCURACY
Moisture: 2%
Starch: 3%
Crude Protein: 3%
ADF: 3%
NDF: 3%
Ash: 3%
Crude Fat: 3%

USER INTERFACE

Display
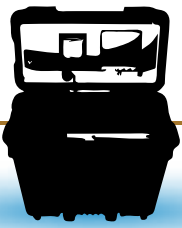Touchscreen 4,3", 480 x 272 resolution

Language
10 languages available

NIR Families VS Nutrients

			Moisture	Starch	Crude Protein	ADF	NDF	Ash	Crude Fat
					NUTRIENTS				
NIR FAMILIES	**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 within a basket of more than 50 families divided by geographic area.

Your own lab on-the-go

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
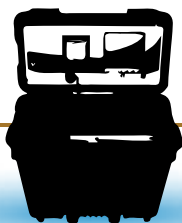- Quick ROI thanks to multiple uses in field and in farm of the machine

VALIDATION

- 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 the US 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 device: Purdue University, Cornell University, University of Wisconsin-Madison.

HOW TO USE IT

- Put the material in the sampling box
- As soon as power is supplied and lamp is stabilized, sample analysis can begin
- Insert the sampling box into the AgriNIR™
- Start the analysis, and read the result on the display; the analysis results can be printed on a ticket or transferred to a PC

THE SYSTEM

The system components:

- AgriNIR™
- Check cell
- AC power supply
- Car lighter adapter for field use
- Service contract (Included with the purchase of the machine for the first year) with:
  - Spare parts
  - NIR Trace software
  - NIR Evolution software
  - 24/7 support service
  - Multi-lingual helpdesk
- Optional
  - GSM/GPRS mobile communication

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

ACCURACY

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

NIR Evolution software enables performing initial verification for high-accuracy analysis.

USER INTERFACE

Keyboard with 13 Soft Keys

Display
LCD 1/4 VGA
Easy to read on-screen instructions 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

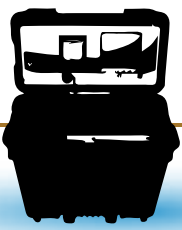**Working temperature**
0°C / +40°C (104°F)

Power supply
100 - 240V ac (external power supply included)
12 - 18 Vdc 60 W max (car lighter plug included)

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
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 forages and with a total of 44 curves.
Other families or nutrients available on request.

TESTIMONIALS

1

Dr. Randy Shaver, Professor of Dairy Science
University of Wisconsin

"If I was a feed consultant or nutritionist I'd be pretty excited about the opportunity to have one of these," says Dr. Randy Shaver, Professor of Dairy Science, University of Wisconsin. "The reason we were interested in on-farm NIR was measuring the dry matter content of silages coming out of the bunker….we have been trying to do a better job of keeping all our rations consistent on a day-to-day basis.
"Dry matter content changes as you go through the bunker, and when you have rainfalls, that can really affect dry matter content. And that is how most people will use this technology, to do more frequent measurement of dry matter content on a daily basis," he adds.

2

Mike Jerred, Global Dairy Leader
Cargill

"The AgriNIR helps us do a better job teaching our feeders bunker face management," says Mike Jerred, Global Dairy Leader at Cargill. "Likewise, there may be cases where forages are coming to one farm from various locations. With the AgriNIR, we can sort the hay by dry matter and digestibility as it comes onto the farm into different piles. Our consultants and feeders now take more time for face management and pre-mixing.
"We aim to optimize nutrient flow to our cows at optimum cost. Anything that can help us get a better handle on nutrient variation on the farm is going to help us apply that system better," he concludes.
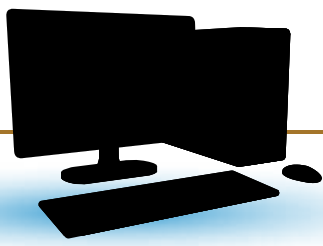
3

Dr. Larry Chase, Professor and Extension Specialist in Dairy Nutrition
Cornell University

