



**WE BUILD
THE FUTURE
TOGETHER**



OUR HISTORY

is the story of dairy automation

I **NG. FERRETTI** was founded by Ing. Renato Ferretti and his father, Sincero, in 1973 in Quattro Castella, in the province of Reggio Emilia, where he still works today. After graduating in Mechanical Engineering from the Milan Polytechnic in 1967, and after four years still working in Milan at a major chemical company, Renato Ferretti decided to return to his birthplace, Quattro Castella, to address the question of a local entrepreneur, a producer of Parmigiano Reggiano®:

“Why don’t we make a machine that automates the work in our warehouses?”

In those days, the work of cleaning the forms of cheese, in Quattro Castella and throughout the Parmigiano Reggiano® region, was carried out manually, requiring a great deal of effort and impacting on the health of the workers. This was backbreaking work, consisting of eight-hour shifts during which the heavy forms of cheese were each loaded and unloaded dozens of times by hand, inside the maturing warehouses, over a period of at least 12 months, once a week, or at the most every twenty days.

Thus, with the help of his father Sincero, an inventor and natural talent for mechanics, the **P.R.A. ING. FERRETTI** was created in October 1972, **the first automatic machine for cleaning and turning forms of cheese**. A machine that started out well, has improved over the years, and whose structure has remained fundamentally unchanged, a sign of a precise and effective basic intuition regarding the customer’s operational needs.

In 1985 the **C.S.F. ING. FERRETTI**, **for loading and unloading forms followed by B.E. ING. FERRETTI**, **Elevator Bench specific lift tables for the cheese industry**.

The construction of ladders was also carried out, with a view to the complete provision of an integrated logistics system.

In 2012, following the severe earthquake that hit Emilia and Lombardy and therefore also the Parmigiano Reggiano® and Grana Padano® industry very important in the area, the **ING. FERRETTI** decided to focus its activity on automation, as it was not possible to quickly rebuild the numerous ladders destroyed by the earthquake in its customers’ warehouses.

This led to the first operational collaboration with **ROSSS** the Tuscan company owned by the Bettini family, which specialises in industrial and commercial warehouses: a successful collaboration but also a meeting between people who share the same values.

LOOKING TO THE FUTURE

the commitment of the Bettini family in the Ing. Ferretti

The future of Tradition is built together, joining forces between those who have the same passion in building quality tools for those who work for Tradition and standing by the customer at all times.

Today, the history of **ING. FERRETTI** is thus enriched by the contribution of the **BETTINI FAMILY** who, with respect and admiration, joins forces with a company respected in its community and a leader in its field for over 40 years.

FOCUS ON EXCELLENCE

the vision of ING. Ferretti



Excellence is achieved by continuing to develop **specific solutions** for a specific customer market

AUTOMATION THROUGH TRADITION

the mission of Ing. Ferretti



To produce and maintain machines and automatic systems that are easy to use, reliable, robust and safe, capable of **facilitating human work** within dairies to raise the quality of the final product while respecting the dairy tradition.

THE HEADQUARTERS of ING. FERRETTI

via Silvio Pellico, 5 - Quattro Castella (RE) Italia



When **TECHNOLOGY** **SIMPLIFIES WORK** and **INCREASES PRODUCTIVITY** in the **DAIRY INDUSTRY**

*The technologies of **Industry 4.0** can save up to 64 thousand euro in costs every year for a dairy*

(data collected by the Smart Agrifood Observatory of the Politecnico di Milano and the University of Brescia).



I **NG FERRETTI** offers the opportunity to join the **Industry Plan 4.0** even from traditional machinery and scale and is a reference company for building **Warehouses Industry 4.0** fully automated warehouses.

It is the perfect combination of tradition and innovation, of know-how handed down from generation to generation and the potential offered by technological progress.

The **Present** and **future** of the dairy industry is through automation and digitisation, but what remains of paramount importance is that behind it all are the people: entrepreneurs and workers.

Only those who are familiar with the reality of dairy factories - the specific processes of transformation, processing and maturing of products - can offer technological solutions to simplify work management and improve the quality of the end result, supporting the productivity and competitiveness of the company.

The history of **ING. FERRETTI** is the story of dairy automation, an all-Italian story that began in an area that symbolises excellence in the milk production and processing sector: the company was founded in 1973 in Quattro Castella, in the province of Reggio Emilia, where it still operates today.

WMS ING. FERRETTI. DAIRY WAREHOUSE MANAGEMENT has never been so **EASY, SMART AND INTEGRATED**



Reliability, functionality and simplicity of use have always been the key features the success of each realisation of **ING. FERRETTI** and, the **software** designed to **manage** and **coordinate** all operations within the cheese maturing warehouse, is no exception: thanks to its essential and intuitive interface it allows the facilitation of management and coordination **easily** and **quickly** of all the necessary operations.

The program provides an accurate mapping of the warehouse updated in real time: with just a few clicks it is possible to know in detail the size and allocation of the various batches down to the **exact position of each form**. Each product is in fact coded and has its own identity card: **properties, maturing phase, classification** and **inspection** (defined by the consortium, the owner and the possible buyer), as well as any other useful information. Once the maturing formulas have been established, they can be associated with each individual batch of cheese entering the warehouse. **The software is designed to communicate effectively with the integrated system of machinery and equipment** thus each form is automatically - and on schedule - subjected to the required treatments (brushing, turning, inspection, cleaning the wooden board, etc.) according to the recipe assigned to it.

With the **App** developed by **ING. FERRETTI** warehouse management is always under control and, above all, at your fingertips because it is accessible not only from a **PC** but also from a **tablet** and from **smartphones**.



WMS (Warehouse Management System) "CHEESE"

SPECIALLY FOR THE SECTOR

WMS "Cheese" ING. FERRETTI was created to provide customers with a management software specific to their needs: dealing with all aspects of cheese maturing, machinery, warehousing.

