

La Lorraine takes the lead in sourdough baking



With a production process developed in collaboration with Spiromatic, the Belgian bakery group La Lorraine has taken the lead in developing 100% sourdough baking on an industrial scale. It is a response to the increasingly demanding consumer landscape and a revolution for the industry.

Production manager Jean-Marie Prégardien at La Lorraine Barchon, near Liège, knows what he's talking about. He has been in the baking business for more than twenty years and has witnessed some remarkable evolutions, the most recent being increasingly demanding consumers. "Health and sustainability come first," he insists. "We hear it from the retail purchasing managers: people want healthier bread with more fiber, less salt, and no palm oil or additives. Clean label bread is expected to become the new normal, and it needs to be tasty too."

Sourdough has it all

Clean label? This prerequisite could become the decisive game changer in favor of sourdough bread according to Prégardien: "Sourdough bread has it all. You don't need any yeast as a leavening agent, and the longer shelf life eliminates the need for synthetic preservatives. The structure is great, and it has a wonderful taste."

But there's just one problem, says Prégardien: "Our industrial bakeries are not prepared to make this type of bread. Sourdough baking is time-consuming, with completely different recipes and very particular mixing, leavening and baking processes."

Challenge accepted

Working from its base in Barchon, La Lorraine accepted the challenge. "We've been trying different sourdough recipes working with German and Austrian experts. They helped us develop 100% sourdough mixes to accord with the tastes of our customers, who are not so keen on the inherent acidity of German sourdough."

"The industrial process was a challenge of a different order," Prégardien argues. "Keep in mind that sourdough is very sensitive to temperature fluctuation, which means we need to constantly control the temperature throughout the mix, which is challenging in industrial-scale vessels up to three meters in diameter. You also have to firmly control the homogeneity and viscosity of the mix."

Workable solution with Idromix

The process has been developed in collaboration with Spiromatic at their test facility in Nazareth. "This allowed us to test mixing, fermentation and baking processes using different system parameters," says Prégardien.

A significant innovation is the use of Spiromatic's Idromix technology in the mixing process. Idromix is a sophisticated pre-mixer which instantaneously mixes flour particles with water using a spray technique.

"Its parameters need to be tuned very precisely," adds Prégardien, "but once we achieved that, we could produce a workable and homogeneous pre-dough at a constant pace and just in time, perfect for the sourdough fermentation process that follows."

A sign of the changing times

Prégardien also confirms that Idromix makes cleaning significantly easier: "Traditional spiral mixers always produce a lot of dust and clog the vessels with dry matter, requiring hours of cleaning using water at 60°C. With Idromix they're clean in three minutes, and it's a closed system with no risk of bacteriological contamination."

Meanwhile, the entire sourdough process is fully operational at Barchon. In this process, the prefermented dough is developed over a weekend and intermittently supplemented with water and flour to feed the sourdough mixing process for the rest of the week. Downstream, additional resting space in the production line has been created to cater for the longer sourdough fermenting times.



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Sourdough aims at greater quality, fewer additives, longer shelf life, and happier consumers

The whole operation makes Jean-Marie Prégardien beam with pride: "This installation is a sign of the changing times. Ten or twenty years ago, the bakery industry seemed to focus exclusively on speeding up the production process. Sourdough reverses that trend, aiming for greater quality, fewer additives, longer shelf life, and happier consumers."

"It's nothing short of a revolution for our industry."



The Siemens 1515 PLC system allows for very precise process control.



A precisely controlled weekly cycle

At La Lorraine Barchon, sourdough bread is produced in a precisely controlled weekly cycle, involving the following steps:

- Precise quantities of flour and water are fed into an Idromix premixer to produce a homogeneous predough, hydrated exactly as defined in the recipe;
- This predough accumulates in a small hopper and is pumped into a 5-m³ fermenter tank where it rises and becomes the mother dough;
- Additional quantities of water and flour are added in a controlled manner so that the mother dough propagates to an appropriate volume for industrial production;
- Throughout the weekly cycle, the mother dough is continuously cultivated to produce final fermented sourdoughs;
- The sourdough circulates to six dosing points feeding the production lines;
- At the end of the week, the entire installation undergoes a clean-in-place (CIP) cycle in preparation for the following week.

