

Chr. Hansen Optimizes Quality Control in Starter Culture Production

Chr. Hansen selected Thermo Scientific™ SampleManager LIMS™ software for quality control in starter culture production at the company's Danish facility. The company has since gone through multiple upgrades of the system, keeping pace with the release of new versions in order to take advantage of new features and technologies. A significant increase in productivity led Chr. Hansen to standardize on the LIMS across all of its six culture production sites in Denmark, France, Germany and the US. This enterprise-wide standardization provided immediate benefits with regard to productivity, information sharing and accelerated sample processing.

Introduction

Food safety is an area of significant importance and growing concern, with consumers becoming more skeptical about the safety of the food products they buy and consume. These concerns have led regulatory bodies to enforce strict rules to ensure the quality of food and people's health.

The US Food and Drug Administration's Food Protection Plan builds in safety measures to address risks throughout a product's life cycle, from the time it is produced to the time it is distributed and consumed. The World Health Organization (WHO) published a Global Strategy for Food Safety which aims to reduce the burden of food borne illness by advising and assisting Member States to reduce exposure to unacceptable levels of chemicals or microorganisms in food. The European Union (EU) also issued a whitepaper on food safety which proposes implementing certain measures in order to enable food safety to be organized in a more co-ordinated and integrated manner with a view to achieving the highest possible level of health protection.



As a result, food ingredients manufacturers face a number of food safety challenges including compliance with the increasing regulatory requirements and difficulties in keeping production facilities and raw materials free of pathogens. Furthermore, the increased availability of minimally processed, ready-to-eat refrigerated foods puts higher pressure on the manufacturing process to control or eliminate pathogens. In any case, food ingredients manufacturers need to take a proactive approach and maintain a high level of food safety.



Chr. Hansen

Founded in Denmark in 1874, Chr. Hansen is one of the world's top food ingredients companies with an annual turnover of 500 million krone in 2006. A total of 2,500 employees in over 30 countries around the globe are involved in the development of natural ingredient solutions such as cultures, enzymes, colors and flavors for the food, pharmaceutical, nutritional and agricultural industries. Every day, 500 million people around the world eat or drink products containing Chr. Hansen's ingredients.

Chr. Hansen aims to discover and provide innovative ingredient formulas in order to improve the quality of food and health for people all over the world. The company offers natural safety and protective barriers that answer specific customer and market needs. Chr. Hansen's Food Safety and Protection Program is a combination of natural products, application knowledge and industry expertise that helps assure the safety and stability of meat, dairy and prepared foods.

Of its total annual turnover, Chr. Hansen spends around 6% on research and development activities taking place in the company's major R&D facilities located in Denmark, France, Germany and the US. Chr. Hansen also operates state-of-the-art application centers in 21 different countries and six production sites on three continents.

The Challenge

Chr. Hansen needed a laboratory data management system capable of ensuring optimum quality control in starter culture production. Since the system would be operated by a large number of research scientists, whose extensive

training would have been both costly and time consuming, there was a prominent need for an easy-to-use solution requiring no specialized knowledge in order to run in an efficient manner. The company also required a system that would take a full-circle approach to analysis, with each analysis request handled entirely via the web, from sample login and test assignment through to test information and reporting.

Full automation was also considered to be of great importance. Manual processes such as the labor-intensive entry of data onto excel spreadsheets needed to be eliminated. Additionally, it was necessary to choose a software solution that would facilitate secure access to certain confidential files of data only to authorized personnel. In that way, not all data would be visible to all production quality control personnel or to customers making audits. Finally, an efficient solution would be capable of seamlessly integrating with the company's ERP system. In order to meet these requirements, the company began to look for a Laboratory Information Management System (LIMS).



Implementation

Chr. Hansen investigated the installation of a LIMS for quality control in starter culture production. After extensive market research, the company found that no other system matched the capabilities of Thermo Scientific SampleManager LIMS software in terms of consistency of performance, easy configuration and dedication to the analytical field. As a result, the solution was implemented in the Chr. Hansen Danish production facility.

Since the installation of SampleManager LIMS software, the company has been following the release of new versions and has upgraded the initial system multiple times whenever new features of significant benefit were introduced. The company decided to standardize on the LIMS for quality control in starter culture production across all of its six culture production sites in Denmark, France, Germany and the US. All newly installed systems are run by the initial central server located in Denmark while an infonet connection has been established between the culture production laboratories and the rest of the Chr. Hansen plants. The LIMS was also employed in the Chr. Hansen Central Analytical Laboratory for Research in Denmark. In total, the system is being used by more than 100 research scientists.