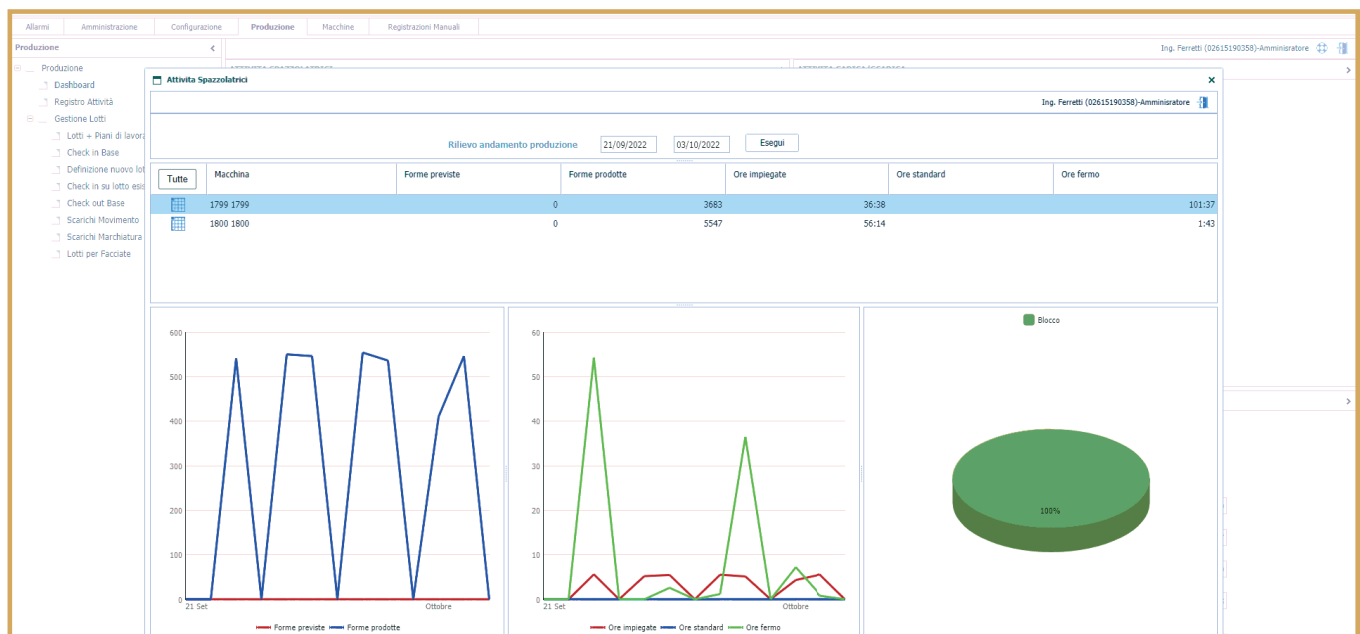
"Cheese" is available in two versions "basic" or "advanced" depending on the customer's needs: with the "basic" system, it is possible to trace a batch of cheeses within the company's own warehouse to the "front", while with the "advanced" system it is possible to trace each individual cheese and its specific location.

SCHEDULE OF PRODUCTION

Via the **Management System** it is possible to plan, organise and confirm all operations to be carried out within the warehouse so that work "missions" can be sent directly to the individual machines. The operator is able not only to keep track of each machine but also to keep track of the operations carried out on each batch of forms.

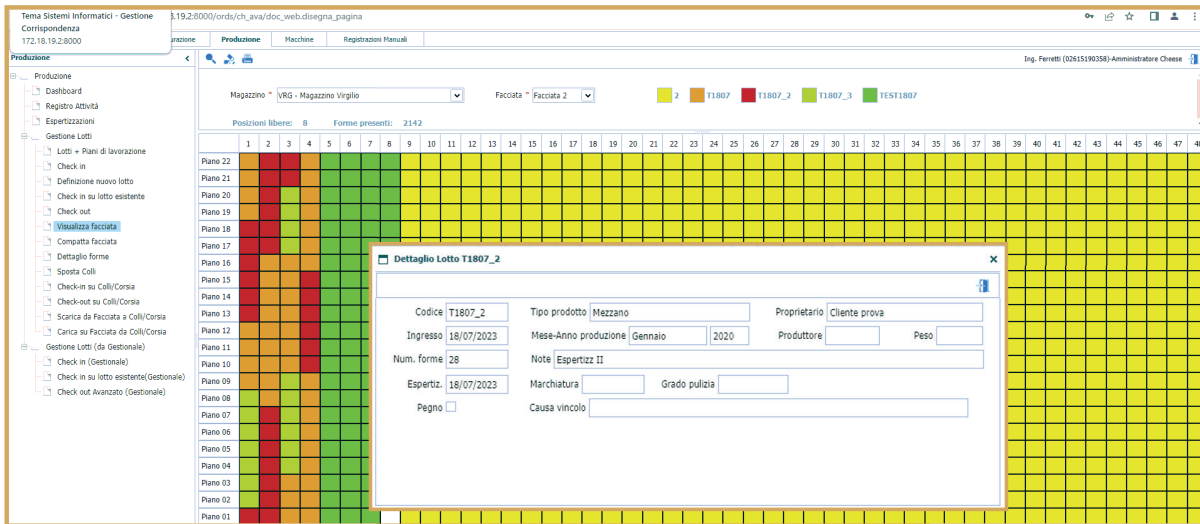
DETAILED REPORT

"Cheese" keeps track of every operation performed by the machines connected to the system and generates highly detailed reports that allow managers to analyse objective data on the utilisation, performance and downtime of each individual machine.



"INSPECTION" MANAGEMENT

"Cheese" is able to handle consortia beating, as well as "commercial" beating, identifying up to 9 product categories fully customisable to each customer's needs. In the "basic" system, the number of cheeses for each batch can be entered into the system for each product category, while in the "advanced" system, using the Elevator Bench (B.E.), the quality can be assigned to each individual cheese in real time. This will allow the unloading machines to unload only certain "product qualities" from the rack, while the P.R.A. will perform specific and differentiated operations for each "product quality"



SAFE AND EFFECTIVE

The "Cheese" Management System offers stability, security and effectiveness since it is based on the "Oracle" database (the absolute reference and world leader).

REMOTE ASSISTANCE

Through its installed computer systems, ING. FERRETTI is able to offer remote support on both software and hardware. In fact it is possible to perform remote assistance operations by connecting to PCs, PLCs, HMIs and other equipment of each individual machine guiding the operators to a rapid resolution of the problem. In addition, the remote assistance service offers the possibility to update software directly and remotely, without affecting the work of the warehouse operators.



OUR RANGE

P.R.A.

Automatic
Stacking
Machine



P.R.A. 1 GRIPPER (page 10)



P.R.A. 2 GRIPPERS (page 12)

C.S.F.

Loading-
Unloading
forms of cheese
automatically



C.S.F. TRADITIONAL (page 14)



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C.S.R.

Loading-
Unloading
Machine



C.S.R. (page 18)

C.A.

Trolley
Equipment



C.A. (page 20)

PAL/ DEPAL

Automatic
Depalletiser-
Palletiser



PAL/DEPAL (page 22)

OUR RANGE

B.E.
Elevator
Bench



B.E. 6 - 11 QUINTALS (page 24)

B.S.
Ladder
Bench



B.S. (page 26)

F.A.
Hot Air
Flaming
Machine



F.A. (page 28)

T.C.C.
Computed
Tomography



T.C.C. (page 30)



1973 - 2023

M.S.
Maintenance
and services

M.S. (page 8)



Scheduled
audits



Compliance
check



On-call
assistance



Extraordinary
maintenance



Original spare
parts warehouse

MAINTENANCE AND SERVICES





SCHEDULED AUDITS

We offer our customers a scheduled maintenance service on each machine on a quarterly, six-monthly or annual basis. The aim is to maintain maximum machine efficiency and performance at all times by analysing both mechanical components and operator safety equipment.



B.E. COMPLIANCE CHECK

As a "manufacturer", we are able to certify the conformity of our lift benches, issuing appropriate documentation that certifies their good state of preservation and the perfect functioning of all installed safety devices.