"We have used AgriNIR for corn silage, grass silage and total nutrition samples. The AgriNIR unit does a really, really good job in analyzing dry matter" says Dr. Larry Chase, Professor and Extension Specialist in Dairy Nutrition, Cornell University.
"When you are looking at fiber and protein for grass silages and TMRs, it works very well for those. We are working on tweaking it a bit yet for corn silage because the particle sizes have so much variability. It does pretty much what they say it does."
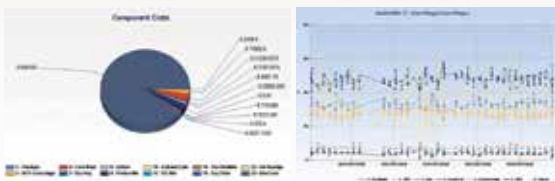
NIR TRACE

NIR Trace data management software allows recording, organizing and presenting NIR analysis

- Data transfer from NIR Trace software through USB
- Client data transfer from NIR Trace to every NIR device by Dinamica Generale and vice versa. Possibility to see client data directly directly from the NIR device

- Historical NIR Analysis data;
- Possibility to select parameters and make accurate statistics
- PDF and Excel reports of all analysis
- Possibility to manage different NIR devices with a single software using different IDs;
- Creation of graphs, multiple graphs view on one screen
- All NIR analysis are imported into the NIR Trace then into DTM™ IC to easily recalculate the ration using real values.

NIR Evolution

The NIR Evolution software is a cloud-based tool for initial verification of your NIR device.

NIR Evolution software keeps your analyzer always up-to-date thanks to continuous calibration curves and firmware update. To perform high-accuracy analysis NIR Evolution is the essential tool.

NIR Evolution is included within the Service Contract of your new NIR device for the first year.

ACCURACY STEPS

NIR Evolution enables each and every user to access its own database to control the status of the machine, download firmware and calibration curve updates.

The introduction of such innovative Cloud service enabled Dinamica Generale to provide smooth service to customers and always ensure high performance of all NIR devices on the market.

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 the NIR technology analyser, installed on the self-propelled mixer or in the front loader's bucket. During loading phase of ingredients, the NIR sensor measures in real time the value of moisture and key nutrients of each ingredient.

The system automatically recalculates the weight of ingredients thus ensuring the ration delivered matches the ration calculated by the nutritionist.

ADVANTAGES

- Providing always consistent rations means:
  - Increasing the amount of milk produced
  - Improving milk quality
  - Increasing the level of fat and protein in the milk
- Daily ration management contributes to:
  - Minimising the amount of waste
  - Maintaining a balanced and constant nutritional content for each ration
- Providing the nutritionist with remote access to the DTM™ Management Software enables constant monitoring of feeding process and instantaneous implementation of corrective actions.
- Quick return on investments.

