



ALL THE SOUL OF WHEAT

Millers since 1937

ORIGINS

In mankind's evolutionary path, everything changes constantly but still today it is impossible to do without three fundamental inventions: fire to cook food, the millstone to process them and the wheel to transport and sell them.

FIRE

During the lower Paleolithic Age, homo erectus discovered a natural element essential for the evolutionary process.



MILLSTONE

In the Neolithic Age, man learnt how to grow cereals and mill them using a smooth stone as a base (the millstone) and a rough stone to grind them (grinder).



WHEEL

The tool that revolutionises transport was invented by the Sumerians in 3500 B.C.



These three inventions are linked with a **contemporary production reality** with historic and even prehistoric roots.

This production reality is **the mill**. To call it merely a “company” would be rather limitative: **milling art**, today as in the past, is an integral part of society and culture. In many cases, the flour mill even stood for the soul of a community.

Every homeland has its history, traditions and customs.

Its own **cuisine**.
Its own **bread**.
Water and **flour**.
Its own **mill**.

The Polesine area is an agricultural zone in the plains between Italy's two longest rivers: **the Po and the Adige**.

A land of mills, given its configuration and nature. Our mill is one of these: **it was founded in Lendinara in 1800**, expanded a little at a time and always made good bread.

Macinazione Lendinara is a brand currently owned by the **Cavallari family** and is well-known and highly-regarded by professionals and food sector companies for the quality of its flour and its skill in responding to customers in a flexible, detailed and personalised manner.

The company's original head offices still stand proudly in the home town, while the new production plant built in the 1990s is located in **Arcole (Verona)**. This is a cutting-edge facility capable of producing **450 tonnes** of flour per day for a market of professionals and major food industry companies.

BEGINNINGS AND EVOLUTION

The mill yesterday

The original mill was founded in **Lendinara in the XIX century** and was purchased by **Francesco Cavallari** and his brothers in **1938**.

A strong entrepreneurial vocation saw the family come to manage eight mills located throughout the surrounding area: Lendinara was joined by plant in **Rovigo, Papozze, Adria, Ferrara, Ravenna, Ceneselli and Bologna**. The Cavallari family became **leaders in the flour milling sector in North East Italy** and achieved impressive reputation for excellence throughout the country.

The mill today

The story of each mill grows together with its local people: the **eight plants** owned by the family were later divided among the various heirs, while the original facility in Lendinara achieved its maximum production capacity

The Cavallari family, under the initial leadership of **Antonio**, followed by **Valentino** and **Pier Massimo**, found exactly the right solution to meet the growing demands of the market.

In **1990**, the company inaugurated its new **production facility in Arcole**, a cutting-edge structure boasting a rational design to meet the needs not only the professional market but also the food industry, with two bulk flour loading tunnels for tanker trucks.

The mill - facts and figures

Production plant: 44.500 square meters

Production capacity: 550 tonnes per day

Storage capacity: 30.000 tonnes

TECHNICAL INFORMATION

Wheat is a living, vital raw material that is always different

The miller's art lies in **producing flour with precise characteristics** that meet the standards demanded by the market despite having to handle highly variable ingredients. Even same variety of wheat may change from year to year depending on the harvest, climatic conditions and the country of origin.

Skilled millers can handle unexpected events and changes, especially they can rely on large, avant-garde plant and storage silos, as is the case for our Arcole mill.

Flour is the soul of wheat and wisdom is the art of our millers



Selection of raw materials

Selecting the grains to grind is our first step towards quality.

Milling quality indicators:

1) Average weight of kernels.

The kernel is the grain of wheat. A high average kernel weight is an indicator of high yield during the milling process because the size of the grain affects the percentage amount of flour free of impurities obtained from the crushed grain. Average kernel weight: 35 - 45 mg.

2) Electrolytic weight.

This parameter is used for ISQ classification; it is acceptable when higher than 75 kg/hL.

3) Hardness.

The resistance opposed to crushing by the kernels. Wheat is classified as **hard** (over 70), providing flour suitable for baking biscuits, **medium** (between 45 and 70), yielding flour for slightly leavened loaves and dough, and **soft** (under 45), giving flour used for well-leavened products such as Panettone and Pandoro.

4) Protein content.

Percentage protein content:
equal to or higher than 14% for **very strong wheats**, 13% for **strong wheat used to make bread** and 11% for **plain flour**.

SQI FOR WHEAT ASSESSMENT

Classification of wheat varieties is based on the Summary Quality Index (SQI), which simultaneously takes into account the six parameters shown in Table 1; the values shown, unless otherwise specified, indicate the minimum limit. In relation to this index, batches of wheat are divided into five classes with different intended uses, as described in Table 2.