ON-CALL ASSISTANCE

Our Customer Service is active throughout the territory production of Parmigiano Reggiano®, Grana Padano® and Trentingrana®: our aim is to keep the heart of the Italian dairy industry efficient every day, with fast and professional interventions, limiting downtime to a minimum. Experienced operators are available to offer customers telephone support during normal maintenance operations carried out by the in-house technicians of individual dairies.



EXTRAORDINARY MAINTENANCE

We perform complete maintenance of used machines at our workshop by completely disassembling them, replacing worn parts, sandblasting and completely repainting them, thereby significantly extending the life of the machine.



ORIGINAL SPARE PARTS WAREHOUSE

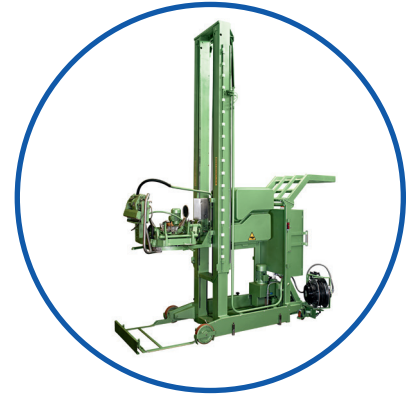
We guarantee stock availability of all spare parts, even those of older machines. All of our components are manufactured to high quality and safety standards, which only the machine manufacturer can ensure by understanding the peculiarities of each individual part.



P.R.A.

1 gripper

Automatic
Stacking
Machine





○ **GENTLE ACTION ON THE PRODUCT**

The P.R.A. is specifically designed for the **cleaning** and **turning** of forms of cheese, directly in the cheese ladder, with a diameter between 34 and 49 cm and a height between 22 and 26 cm, working with Parmigiano Reggiano®, Grana Padano® and Trentingrana® cheeses. Although it is particularly suitable for machining fresh forms, it can machine forms of any hardness.

○ **TCT**

The P.R.A. is equipped as standard with a TCT (table-cleaning tool), which allows cleaning of the area on which the form of cheese rests when it is moved on a full scale.

○ **MANOEUVRABLE WHILE MOVING**

The P.R.A. is easy to move within the warehouses thanks to its compact and functional design.

○ **TAILOR-MADE GUIDES**

The P.R.A. moves on a metal rail constructed, supplied and installed by ING. FERRETTI, according to the specific requirements of the product storage installation. The rail can be floor-standing or connected to the foot of the ladder.

○ **OPTIONAL STAINLESS STEEL CONSTRUCTION**

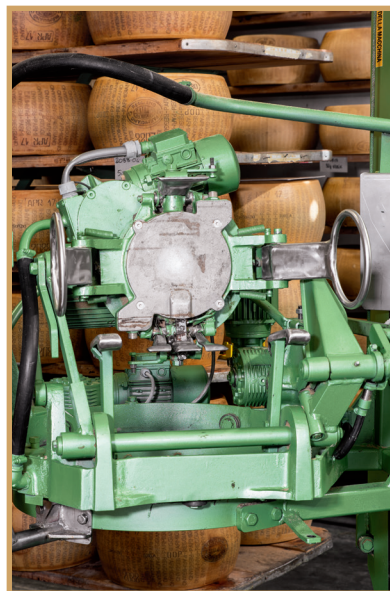
The P.R.A. can be made entirely of stainless steel (with the exception of the frame and internal mechanical parts) to ensure easier cleaning of the machine itself.

○ **OPTIONAL FOR CLEANING EMPTY SHELVES**

Upon request, the P.R.A. can be supplied with TCT (optional) for cleaning the shelves when empty in order to achieve full and complete cleaning of the shelves.

○ **BRUSHES**

The P.R.A. is fitted with special nylon brushes, designed to ensure a gentle action on the product, but at the same time a perfect cleaning of the form.





P.R.A.

2 grippers

Automatic Stacking Machine



○ VERSATILE

The P.R.A. operates both on pre-existing ladders, and on ladders designed according to its operational characteristics, where it shows its full potential.

○ AVAILABLE WITH ONE OR TWO GRIPPERS

The P.R.A. is available in two versions: single and double gripper. On request, it can also be made with three grippers.

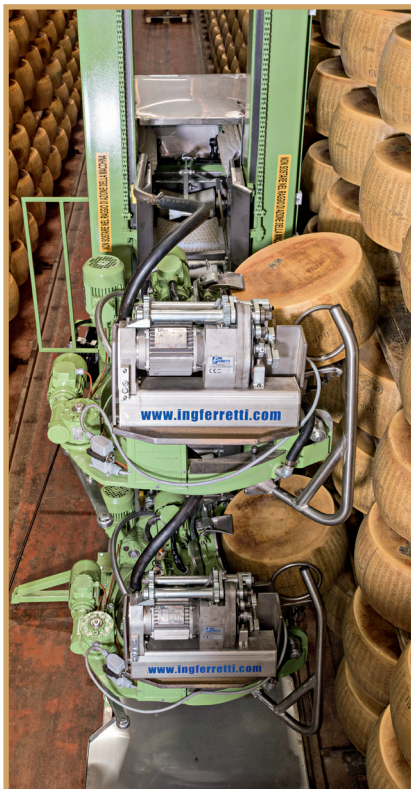
○ OPTIONAL STAINLESS STEEL CONSTRUCTION

The P.R.A. can be made entirely of stainless steel (with the exception of the frame and internal mechanical parts) to ensure easier cleaning of the machine itself.

○ CE SAFETY DEVICES

The P.R.A. complies with safety regulations in accordance with Legislative Decree 81/2008. The P.R.A. is equipped with gates on both sides of the machine controlled by two safety microswitches, which prevent the operator from accessing the side of the machine during machining. There are also two probes equipped with safety microswitches that intervene should the machine hit an obstacle on the ground or floor during its movements. The machine is also equipped with a canopy, to protect the operator engaged in setting operating commands on the panel to start or stop the machine.

P.R.A. SINGLE, DOUBLE GRIPPER		
DESCRIPTION	MEASURE	NOTES
Power supply	400V	Standard
	220V	On request
Electrical socket required	3 poles + earth 16 A (single)	
	3 poles + earth 32 A (double)	
Overall dimensions	Length 106 x L. 300 cm	
Minimum aisle (shelf-shelf)	115 cm	Minimum
	160 cm	Recommended
Warehouse end aisle	60 cm	Minimum
	90 cm	Recommended
Aisle at the beginning of warehouse	300 cm	Minimum
	350 cm	Recommended
First shelf height	42 cm	Minimum
	50 cm	Recommended
Single gripper performance	110 forms/hour	Measured with form cleaning program + form turning + table cleaning, with form cleaning time set to 8 seconds
Double gripper performance	220 forms/hour	





C.S.F.