PARAMETERS AND FAMILIES ANALYSED

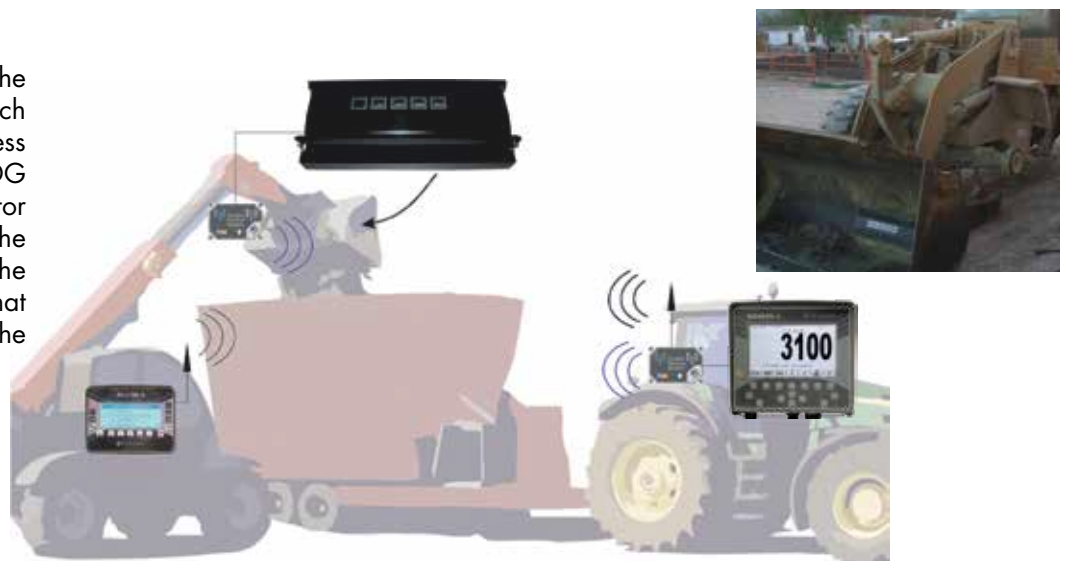|		NUTRIENTS						
		Moisture	Crude	Crude Protein	ADF	NDF	Ash	Crude Fat
FORAGES	Corn silage	YES	Protein	YES	YES	YES	YES	YES
	Hay	YES	NO	YES	YES	YES	YES	YES
	Corn mash	YES	YES	YES	YES	YES	YES	YES
	Alfalfa Hay	YES	NO	YES	YES	YES	YES	YES
	Grass silage	YES	NO	YES	YES	YES	YES	YES
	Unifeed	YES	YES	YES	YES	YES	YES	YES
	Soya-bean meal	YES	NO	YES	NO	YES	YES	YES

THE APPLICATIONS

SELF-PROPELLED MIXER

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 weight of each ingredient according to the weighted average of the dry matter measured during the analysis.
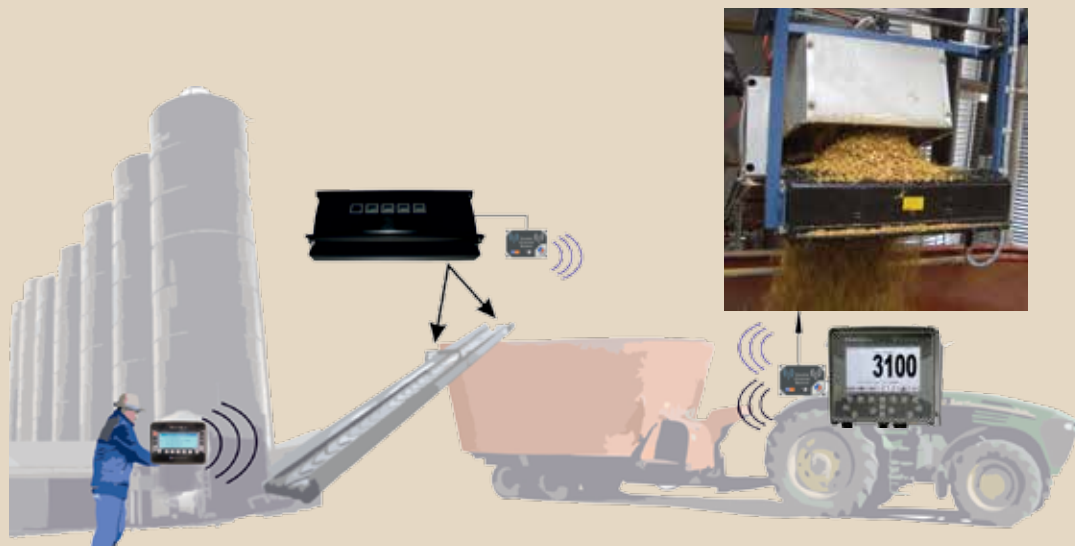

FRONT LOADER

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 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 components into the mixer 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 dry matter measured during the analysis.

