




## Customer Case Study:

# Improving Research and Development Processes

*The Dow Chemical Company Uses Thermo Scientific Nautilus LIMS™*

**The Dow Chemical Company is a leader in science and technology, providing innovative chemical, plastic and agricultural products and services a wide range of consumer markets. Dow Chemical began using Thermo Scientific Nautilus LIMS™ for Research and Development laboratories in 1999 to replace a previous LIMS that was not Y2K compliant. Nautilus LIMS has now been selected as the company's Most Effective Technology (MET) within the Dow R&D sector.**

### The Dow Chemical Company

Dow Chemical is a diversified chemical company that aims to constantly improve progress using scientific and technology innovation. Offering a broad range of products and services to customers from over 175 countries, Dow has annual sales of $49 billion and employs 43,000 people worldwide. Built on a commitment to principles of sustainability, Dow helps its customers to provide everything from fresh water, food and pharmaceuticals to paint, packaging and personal care products.

Dow uses laboratories for research into new products and processes as well as for production support. Dow Chemical Research and Development (R&D) is substantially organized in alignment with Dow's businesses, but the division also has key capabilities that are leveraged throughout the corporation. The key R&D organizations consist of:

- Core R&D, including Applied Science and Technology and Research and Engineering Sciences
- Basic Plastics and Chemicals, Hydrocarbons and Energy and Licensing R&D
- Photovoltaics R&D
- AgroSciences and Biotech Core R&D
- Speciality Plastics, Dow Fiber Solutions and Wire and Cable R&D
- Building Solutions and Materials Transformation R&D
- Automotive and Materials Engineering R&D
- Designed Polymers and Latex R&D
- Polyurethanes and System Houses R&D and Coatings and Interfacial Science R&D

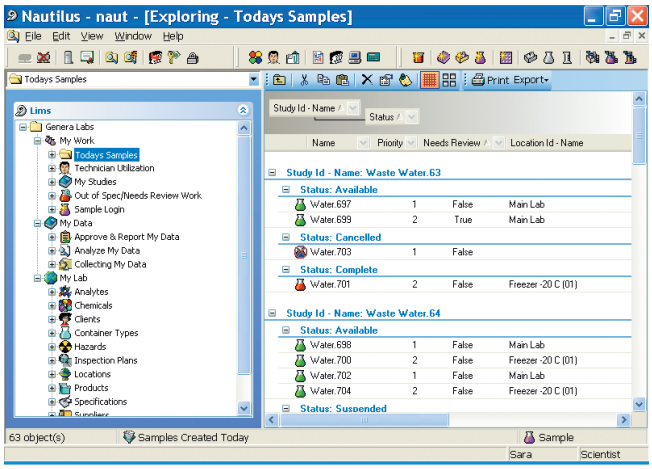
- Epoxy and Intermediates, Dow Specialty Chemicals R&D
- Global Technical Service and Development, Customer Technical Service Centers, Product Stewardship

Dow R&D is conducted in over 40 locations worldwide and each site ranges in size from six to over 1000 employees.

## The Challenge

Dow R&D has laboratories across the globe, and its internal process management systems can contain up to 247 concurrent users at any one time. The company has a wide range of configuration requirements including tracking samples, tests, technician and instrument hours as well as parsing data into the system, generating results and transmitting testing requirements to outside contract laboratories. As part of its R&D activity, Dow carries out a mixture of both routine and variable sample analyses, and requires integration for approximately 50 instruments in order to undertake these tests.

As a result of these specific requirements and the large amount of system users at Dow R&D, it is essential that any computer system implemented be flexible and adaptable. Prior to implementing Nautilus LIMS, Dow R&D used a variety of systems, both homegrown and vendor-supplied, for the management of data. In 1999, management at Dow R&D became concerned with a Y2K issue with the previous LIMS. After carrying out an internal evaluation it was decided that a replacement system was required in order to provide the flexibility and configurability to deal with the large amount of data from system users worldwide.




## Implementation

When the decision to change the existing non-Y2K compliant LIMS was taken in 1999, Dow R&D investigated several alternative systems but found that none matched the capabilities of Thermo Scientific Nautilus LIMS in terms of flexibility and configurability. Nautilus LIMS provides a foundation for the storage and processing of huge quantities of data, including sample and analysis tracking and reporting as well as essential technician and instrument information. Robust and adaptable with easily configured extensions, Nautilus is the LIMS of choice for many organizations worldwide.

The flexibility of Nautilus and its capacity to handle large amounts of data provides the ideal system for Dow's

LIMS users worldwide. With built-in instrument integration, the LIMS offers productivity gains right from the outset and the flexibility of the software offered Dow the option to configure the LIMS for the company's individual requirements.

Dow has worked with Thermo Fisher Scientific since 1990, and has had a good experience with other products. Thermo Fisher's stable position in the global LIMS market also appealed to Dow, as well as the wide range of resources available to Thermo Fisher customers to maintain and improve informatics solutions following implementation.

