

LIMS helps labs in dairy processing achieve food hygiene and safety

European legislation has consistently placed increasing pressure on the food processing industry to conform to the highest levels of food hygiene and safety. As one of Europe's largest dairy ingredient processing companies, Ingredia has a responsibility to conform to the industry standards while processing food products to meet its clients' rigorous demands. Ingredia are the leaders in the development and marketing of functional dairy ingredients. They are a registered supplier recognized by the biggest groups in the international food industry.

The role of the laboratory

Ingredia processes 100,000 tons of dairy ingredients each year for use in chocolates, biscuits, dietary foods, ice cream, yogurts, cheese etc. The company has two laboratories that support six European sites, four in France, one in Switzerland and one in Poland.

The function of the laboratories is quite typical for food processors, and can be broken into R&D and manufacturing QA/QC. The two roles are very different, since the first area requires many different tests to allow the development of new techniques, while for QA/QC, many repetitive tests are carried out on various streams throughout the process. In total, the two laboratories at Ingredia run about 5,000 unique tests each week.

Testing procedures and information tracking in QA/QC

To meet quality testing standards, Ingredia must run numerous tests on raw materials, foods in process and finished products. They use 200 different methods of analysis.



This rigorous testing is carried out to evaluate appearance, performance, texture and taste. In the QA/QC laboratories, Ingredia uses physicochemicals, classical methods of bacteriology, colorimetry and laser granulometry.

In addition to the functional tests carried out by the laboratory, Ingredia also has juries which carry out taste testing. This testing verifies the reliability of results, as well as gauges whether products meet Ingredia's customer expectations.



In the laboratory environment, the staff must track the products and samples, as well as all of the test results. This 'control' is usually carried out most effectively through a laboratory information management system (LIMS). LIMS offer a flexible technological solution to suit different laboratory and industry requirements, and enable both the R&D and manufacturing QA/QC functions to meet the regulatory requirements of the industry with audited data.

The company uses Thermo Scientific LIMS in both the R&D and manufacturing QA/QC testing laboratories, which serve the six processing sites. The LIMS allows the control of Ingredia testing procedures while keeping track of information. It also provides Ingredia with tools to report their data in a format that satisfies the entire organization, ensuring that it can continue its operations without interrupting production. "Our LIMS is totally integrated into everything that we do here," says Alain Hargez, IT Manager at Ingredia. Technology is constantly changing, and the software which controls the laboratory systems must be updated and easy-to-use to meet rigorous external regulations.

Managing test procedures, information and reports in R&D

Ingredia has annual revenue of 251 million euros, and a large percentage of its business is the result of new product developments in partnership with customers. The company develops ingredients for clients through the joint efforts of its sales and technical teams.

Its special product development lines are capable of reproducing clients' manufacturing methods and producing samples that are ready to be tasted. These facilities are serviced closely by the laboratory, which tests many different ingredients for development purposes. As a supplier to multiple customers, Ingredia needs a LIMS that can handle hundreds of test method definitions that may be applied to many different sample matrices. Because of the demand for custom testing and data handling, the LIMS must provide a mechanism to allow general LIMS objects (such as test definitions) to be redefined within the scope of a project without influencing other laboratory work.





The R&D lab relies heavily on the LIMS. Alain Hargez explains, “The LIMS ensures that the lab will achieve repeatable production levels and allows our lab managers to control their testing procedures while keeping track of information, as well as providing them with the tools to report it in a format that satisfies the rest of the organization”.

In the R&D laboratories, the predominant techniques and tests are electrophoresis for splitting, light emission and atomic absorption. In addition they also use colorimetry and laser granulometry.

Organizational requirements demand that laboratories provide the results, a host of limits, raw data and trend information formatted and organized for customer requirements or to meet production schedules. The data must be presented in several formats including paper reports, fax, e-mail, spreadsheets and even custom electronic file formats.

Meeting customer requirements and regulatory compliance via audit reports

The role of the LIMS within the organization is dictated by Ingredia’s Quality Systems, EC standards and the laboratory test results needed.

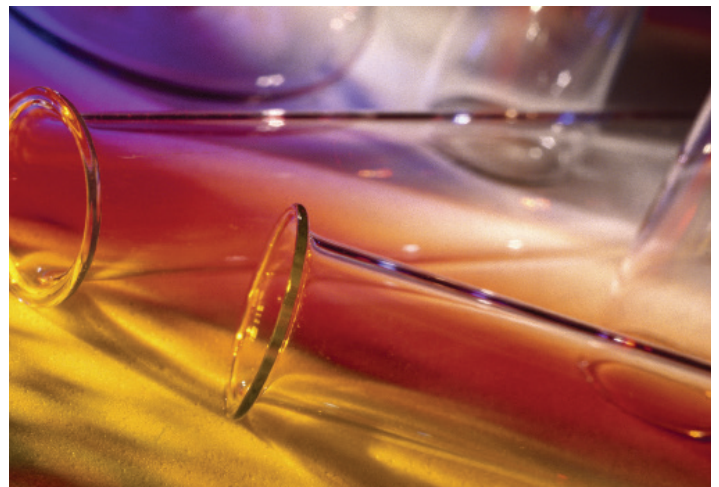
The LIMS provides a secure auditable environment so the laboratory can meet requirements. Wide adoption of a Total Quality Management practice at Ingredia has allowed firm structures to be implemented that legally require data to be both valid and traceable. Ingredia conforms to standardized quality control in all of its services and production procedures.

Through its total quality policy the company guarantees its commitment to the standard of finished products:

- Quality assurance standard ISO 9002
- HACCP (Hazard Analysis and Critical Control Points) procedures
- Audit evaluation

Laboratories operating within Europe need to meet stringent local regulations as well as those of the EC and the USA, making the regulatory environment a complex and expensive burden on the whole industry. Furthermore, French and European food safety and hygiene standards affect the working practices of the laboratories. Food safety standards apply to the processing and manufacture of food products.

The laboratory is also subject to client audits, whereby customers of Ingredia require proof of methods of practice. The laboratory must operate in a way that demonstrates compliance for client audit procedures.



Ingredia uses the LIMS Audit Trail facility to monitor all data trail activity within the LIMS' database. This offers security to protect against inadvertent changes to data, as well as against malicious alterations and damage to archived data. Audit-ready information is kept within special READ-ONLY tables in the LIMS and can be archived to disk or magnetic tape. For straightforward audits, regulatory authorities can source audit reports directly from the LIMS.

If a computer system is not validated it may seriously impair the commercial and legal position of the company. The LIMS allows compliance with regulatory authority accreditation schemes and external audits. Built-in security requires both operator approval during and completing a task and work profiles, conforming to GMP, NAMAS, EPA, FDA and GLP guidelines.

Integration with enterprise systems

In large organizations, a LIMS plays a key role in the integration of the laboratory environment with enterprise resource planning and other critical systems. This allows laboratory test data to be automatically available to plant process and control systems, giving managers immediate accessibility to results and providing a more automated environment.

"We are very pleased with Thermo Scientific LIMS," continues Mr. Hargez. "The system has been very easy to implement and use. There have been literally no problems. The users are grateful for it."



Partnering with Thermo Fisher Scientific

Thermo Fisher Scientific is the worldwide leader in laboratory software and services, providing enterprise-wide, multi-laboratory solutions that are relied on by global food and beverage companies. To support our Thermo Scientific LIMS installations, we provide implementation, validation, training, maintenance and support from the industry's largest worldwide informatics services network.

Find out more at [thermofisher.com/digitalscience](https://www.thermofisher.com/digitalscience)

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