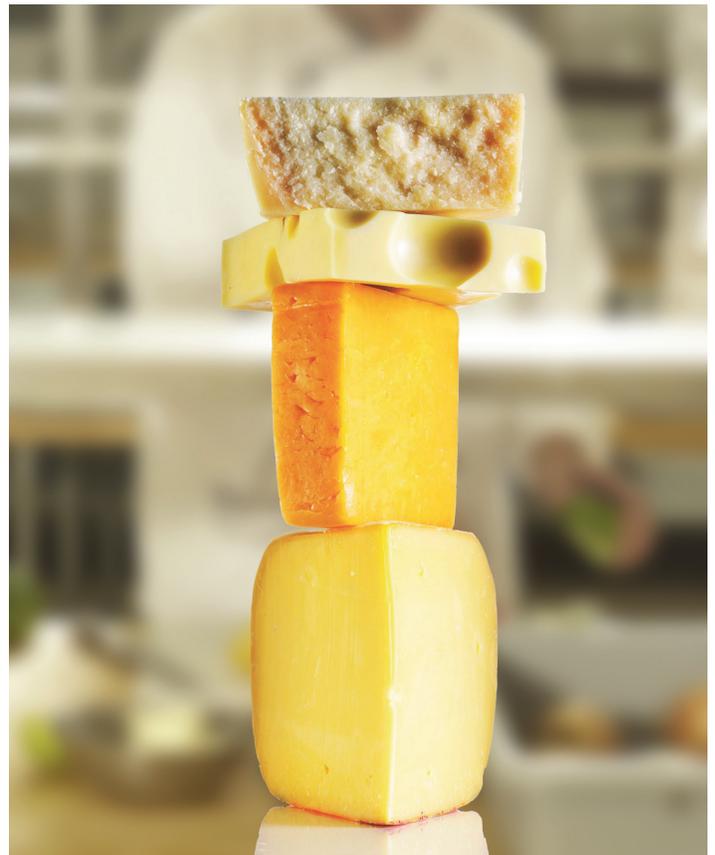
SampleManager LIMS software is designed for organizations seeking to standardize on a LIMS across all of their laboratories. With proven, dependable technology at its core, the solution is full-featured for analytical laboratories, easily configured to provide enhanced functionality for specific industries and easy to use. The LIMS can be implemented to support local and global laboratory deployments, is scalable for a large user base and available in multiple languages. It provides the foundation for a complete laboratory automation solution by integrating with instruments as well as laboratory and business systems, including PIMS, MES and ERP solutions. The system is auditable for laboratories operating in regulated environments and it is designed, developed and supported within an ISO 9001/TickIT environment.

Key benefits

Since the deployment of the LIMS, Chr. Hansen has experienced considerable benefits with regards to real-time, global availability of analytical results leading to increased laboratory productivity and accelerated sample turnaround. Identical product specifications are being used even if a product is produced in more than one site.

Key performance indicators are easily calculated and different plants are measured by the same criteria. Global bottlenecks can now be easily identified in a timely manner. Ring tests are now easily carried out and the system has enabled direct comparison of results between research and production quality control whenever new products are being launched. Furthermore, the implementation has been processed smoothly with no training required for the 100 LIMS users at Chr. Hansen research and production facilities.

At Chr. Hansen, the SampleManager LIMS software serves as a complete solution for information deriving from projects across all sites, enabling laboratory scientists to easily consolidate sample and instrument data. With administration of the system being kept simple, it is possible for the company to create new users using the integral functionality of the LIMS without the need to involve the IT department. Implementation of the LIMS in the laboratory has ensured that validated methods of production are being used in the research area whenever possible.



Chr. Hansen has also integrated the LIMS with the existing ERP system, and each process order for a batch of culture in the ERP triggers the login of a task in the LIMS. Quality control data is now maintained in the LIMS rather than in the ERP. The LIMS facilitates laboratory-specific login, meaning that samples from one batch can be assigned to different laboratories according to the analytical method that needs to be implemented. Furthermore, plant specific login allows samples to be assigned to a designated plant. Samples can be logged in without assigning any tests and production labels are generated without logging them into the ERP. A different group ID is assigned to each sample of the same batch, while different test schedules are applied to different sampling points in the LIMS. Overall, this system integration means that as soon as the test results are introduced and authorized in LIMS by the laboratory personnel, the information is immediately available for the processing facility technicians and other personnel and laboratory administrators.

Data integrity and quality of results is driven through the LIMS, since almost all calculations are processed by the LIMS using the same format for different purposes at the various plants. The use of spreadsheets and error-prone processes in the laboratory are thus eliminated. VPN access to reports generated across more than 50 sites is now possible via the internet.

Conclusion

With food safety concerns growing stronger and strict regulations being enforced to ensure the quality of food and people's health, food ingredients manufacturers need to employ systems and processes that help them comply with regulations.

Chr. Hansen required a laboratory data management system capable of ensuring optimum quality control in starter culture production. By implementing the SampleManager LIMS software, Chr. Hansen has put in place an efficient system that facilitates real-time, automated entry and processing of laboratory data and fast extraction of results without requiring a high degree of technical expertise.

Henrik Behrndt, Lead Systems Consultant, Global Production Quality at Chr. Hansen based in Hørsholm, Denmark comments: "Consumers are becoming more negative towards chemical additives and antibiotics in food products. Using natural starter cultures for bioprotection is the answer. Chr. Hansen believes in a high level of research and development to continue the flow of innovative solutions that can improve the health of consumers around the world. The continuous upgrade to newer versions of the SampleManager LIMS software is part of this effort. We chose this innovative software solution because Thermo Fisher Scientific shares our vision for making the world a healthier, cleaner and safer place in which to live."

"The LIMS is extremely easy to use and we did not need to devote any time to train our laboratory scientists. Furthermore, the system enables our scientists to automatically enter all test related data, thus saving time and facilitating quicker results. Overall, with the implementation of the LIMS, laboratory productivity has been considerably enhanced and sample turnaround has been accelerated while ensuring optimum product quality. We are now looking to the next LIMS upgrade to take advantage of even greater technological advancements."