Traditional

Loading-Unloading
forms of cheese
automatically





○ **GENTLE ACTION ON THE PRODUCT**

The **C.S.F.** is the automatic machine that allows the loading and unloading of cheese forms, from the steps with a maximum height of 22 shelves, with a diameter of between 34 and 49-50 cm and a height of between 22 and 26 cm, working perfectly with Parmigiano Reggiano®, Grana Padano®, Trentingrana® or similar cheeses. Although it is particularly suitable for processing fresh forms, it can machine forms of any hardness.

○ **VERSATILE**

The **C.S.F.** is a machine particularly suitable for loading fresh cheeses just out of brine as it is made entirely of stainless steel and therefore has no rusting problems due to brine dripping on painted parts. The machine allows the loading or unloading of the forms from the scales in a fully automatic manner. The operator only has to introduce the form into the machine when loading, or take the form out when exiting the unloading operation. The forms enter and exit the rib machine by rolling on the heel, so the operator only has to accompany it as it enters and exits the hopper without having to lift it, thus complying with the new occupational health and safety directives.

The machine works with the aid of a single operator, who is able to load or unload the forms from the ladder effortlessly. In the loading phase, production can reach 320 forms/hour and in any case the machine loads the forms fed to it by the operator. In the unloading phase, the output reaches 300 forms/hour and can be reduced with a suitable device in order to align the rhythm of the machine with that of the operator. The machine uses the same guides as those used for the Automatic Cleaners, so the latter will find the forms exactly in the required position with the consequent elimination of processing blockages due to manual positioning of the forms.

○ **MANOEUVRABLE WHILE MOVING**

It is easy to move within warehouses due to its compact and functional design.

○ **OPTIONAL**

- REMOTE CAMERA WITH MONITOR for the control of the cheeses to be picked up and PHOTOCCELL for detecting the presence of the cheeses on the steps.
- MAKING OF THE MACHINE STRUCTURE IN VARNISHED CARBON steel instead of stainless steel (standard).
- STAINLESS STEEL GRIPPER (only for painted steel machine).
- The **C.S.F.** AVAILABLE IN DIFFERENT HEIGHTS up to a maximum operating height of 22 shelves, to meet the specific requirements of the customer's warehouse height.

The C.S.F. complies with safety regulations in accordance with Legislative Decree 81/2008.

○ **C.S.F. LOAD-UNLOAD FORMS AUTOMATICALLY 022**

The **C.S.F. 022** operates both in the presence of existing ladders and on ladders designed according to their operational characteristics, where it shows its full potential. The **C.S.F. 022** can work in warehouses of 13 to 22 shelves of any pitch, adapting automatically, through settable program, to the various warehouses. The **C.S.F. 022** allows the automatic processing of all ladder shapes, even the lowest ones, thanks to a system patented by ING. FERRETTI that allows the head to pass up to a minimum distance between the first shelf and the floor of 470 mm. The **C.S.F. 022**, thanks to a system patented by ING. FERRETTI, automatically adapts to floor conditions, it is the first machine to do so.





C.S.F.

022

Loading-Unloading
forms of cheese
automatically





with an automatic self-levelling device that corrects any unevenness in the floor, ensuring the safety of operators by preventing forms from falling accidentally.

- A completely redesigned machine, a more rigid structure to guarantee maximum machining precision, main movements mounted on innovative rotation systems to ensure maximum reliability over time.
- Rope wheels (lifting and guarding) made of composite material.
- New-generation hydraulic power unit.
- Travelling movement inverter-controlled forward-reverse.
- Hopper with photocells to ensure maximum operator safety and working efficiency.

○ **MODES OF OPERATION**

All operations, with the exception of loading and unloading the forms from the hopper, are performed automatically once the operating cycle has started; at the end of the row of forms, the machine stops and waits for the next column to be moved by the operator's direct command via the touch screen control panel.

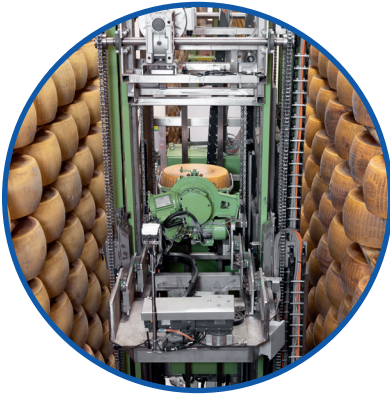
○ **USE PROGRAMS:**

loading, unloading with selection via camera and monitor (optional), exclusion of the first three forms etc. The machine works across vertical rows.

The C.S.F. 022 complies with safety regulations in accordance with Legislative Decree 81/2008.

* The C.S.F. performances refer to data that take into account manual positioning on the first 3 shelves. The data are taken from a 22-shelf warehouse.

C.S.F.			C.S.F. 022	
DESCRIPTION	MEASURE	NOTES	MEASURE	NOTES
Power supply	400V		400V	
Electrical socket required	3 poles + earth 16 A		3 poles + earth 16 A	
Overall dimensions	Length 120 cm x L. 140 cm	standard	Length 120 cm x L. 200 cm	
Minimum aisle (shelf-shelf)	142 cm	Minimum	152 cm	Minimum
	160 cm	Recommended	160 cm	Recommended
Warehouse end aisle	60 cm	Minimum	60 cm	Minimum
	90 cm	Recommended	90 cm	Recommended
Aisle at the beginning of warehouse	200 cm	Minimum	260 cm	Minimum
	300 cm	Recommended	300 cm	Recommended
Performance	320 forms/hour*	loading (max)	220 forms/hour	loading (max) working all rows
	300 forms/hour*	unloading (max)	200 forms/hour	unloading (max) working all rows