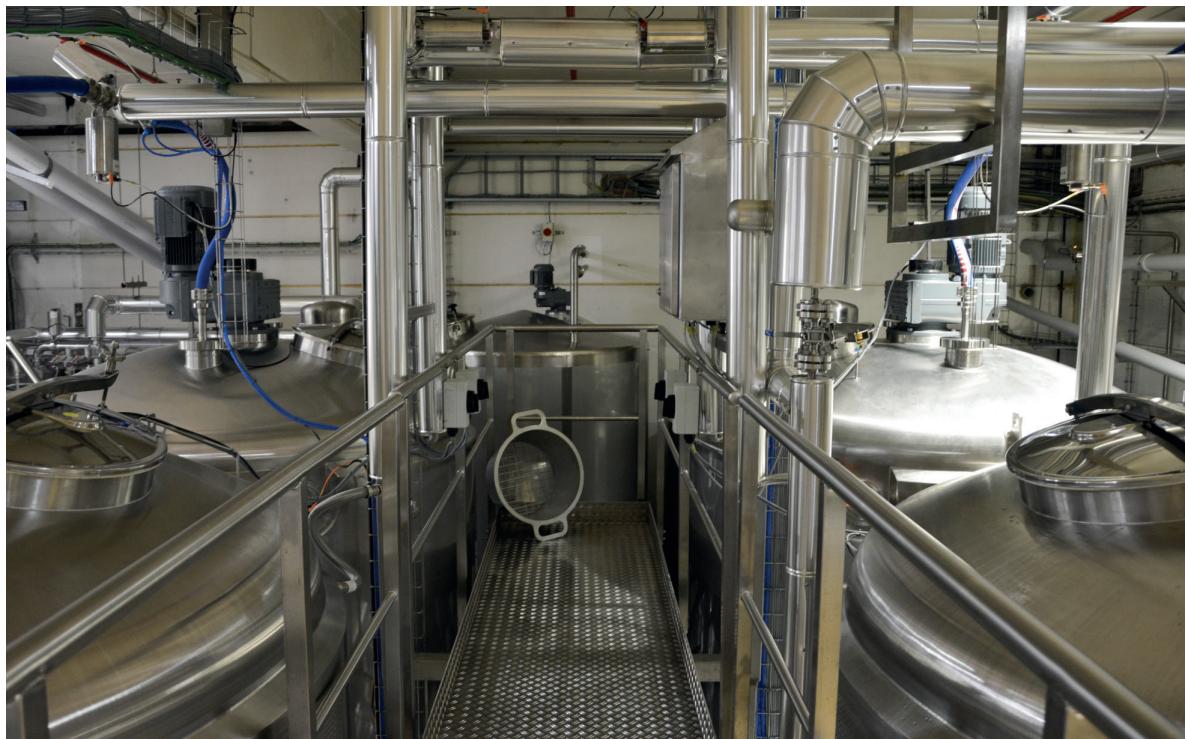


Sourdough baking eliminates the need for yeast and synthetic preservatives.

Specifications

Spiromatic installed the following systems and components at La Lorraine Barchon:

- Two **loss-in-weight dosing hoppers** for precise continuous flour feed;
- An **Idromix** premixer, the heart of the installation, able to produce up to 3000kg/h of predough;
- 4 x **5m³ fermenter tanks** with hygienic agitator on double shear load cells for precise weighing, equipped with low level detection, temperature sensors, pressure sensors and rotary jets for the cleaning cycle;
- A dedicated **Siemens 1515 PLC** with 19-inch touch screens to allow process control using Industry 4.0-compliant technologies.
- A **circulation loop** for feeding sourdough to six dosing points with high-precision Promass debitmeters, and a **pigging system** to recover residual product in a dedicated fermentation tank;
- A clean-in-place (**CIP**) system consisting of a 3000-litre water tank and a secondary 2000-litre tank containing cleaning agents. Both are equipped with level detection, temperature and conductivity sensors, a pump, electropneumatic valves and drainage. A **heat exchanger** brings the cleaning solution to the required temperature.



Jean-Marie Pregardien

Production manager at La Lorraine Barchon

More information on our sourdough and Idromix solutions?

Email info@spiromatic.com

www.spiromatic.com