TABLE 1 - TECHNOLOGICAL CHARACTERISTICS OF WHEAT CLASSES

SQI quality classes	Protein (%)	Chopin W	Chopin P/L	Brabender Stability (min.)	Specific Mass (kg/hL)	Hagberg Index (sec.)
Strong wheat (SW)	14,0	300	< 1,8	13	75	300
Very strong wheat (VSW)	13,0	220	< 1,2	9	75	250
Bread-making wheats (BMW)	11,0	160	< 1,0	5	75	220
Biscuit wheats (BW)	< 11,0	< 120	< 0,5	-	75	220
Wheats for other uses (FOU)	Not covered by any of the above classes					

TABLE 2 - INTENDED USES OF VARIOUS CLASSES OF WHEAT

Quality class	Prevalent use
Main use Strong wheat (SW)	high-leavening bakery products (Panettone), corrective flour to enhance bakery performance.
Very strong wheats (VSW)	Special bakery (bread rolls), quality pastry.
Bread-making wheats (BMW)	Common bread, sliced bread.
Biscuit wheat (BW)	Biscuits, minimal leavening products.
Wheats for other uses (FOU)	Animal feed.



The home of wheat: Our silos

Our team of experts manages to purchase the best wheat thanks to their impressive expertise acquired over the years and our mill's astonishing storage capacity - equivalent to **24,000 tonnes**.

Year by year, all wheat varieties undergo changes arising from numerous environmental factors: to obtain a balanced flour that meets required characteristics, it is essential:

- a) to know the fundamental features that each quality wheat must have;
- b) make purchases at precisely the right time;
- c) store grain optimally until ready for use.

This is why Macinazione Lendinara has **24 storage silos** of different capacities and sizes. In this way, we can buy and store different types of wheat in order to create the best or more particular blends, with significant competitive advantages in terms of quality and price.

The journey inside the mill

Cleaning, wetting and conditioning

The journey from the field of wheat to the mill to produce flour is long and adventurous.

External agents of various kinds, particular climatic and environmental conditions and the proximity of other crops may contaminate our ears of wheat from the moment they bud through the harvest.

When wheat arrives at our mill, our technicians carry out an initial visual and sensory inspection; samples are then taken for preliminary analysis of specific mass, protein, moisture, gluten and checks for mycotoxins.

If the batch of wheat passes these tests, it is sent to the relative unloading trenches.

The wheat then undergoes a pre-cleaning process involving a separator magnet that detects metal foreign bodies and a fan sieve which eliminates impurities, empty seeds and chaff.



Immediately afterwards, the first full-scale cleaning stage is performed. It is a delicate and complex operation in which specific tools are used:

- **A magnet**
- **A separator** to remove fine and coarse impurities
- **Destoner** to remove pebbles and stones
- **Fan**, sieve to separate lightweight impurities
- **Shellers**, to isolate extraneous seeds
- **Brushes**, to remove stubble and impurities around the wheat grain
- **Wheat wetter**, a key step to ensure optimal wheat moisture.

After wetting the wheat for the time, it is left to rest in the five first conditioning cells, before performing a second wetting and conditioning operation. **The ideal humidity percentage for milling is 16.5% - 17%.**

Starchy wheat (also known as soft wheat) are low fermentation grains that absorb water quickly. Hard wheats have a high protein content that make water penetration slower. In order to moisten the wheat uniformly, it must be placed in a wetting cell for 16-20-48 hours, depending on individual requirements.

Safety is the most important aspect.