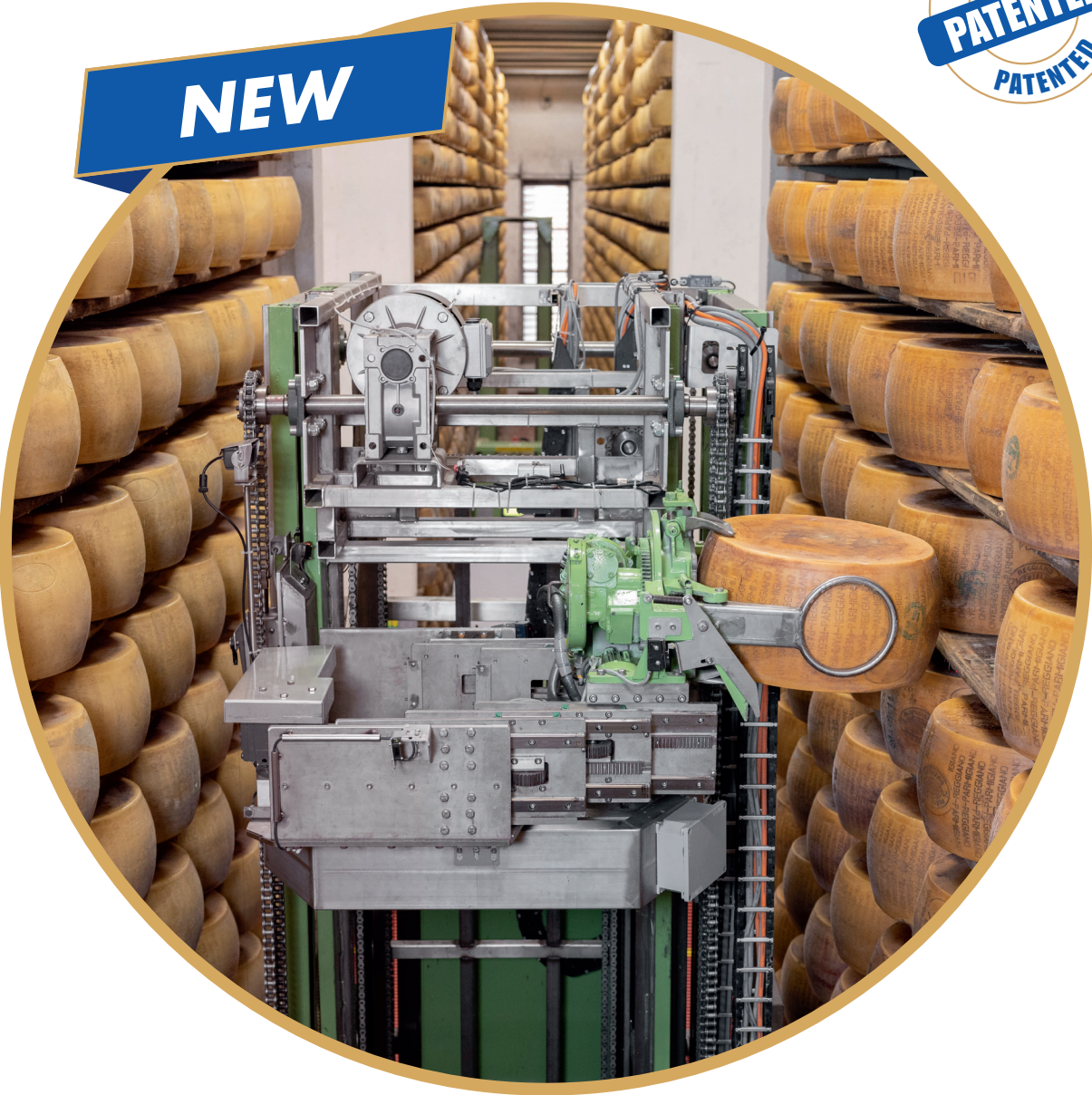


C.S.R.

Loading-
Unloading
and Turning
Machine



NEW





○ VERSATILE

The **C.S.R.** allows the loading or unloading of the forms from the ladders in a fully automatic way on all the shelves, from the first to the twenty-second, on the right and on the left of the aisle, and also allows the forms to be turned without having to replace the loading/unloading with the P.R.A. (Automatic Stacking Machine) inside the aisle, as well as carrying out the operations for re-compacting the front.

The form gripping unit is the same as the one used in Ing. Ferretti's well-established cleaning machines, which are already characterised as a benchmark of excellence in the sector for safe gripping, respect and care

of fresh cheese; the action of this gripper is gentle and safe, preserving the forms from marks and defects. The gripper is mounted in the new Ing. Ferretti handling unit, which allows the form to be moved on both the left and right sides of the machine, and can also be used for turning. This unit has made it possible to create a machine that can work flexibly in warehouses with aisles ranging from a minimum of 135 cm up to a maximum of 180 cm, with a minimum floor shelf of 47 cm and a minimum end aisle of 60 cm. Thanks to a new-generation chassis, it can work in warehouses with different heights, creating a specific map of each one through the HMI operator panel.

The forms enter and leave the machine horizontally (on the plate), moving on food-grade conveyor belts. The operator just has to place the forms on the conveyor belt (during loading operations in the warehouse) or pick them up from the belt and place them on the pallet (during unloading operations).

The **C.S.R.** can be combined with both the Pal/ Depal and the Trolley Equipment to facilitate or fully automate the operator's work. In this way, a single operator is able to load or unload the forms from the ladder effortlessly and with considerable labour savings.

○ SAFETY

Ing. Ferretti's new **Loading-Unloading and turning Machine** is characterised by identifying new work safety standards within cheese maturation warehouses:

- Working both left and right and on all shelves in the warehouse.
- High-quality electronic and mechanical systems guarantee absolute precision in the positioning of the forms.
- Automatic self-levelling, patented by Ing. Ferretti, which allows the cheeses

to be positioned on the rack in the appropriate way, reducing the risk of the cheeses falling off.

- The machine is moved out of the aisle with a battery-powered motorisation that eliminates human effort in handling. With a simple joystick it is possible to perform forward-backward movements and left and right steering.
- The machine is made of AISI 304 stainless steel to ensure easy cleaning, sanitising and durability.
- Full compliance with the machinery directive, complete with operating and maintenance manual and CE marking.

○ ELECTRONICS AT THE SERVICE OF THE OPERATOR

The machine is equipped with a control panel with Siemens PLC and operator panel (HMI). The man-machine interface system is easy and intuitive. The main controls are on a touch screen, very practical in use and highly reliable over time. From this console it is possible to control and manage all the functions of Loading and Unloading the forms on the ladder, working at speed, etc.

The operator panel shows all functions that the machine is performing during operation, including any blockages or malfunctions. A new diagnostics system has been introduced that allows malfunctions to be reported immediately to the operator, making it very easy to use the machine. The machine can be connected to the WMS management system, allowing Ing. Ferretti to intervene by remote assistance.

○ OPTIONAL

- Interconnection to the **WMS system**
- Self-levelling
- Carrying Casein Plate
- Reader Load Cell

C.S.R.		
DESCRIPTION	MEASURE	NOTES
Power supply	400V	
Electrical socket required	3 poles + earth 16 A	
Overall dimensions	Length 132 cm x L. 340 cm	
Minimum height of the first shelf	47 cm	
Maximum height of the last shelf	764 cm	
Minimum space between last shelf and upper beam	55 cm	
Minimum aisle (shelf-shelf)	135 cm	
Maximum aisle (shelf-shelf)	180 cm	
Warehouse end aisle	60 cm	Minimum
	90 cm	Recommended
Aisle at the beginning of warehouse	450 cm	Minimum
	550 cm	Recommended
Performance	200 forms/hour in loading or unloading, working on all rows	



C.A.

Trolley
Equipment



NEW





○ INTEGRATION

The **C.A.** was born out of our customers' need to reduce the risk of "manual handling of loads" within maturation warehouses.

It is specifically designed to move between pallet and the C.S.R. (Loading-Unloading and turning Machine) or CSF (Loading-Unloading forms) of cheeses with a diameter between 34 and 49 cm and a maximum weight of 50 kg, working with Parmigiano Reggiano®, Grana Padano® and Trentingrana® cheeses.

The "suction cup" gripping unit ensures a firm hold of the cheese form, but at the same time it is gentle on the freshest cheese, while a weight "easing" unit facilitates the lifting of the form by totally eliminating the force of the operator. The "facilitation" unit is installed on guides that allow easy sliding and handling during palletising and de-palletising.

