

# LabSystems Case Study: The Importance of the Laboratory in Food Processing

**Company:**  
Ingredia  
**Industry Sector:**  
Food and Beverage  
**Environment:**  
QC, R&D  
**Software Used:**  
SampleManager v3.1-1  
Audit Trail  
Batch Trees  
SQC Charts  
**Platform:**  
Alpha on OpenVMS  
**Database:**  
Oracle RdB

European legislation is placing 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 whilst processing foodstuffs 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, yoghurts,



cheese etc. The company has two laboratories which support six European sites; four in France, one in Switzerland and one in Poland.

The function of the laboratories is typical of a food processor:

- Research and Development
- QA/QC

The two roles are very different, since the first area requires many different tests to allow the development of new techniques whilst for QA/QC, many repetitive tests are carried out on different streams throughout the process. In total, the two laboratories at INGREDIA run about 5000 different tests each week.

## 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 their appearance, the performance, the texture, and the taste.

In the QA/QC laboratories, Ingredia use:

- Physicochemicals
- Classical methods of bacteriology
- Colorimetry
- 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 gauging whether products meet INGREDIA's customer expectations.

In the laboratory environment, the staff must keep track of products, and the samples taken, as well as the test results. This 'control' is usually carried out most effectively through a piece of laboratory software known as a LIMS (Laboratory Information Management System). LIMS offers a flexible technological solution to suit different laboratory - and industry - requirements, and



enables both the R&D and manufacturing QC functions to meet the regulatory requirements of the industry with audited data.

Alain Hargez is the IT Manager at Ingredia. The company uses SampleManager LIMS in both the research and development and QA/QC testing laboratories, which serve the six processing sites. SampleManager LIMS allows the control of their testing procedures whilst keeping track of information, and provides Ingredia with the tools to report in a format which satisfies the rest of the organization so that it can continue to operate without interrupting production. "Our LIMS is totally integrated into everything that we do here," says Alain Hargez.

Technology is constantly changing and as a result the software to control the systems in the laboratory has to keep up-to-date to meet rigorous external regulations, as well as being easy-to-use.

## R&D

INGREDIA is a 1.5 billion francs turnover company (£150 million) 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 which are ready to be tasted. These facilities are serviced closely



# Case Study: Ingredia

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 *"It 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
- atomic absorption

In addition they also use:

- colorimetry
- 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. For much laboratory work, the data must be presented in several formats including paper reports, FAX, e-mail, spreadsheets, and even in custom electronic file formats.

## INGREDIA's Laboratories:

The laboratories in INGREDIA have had a client/server LIMS installed since 1992. The LIMS is SampleManager by LabSystems. Its role within the organization is dictated by INGREDIA's Quality systems, by EC standards and by the laboratory test results needed.

Within a secure I.T. environment, the laboratory can prove it meets audited requirement. Wide adoption of a Total Quality Management practice has allowed firm structures to be implemented which 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 procedures (Hazard Analysis and Critical Control Points)
- Audit evaluation.

Laboratories operating within Europe need to meet their own 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.

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 SampleManager Audit Trail facility to monitor all data trail activity within the LIMS' own 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. SampleManager LIMS allows compliance with regulatory authority accreditation schemes, and external audits. In-built security

requires both operator approval during and completing a task, and work profiles, conforming to GMP, NAMAS, EPA, FDA and GLP guidelines.

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. In addition to meeting these rigid standards, the laboratories themselves have to conform with good laboratory practice (GLP) etc.

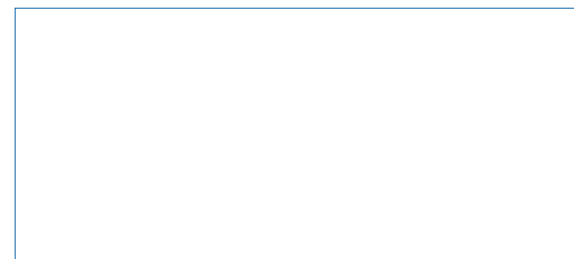
In larger organizations, a LIMS suite is a key element in the integration of the laboratory environment with SAP R/3 enterprise resource planning and other critical systems. This then allows laboratory test data to be automatically available to plant process and control systems, giving managers immediate accessibility to results, and providing a more automated environment.

*"We are very pleased with our LIMS,"* continues Mr. Hargez. *"The system has been very easy to implement and use. There have been literally no problems. For this reason, there has been no conflict between the IT people and the lab people, which is a pleasant circumstance. The users are grateful for it."*

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