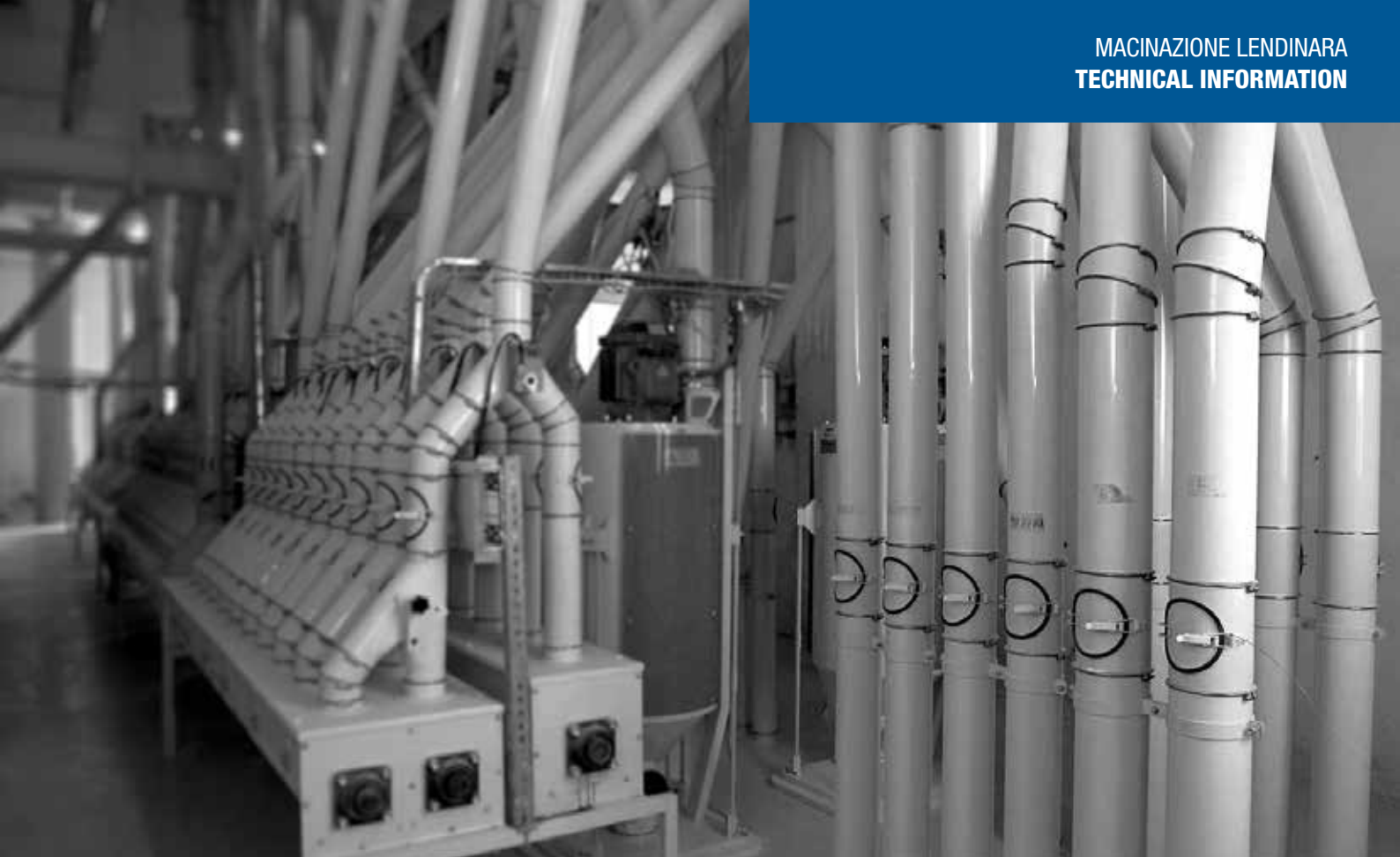
Safety is our priority and is why we have equipped our mill with an **optical grader** and a **peeler** to ensure excellence in our product controls.

The **optical grader** is based on highly sophisticated technology and is able to isolate damaged and germinated grains as well as allergens using compressed air streams.

The **peeler** performs a mechanical task on wheat grains intended for grinding and significantly reduces any bacteria and pesticide residues.

Arriving at the soul of wheat: grinding

This is the key moment in our work and involves alternating milling and sifting steps. The grain passes over roller mills and is then carried by an air-operated system to the plansifters - large sifters that separate



flour and fibre on the basis of particle size. The larger groats are returned to the crushing mills, while the thinner groats pass through the purifiers for cleaning and then they are ground again.

Groats still having traces of bran pass through so-called stripping mills, until the grain is completely separated from the chaff.

The skills of our mill.

Our plant is divided into 2 sections respectively capable of grinding 360 and 220 tonnes of wheat in 24 hours, for a total of **600 tons** of wheat per day. The various basic flours produced are sent to homogenisation cells and then transferred to storage silos.

The final goal: blending, bagging or reworking

To ensure greater **flexibility** in the formulation of flours and achieve **constant and precise results**, the Arcole flour mill was designed and built with **44 flour cells**, 14 of which are directly connected to the mixing system.

The mill essentially grinds single varieties of wheat; this means that, during the delicate blending stage, our technicians are optimally able to exploit the **characteristics of each variety**.

Quality and safety

During the entire production cycle, our technicians keep a **close eye** on progress, assisted by cutting-edge tools, to ensure the **product safety** thanks to control plansifters, pest centrifuges and magnets to ensure products free of any impurities or foreign bodies.

Our internal quality control laboratory relies on three highly specialised figures who are able to simulate the performance of flours in relation to fermentation and baking.

This specific analysis highlights the basic features of the product and, consequently, its intended use in relation to the specifications required by customers.