The **C.A.**, as an alternative to the suction cup that handles flat forms, can also mount a special mechanical "gripper" unit that allows vertical gripping and rotation of the form.

The **C.A.** moves autonomously within the aisles of the maturation warehouses, following the movements of the C.S.R. machinery (or C.S.F.) to allow the operator to concentrate solely on loading/unloading operations.

The shape of the frame makes it easy to load and unload the pallet with both forklifts and electric pallet trucks, which normally have fixed forks that remain on the ground.

○ OPTIONAL

- The **C.A.** can be equipped with a gripping unit capable of turning the shape vertically (with respect to the horizontal position it assumes on the pallet) so that it can be used in conjunction with

the C.S.F. and C.S.F. 022

- Mechanical "gripper" rather than "suction cup" gripping unit.
- Painted carbon steel construction.

○ SAFETY

- The **C.A.** eradicates the risks of "manual handling of loads" for operators engaged in loading/unloading forms.
- The **C.A.** is equipped with a protective roof that protects the operator from falling from the ladder.

○ STRUCTURE

- The **C.A.** is made of AISI304 stainless steel for durability and easy cleaning and sanitising of the machine. It can be made of painted steel on request.

C.A.

DESCRIPTION	MEASURE	NOTES
Power supply	400V	
Electrical socket required	3 poles + earth 16 A	
Overall dimensions	Length 132 cm x L. 282 cm x H 400 cm	
Minimum aisle (shelf-shelf)	135 cm	
Warehouse end aisle	350 cm	Minimum with C.S.F.
	450 cm	Recommended
Aisle at the beginning of warehouse	600 cm	Minimum with C.S.R.
	700 cm	Recommended



PAL/ DEPAL

Automatic
Depalletiser-
Palletiser
for cheese forms



NEW



○ **FULL AUTOMATION**

Pal/Depal is the machine that, inserted in the aisle together with the C.S.R. (Loading-Unloading and turning Machine) machine, automates the processes of loading/unloading forms of cheese from the ladder. It can process forms of cheese with a diameter of between 34 and 49-50 cm, a height of between 22 and 26 cm and a maximum weight of 50 kg, working perfectly with Parmigiano Reggiano®, Grana Padano®, Trentingrana® or similar cheeses.

The operator just has to load with forklift (or pallet truck) a pallet of forms (when loading the ladder) or unload it (when unloading the ladder).

All transport operations from pallet to ladder (or vice versa) are handled automatically by the two machines: **Pal/Depal** by means of a mechanical pick-up unit installed on Siemens electric axles, picks up the cheeses from the pallet and deposits them on a conveyor belt to C.S.R. and vice versa.

Pallets can consist of up to 25 forms, in a 5x5 configuration with a central form in relation to the pallet.

○ **ADVANCED TECHNOLOGY**

Pal/Depal is an extremely advanced machine that, thanks to the solutions designed and patented by Ing. Ferretti, is able to solve the problems related to the management of interlayers and shapes that can "stick" to each other.

Pal/Depal is in fact the only machine equipped with an "inter-layer management" system that includes mechanisms for the removal, positioning and imaging of the interlayers themselves, as well as a fully automated, cheese-sensitive "removal" system. Work programs are managed by an easy and intuitive



HMI operator panel, which can also interact with the C.S.R. machine so that the operator can manage both machines with a single HMI.

○ **CONSTRUCTION MATERIALS**

The machinery is made entirely of AISI304 stainless steel (with the exception of some mechanical parts) to ensure durability and ease of cleaning, even when handling fresh cheeses that have just come out of the brine bath.

○ **SAFETY**

Pal/Depal complies with safety regulations in accordance with Legislative Decree 81/2008. **Pal/Depal** is equipped with a safety laser-scanner that stops the machine's movements when the operator gets too close to it. During pallet loading/unloading, once the operator has performed the operation, the machine automatically resumes the work cycle.

PAL/DEPAL		
DESCRIPTION	MEASURE	NOTES
Power supply	400V	
Electrical socket required	3 poles + earth 16 A	
Overall dimensions	Length 132 x L. 355 cm x H 475 cm	minimum
	Length 132 x L. 355 cm x H 705 cm	in working conditions
Minimum aisle (shelf-shelf)	135 cm	
Aisle at the beginning of warehouse	700 cm	Minimum
	900 cm	Recommended
Performance	Performance: 200 form/hour during palletising or depalletising*	* Performance calculated without pitch management and without the use of the "detachment" system



B.E.

Elevator
Bench

6-11 quintals





○ **TAILORED TO THE CUSTOMER'S WAREHOUSE**

The **B.E.** is the height-adjustable platform that enables operators of cheese warehouses to carry out all **loading, unloading, cleaning, beating, radiusing and checking operations** on the forms of cheese placed on the steps.

The **B.E.** is made to measure, with the height of the worktop and variable overall dimensions, depending on the characteristics of the maturing warehouse in which it is to operate.

The **B.E.** is available in two versions, P6 (load capacity 600 kg) or P11 (load capacity 1100 kg). Thanks to its platform, which reaches up to 100 mm above the ground, it allows the operator to load cheese pallets directly with wheeled pallet trucks, as well as

to load and unload other equipment for working at height.

B.E. (P11) ING. FERRETTI allows travel with a raised bench with an operator on board.

ING. FERRETTI is also able to meet specific customer requirements for non-standard sizes.

○ **OPTIONAL**

- FALL PROTECTION CANOPY FOR OPERATOR PROTECTION (only on prearranged ladders).
- PARTIAL OR TOTAL CONSTRUCTION OF THE MACHINE IN STAINLESS STEEL ideal for loading fresh forms.

○ **CE SAFETY DEVICES**

The **B.E.** complies with safety regulations in accordance with Legislative Decree 81/2008. **B.E.** is equipped with:

- EMERGENCY STOP to stop moving parts immediately if necessary.
- OVERLOAD DETECTION DEVICE which protects operators by preventing the cause of dangerous situations; this alarm can only be deactivated by removing the excess load or by removing obstacles that impede the ascent of the work surface.
- MAXIMUM ASCENT DEVICE
- SAFETY DEVICE ON ENTRANCE GATE
- ANTI-CRUSHING STRIPS GUIDE
- THE READING DEVICE TO ALLOW MOVEMENT WITH A RAISED WORK
- SURFACE AND THE DETECTION OF BROKEN LIFTING CHAINS

B.E.		
DESCRIPTION	MEASURE	NOTES
Power supply	400V	
Electrical socket required	3 poles + earth 16 A	
Overall dimensions	Length 127 x L. 310 cm	Standard
Working surface height from the ground	10 cm	
Minimum aisle (shelf-shelf)	125 cm	minimum (pallets cannot pass between columns)
	150 cm	pallets can pass between columns
Warehouse end aisle	60 cm	Minimum
	90 cm	Recommended
Aisle at the beginning of warehouse	250 cm	Minimum
	300 cm	Recommended
Performance	1100 kg maximum load capacity	Bench P11
	600 kg maximum load capacity	Bench P6



B.S.