DG 8000 IC

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

CHARACTERISTICS

- Wireless connection of all accessories

- Automatic start of mixing time set

- Recipe management both in Kg/lbs and percentage (48 Recipes with a maximum of 24 Components each)

- Management of group of animals with recipe association and setting of daily rations (48 groups of animals each with a maximum of 16 rations per day)

- Fully automated management of loading and distribution phase of the ration for rearing with automatic feeding systems

- Management of feed refusal for each group of animals

- Control of working time and costs

- Management of users and operators

- Two-way wireless communication with feeding software for programming the indicator and data acquisition
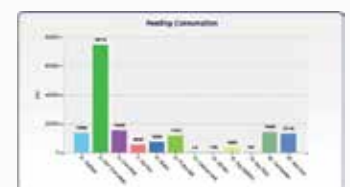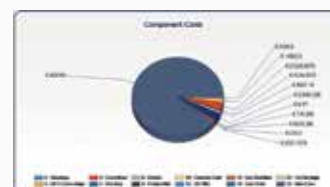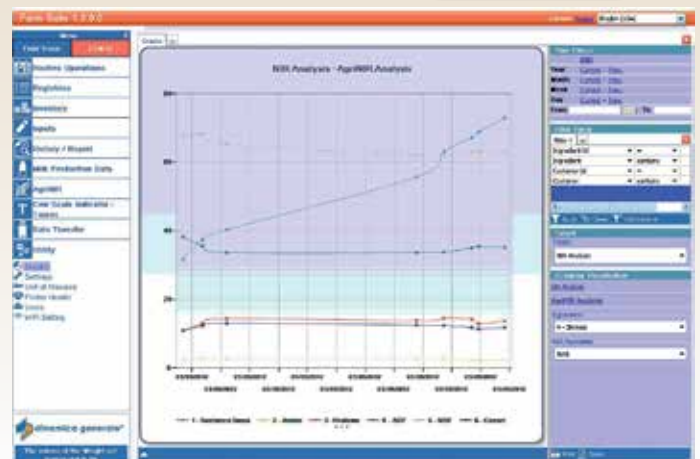
SOFTWARE

DTM IC is a feeding management software to easily monitor the day-to-day farm process.

Key features:

- Stock management and procurement: historical data, planning and consumption forecasts

- Accurate control of ration cost, dry matter ingested and refused

- Detailed reports and graphs to monitor feeding process

- Multiple component selection to quickly create and modify recipes

- Detailed analysis of all parameters for each component of every recipe

- Calculation of feeding efficiency ratio (quantity of milk per head per day/quantity of dry matter ingested per head per day)

THE FILIGRANA PROJECT

Dinamica Generale has participated to 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 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 feed refusal in the trough;*
- *quantity/quality of 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

THE PRODUCT

Weighing unit or complete weighing system for Biogas plants to control the material loaded into the digester. The system integrated with the NIR sensor recalculates in real time the weight and the exact value of organic matter.

AUTOMATIC WEIGHT ADJUSTMENT

Thanks to Dinamica Generale complete systems for biogas application, every farm manager can measure the biomass before pouring it into the digester for a maximum efficiency of the biogas plant.

THE SYSTEM

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

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

SELF-PROPELLED SOLUTION

FRONT LOADER SOLUTION

ON-LINE SOLUTION

The system can be tailored following
the biogas plant needs

QUALITY
AND CERTIFICATIONS*

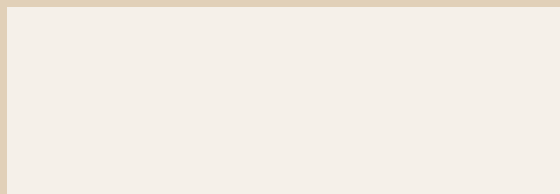|		
CSQ IQNet CERTIFIED MANAGEMENT SYSTEM	CSQ eco	CSQ MED
ISO 9001	ISO 14001	ISO 13485

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*obtained from Dinamica Generale S.p.A.