Quality control tools. *Chopin Alveograph:*

this tool is used to measure dough quality by assessing the three most important parameters:

P: index of dough tenacity

L: extensibility index of the dough

W: flour strength index.

The P:L ratio is used to assess the balance between the tenacity and extensibility of the flour: the optimal value for this ratio is between 0.40 and 0.70.

Brabender Farinograph:

this is a special dough mixer that can measure the consistency of the dough and determine a number of important characteristics used to define the so-called "farinogram", whose unit of measure is the Brabender (= B.U.)

The characteristics measured are:

Absorption: the amount of water needed for the dough to reach the optimal score of 500 B.U.

Development of the dough in minutes: time needed to reach maximum dough consistency.

Stability: maximum dough consistency degree retention time. High quality flours and doughs ensure very high stability, thereby allowing long fermentation and prolonged mechanical stresses.

Degree of softening: measures the extent of dough shredding.

Elasticity: band thickness.

Extensometer

This tool measures the resistance that the dough offers to a deformation force. It measures the index of Resistance, Extensibility and Energy.



COMPANY VISION

Quality, flexibility and convenience at the service of the bakery and confectionery sector

Our Mill expanded by responding to the needs of client companies and developing its technology and production capacity on in relation to demand from the **agro-food sector, specifically the bakery and confectionery sector.**

In 80 years of operations, we have been partners of the leading Italian companies in this sector thanks to our product excellence, **quality:price ratio** and plant capable of meeting all kinds of requirement **quickly, flexibly and perfectly** in line with the **needs of clients.**

Our products are the secret ingredient underlying many well-known brands held in high regard in Italy and abroad, confirming the quality of our flours and the services we offer.

Our goal is to take in the various branches of this sector with innovative, specific, tested and safe products.



Even professional operators in this sector have been **in the forefront of a major development in recent years:** bakers, chefs, pastry chefs and pizza makers have expanded their skills and have become increasingly demanding and selective; they now require types of flour specific to their different types of product.



Macinazione Lendinara is at the service of companies, distributors and professionals seeking superior product quality and customised, fast, reliable and convenient service.

This is why we place primary emphasis on continuous training and updating of our personnel; we also rely on the consulting of expert and qualified technicians to develop new blends.

We are well aware of the important and continuing evolution of the market and the need to keep up with new trends and changing requirements; as a result, we are actively involved in all the most important international events in our sector.

Mugnai
MADE IN ITALY



TREE REASONS FOR CHOOSING US

Mills

We are **one of the largest flour mills throughout North Italy** in terms of grain and flour storage and processing speed. Our facilities means we always have the best raw materials available and consequently we can carry out any kind of processing in a fast and **flexible manner with the highest quality:price ratio.**

Experience

We are proud to be an **historic company** that has inherited skill and mastery from the past, matched in turn with new needs and cutting-edge technologies, with a view to the European and international market.

Logistics

We are located in a **geographically strategic position** from a logistics point of view thanks to the ne-

arby motorways: the A4 crossing Italy from West to East to connect Turin with Trieste, the A22 linking Italy with Austria and Germany, and the E45 European motorway running along Italy from north to south and extending as far as Northern Europe and even Finland.



OUR PROFESSIONAL LINES

The current needs of professional operators require ceaseless efforts to out forward high quality, high performance solutions. In recent years, **we have invested our energy to four innovative lines** dedicated to specific sectors:



The Soul of Bread

This is our historic product line, where everything all began. **This line is dedicated to bakery professionals** and offers a complete range of specific flours for every traditional recipe and for every requirement as regards dough, leavening and baking.



The Soul of Pizza

Our line of flours **dedicated to the par excellence Made in Italy dish**. Fragrant or crisp, thick or thin, rustic or delicate, Roman or Neapolitan, Anima di Pizza comprises 5 types of flour which are coming to the fore for wood-fired ovens. .



The Soul of Pasta

This line is **dedicated to one of Italy's emblematic products - fresh pasta ... and much more**. This specific line comprises ideal solutions for all the main requirements of pasta-makers and delicatessens.



The Soul of Confectionery

Our line **dedicated to master confectioners**. And whether this soul means shortbread, puff pastry or sponge - we have solutions for every need!



Macinazione Lendinara spa

Head Office and Mill:

45026 Lendinara (Rovigo) Italy
Via Caduti sul Lavoro, 31
Tel.: +39 (0)425 601590
Fax.: +39 (0)425 601595

Mill:

37040 Arcole (Verona) Italy
Via Padovana, 123
Tel.: +39 (0)45 7636531
Fax.: +39 (0)45 7636541

info@macinazionelelendarara.it • www.macinazionelelendarara.it