Ladder
Bench





○ The **B.S.** was created from the need of our customers to carry out handling operations after the cheese processing phase in a simple, fast and functional way.

With these fixed points, we have created a machine with a compact design, capable of working even inside warehouses with 1200 mm wide aisles where the "trusty" and well-known Load-Unloader is unable to enter due to its size.

○ The **B.S.** consists of a vertical frame, along which, on one side, a platform capable of holding one operator and three cheeses moves upwards, while on the other, another operator remains on the ground to insert (during loading) or receive (during unloading) the cheeses from the machine. A catenary, derived from the Load-Unloader, transports the forms from the bottom to the top (or vice versa) quickly, carefully and with respect for the product.

○ A push-button panel is installed on the platform to operate the machine: ascent, descent, forward, reverse, charge operation, discharge operation. On the platform floor, a pedal is used to eject a form from the machine (when loading) or to lower it towards the operator at the bottom (when unloading). With this system, both operators always have their hands free to handle the forms of cheese.

○ Both machine access areas (on the platform and at the bottom) are protected by safety barriers that block any movement of the machine, ensuring safety for operators and the product. Under the platform, anti-crush strips are installed to eliminate the danger of crushing. A pair of couplings keeps the machine connected to the racking and perfectly parallel, so that it can move smoothly within the aisle, avoiding collisions with the forms on the ladder.

B.S.

DESCRIPTION	MEASURE
Length	2800 mm
Width	1080 mm
Height	based on the height of the warehouse



F.A.
Hot air
flaming
machine





○ The **ING. FERRETTI F.A.** is a machine created to solve the safety and efficiency problems that have hitherto been present in the "hot" final cleaning operation of forms of cheese. This innovation is an ING. FERRETTI patent.

○ The **ING. FERRETTI F.A.** starts with the now familiar use of the very reliable "P.R.A. "cleaning head" (Automatic Stacking Machine). Specific hot air generators have been connected to this machine to bring hot air to the surface of the form. Under such conditions, the form starts "sweating" and even the most stubborn dirt, as it softens, can be easily removed by the cleaning brushes.

In seconds we go from a dirty cheese form to a perfectly clean and polished one.

○ The **F.A. ING. FERRETTI** uses **hot air generators** and not open flame (as usual) generated by LPG. This solution leads to the following advantages:

- Total respect of fire safety in the working environment.
- Elimination of combusted gas applied to the surface of the cheese form.
- Preservation of the cleaner's PVC brush bristles from accidental contact with the flame, which tends to melt them.



- Better control of the cheese form cleaning process through dedicated software, which allows adjustment of all parameters required for this purpose.

- Possibility of making the process lighter for workers, with the possibility of using weight facilitators or anthropomorphic robots.

- **50% time saving in form cleaning.**

○ A **reliable, latest generation control panel** supports all the functions set by the state-of-the-art touch screen. From this screen we can simply and intuitively manage all the functions of the **F.A.**, as well as create formulas (retrievable programs) to work on various types of dirt, and on cheese by managing the following parameters:

- Operating temperature of each individual heater divided by upper plate,

lower plate and heel.

- Pre-heating time.
- Hot brushing time.
- Cold brushing time.
- Rotation speed of the side brushes.

○ A maturation warehouse cannot be without an **F.A.** if it cares about looking after its cheese and has respect for safety in the working environment.

○ **CONSTRUCTION MATERIALS**

The **F.A.** is constructed entirely of stainless steel (with the exception of the internal mechanical parts).



T.C.C.

Computed Tomography
for the dairy industry



NEW



IN-DEPTH ANALYSES

Ing. Ferretti's **T.C.C.** is the first inspection machine with 2D/3D TAC technology specifically for the dairy industry.

The machine is the result of a collaboration between Ing. Ferretti srl and Imaginalis srl, a company operating in the field of imaging devices for the industrial and medical sectors.

This collaboration between two companies, constantly active in technological innovation and close to the markets in order to understand their needs and changes, has led to the creation of the first with 2D/3D TAC technology specific to the dairy industry.

Our aim is to offer automated, cost-effective and easy-to-use technological solutions, combining and integrating the most advanced hardware and software technologies in the field of imaging with innovative and constantly evolving solutions to enhance product control and quality.

Ing. Ferretti's **T.C.C.** allows enormous advantages in the field of inspection compared to the known Rx technology, guaranteeing the safety of operators during processing. In fact, despite the strong penetrating power of X-rays, the **T.C.C.** is a shielded and self-protected machine that can be used safely without dedicated rooms or the use of lead panels.

Ing. Ferretti's **T.C.C.** can, without any removal of material or destruction

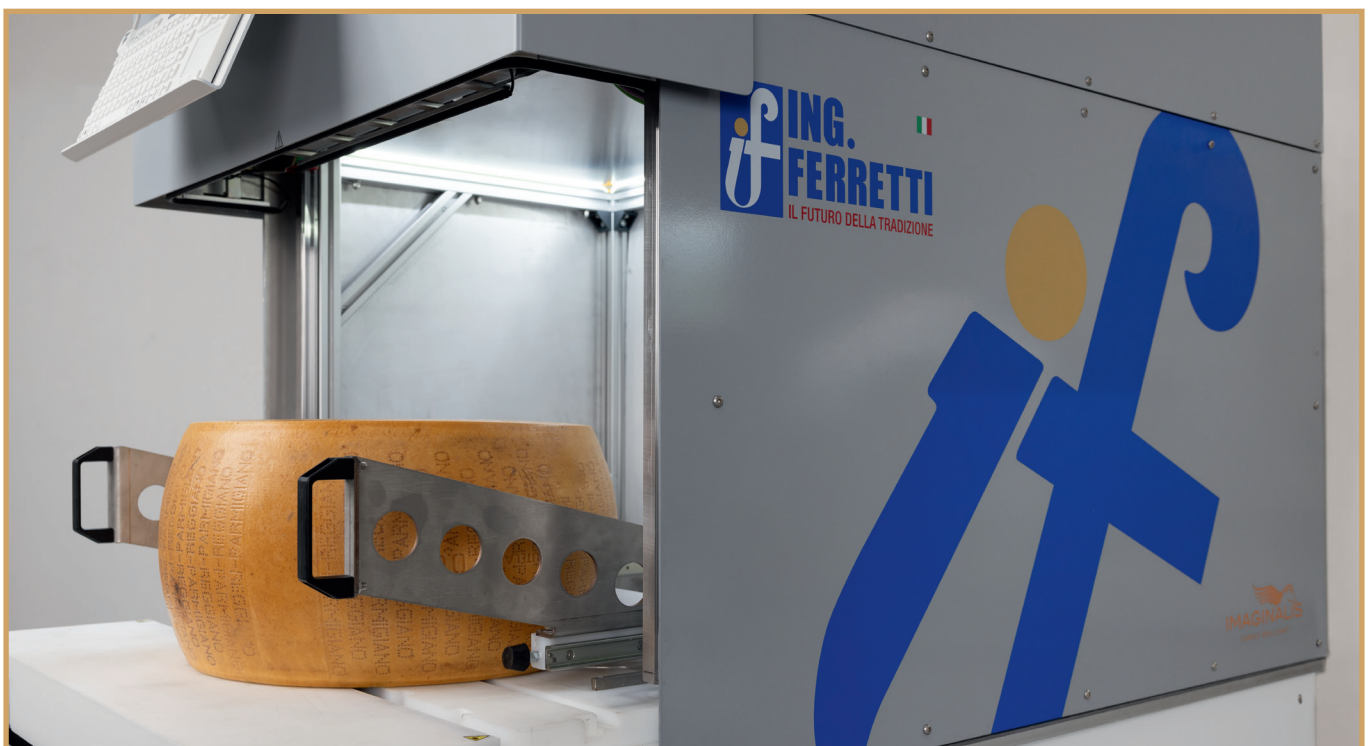


and without compromising the quality and characteristics of the tested product:

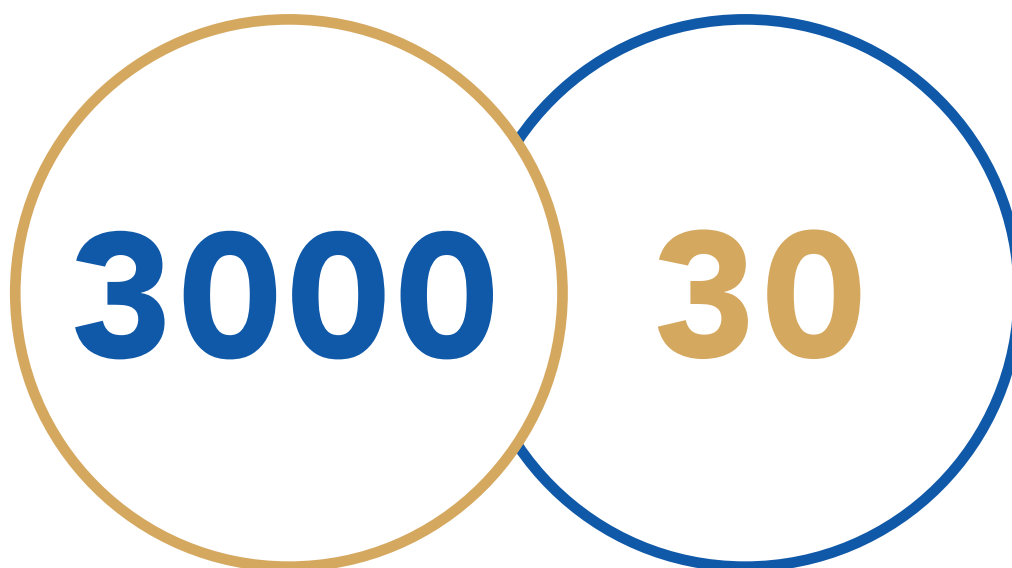
- Make defects visible and quantifiable that would not be detectable using simple Rx technology.
- Carry out surface and volumetric checks, highlighting defects and discontinuities within products.
- Detect a wide range of foreign bodies, including metals and plastic bodies, inside the product without using a metal detector.
- Create a 3D image that objectively highlights the product's internal flaws and eliminates problems by interpreting the image produced.
- Interface with image recognition software that can then, with proper programming, automatically grade the inspected product.

OTHER ADVANTAGES OF ING. FERRETTI'S T.C.C.

- Operator safety.
- Fast inspection time (approx. 30 sec).
- High-resolution images obtained thanks to medical-derived technology supported by a high-performance workstation.
- Possibility to inspect 100% of the product volume.
- Transportability of the instrument on a normal van with a B licence.
- Easy electrical connection to a normal industrial socket.
- Easy archiving of the images taken.
- Possibility to encode the cheeses by linking the encoding to the casein plate, thus having absolute traceability of the cheeses with their associated 3D image.



ING. FERRETTI NUMBERS



• 3000 •

There are over **3000** machines built and installed by **ING. FERRETTI** over the 50 years of its history, a tangible sign that, since 1973, the market recognises us as a leader in the sector.

3000 machines designed and built to last over time, successfully built by people with a great passion for mechanics and mechatronics.

3000 machines that represent the strength of a future-oriented company. A future made of automation, digitisation and innovation, aimed at making the maturation warehouses more efficient and improving the working conditions of the operators.

• 30 •

30 employees who every day, with commitment, determination and knowledge drive the company's commitment and growth. A company structure that allows customers to look to the future with serenity, offering stability over the years, reliability and security of products and services.



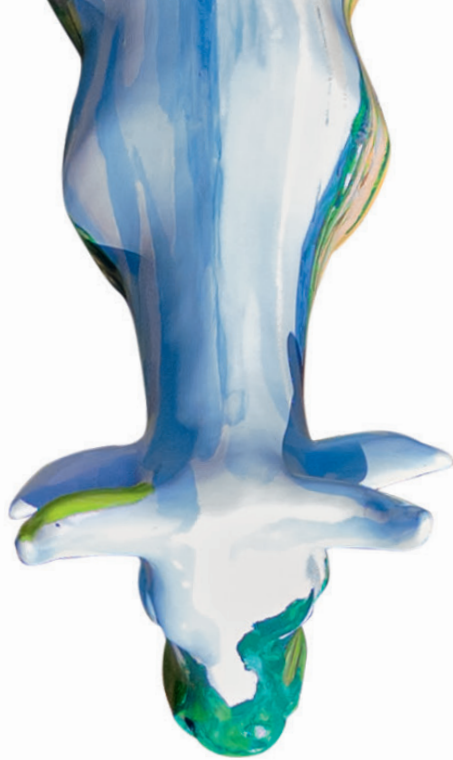
WE BUILD THE FUTURE TOGETHER

THE FUTURE OF TRADITION.

The history of **ING. FERRETTI** is the history of Italian dairy automation, which began precisely half a century ago with the launch of its first invention. With over 3000 machines produced for the maturation warehouses, it is now the preferred choice of producers of the world's three most prestigious PDOs: Parmigiano Reggiano®, Grana Padano® and Trentingrana®. Building on the synergy with ROSSS® - an award-winning manufacturer of industrial shelving, storage systems and logistics platforms - **ING. FERRETTI** is also a supplier of reference for fitting out complete turnkey systems.

THE STRENGTH OF THE TEAM.

ING. FERRETTI is animated by the consolidated team of **30 employees** which, every day, renews the pact of trust with all its customers with passion and dedication. It is the added value of a cohesive and motivated company, highly specialised and capable of providing optimal solutions to the most diverse automation requirements, in compliance with processing and maturing specifications. With the security of after-sales maintenance and emergency service for maximum yield and the longest life cycle of each machine.



1973 - 2023

A leader in automation for the dairy industry since 1973.

 [ingferretti.com](https://www.ingferretti.com)

ING. FERRETTI S.R.L.

Via S. Pellico, 5 - 42020 Quattro Castella (RE) - Telephone 0522 887397 - sede@ingferretti.com