In 1999, Nautilus LIMS was implemented in four of Dow's R&D laboratories. During the subsequent two years, an additional five laboratories were added to the system, and since 2001 Dow has installed Nautilus in around three laboratories each year in North and South America, Europe, Southeast Asia and India. Dow takes full control of this implementation through designated in-house Nautilus Subject Matter Experts. During the initial implementation, Thermo Fisher provided training to Dow's Subject Matter Experts. These resources were then responsible for leading further Nautilus implementation projects and for training internal resources, both super users and end users. Thermo Fisher also provides ongoing training tailored to Dow's individual needs, including in-house training courses for the Subject Matter Experts who can then disseminate the information through the company.

Dow R&D has integrated over 50 instruments with Nautilus including Gas Chromatography (GC), Gas Chromatography Mass Spectrometry (GCMS) and Inductively Coupled Plasma (ICP), in order to carry out a wide range of sample analyses. As part of this instrument integration, Dow is using the Nautilus parsing and mapping features along with shared network directories.

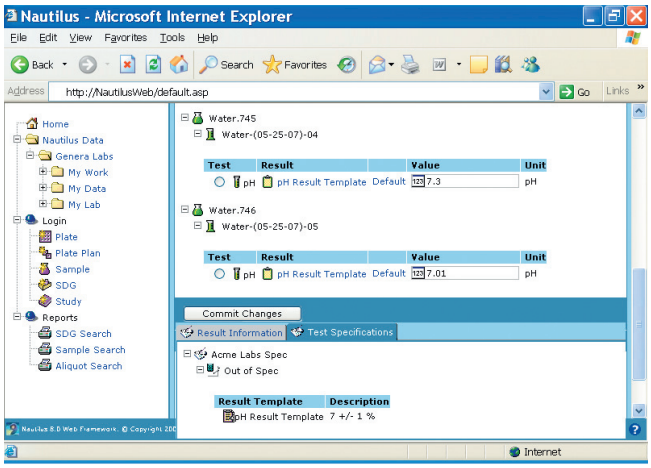
Since the initial implementation, Dow has taken advantage of the configuration capabilities of Nautilus LIMS. One of Dow's guiding principles is that the company performs configuration, changing the system from inside the vendor-supported structure, rather than customization, changing the system outside the supported structure. This configuration is carried out by the Nautilus Subject Matter Experts. Configuration of the LIMS in this way has also enabled Dow R&D to improve the user acceptance of

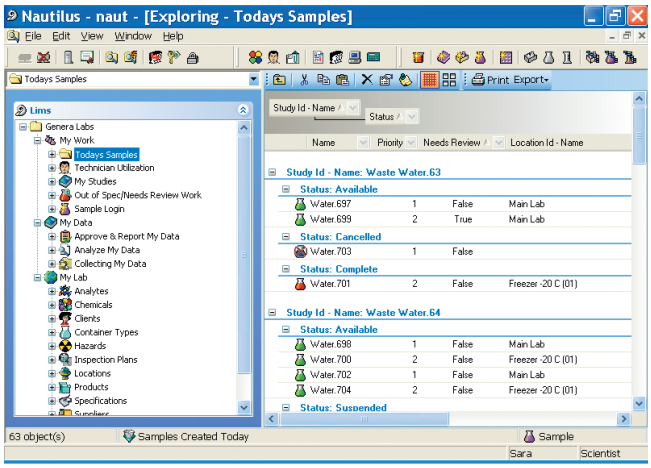
Nautilus, and the company has found that where they have configured Nautilus to mimic previous work processes, acceptance has been high.

## Benefits Achieved with Nautilus LIMS

Where Nautilus has replaced other systems, Dow has experienced significant benefits in terms of Y2K compliance and increased flexibility and configuration of the LIMS. Dow has also experienced increased availability to users across all implementation sites, as well as increased traceability within the lab and better communications with peers and clients.

The flexibility of Nautilus in a quickly advancing scientific world differentiates it from other LIMS currently available, and means that improvements and changes can be made in-house by Dow, with minimal cost to the business. With the right personnel Nautilus can be managed and molded to a system that is open and transparent. This means that the commercial chemical business can grow rapidly without being handicapped by a rigid LIMS system.



Nautilus has also increased productivity at Dow by enabling laboratories using the LIMS across multiple sites to easily transfer work between users. This means that Dow can leverage resources at various sites to avoid hiring additional resources or purchasing additional instrumentation, thereby reducing overheads.

## Next Steps

Since the successful implementation at Dow R&D in 1999, Nautilus has been installed in a number of other divisions of the company, including the core analytical capability and the polyolefins, foams, gas treating and agro sciences groups. Dow is currently implementing Nautilus in approximately three laboratories each year, and this is set to continue indefinitely.

Nautilus is the current Most Effective Technology (MET) at Dow R&D. This means that when a laboratory begins to look for a LIMS, Dow R&D recommends Thermo Scientific Nautilus, providing implementation and support assistance to the laboratories if they choose to utilize this solution.

## Conclusion

In a chemical company operating on a global scale, it is essential that processes and systems be streamlined in order to maximize productivity and reduce costs. However, systems must also be flexible to cope with the constantly changing requirements of the business. Dow R&D has now put in place a complete solution which is capable of handling samples, tracking analyses, storing instrument and technician hours and creating complex workflows. By using Nautilus LIMS, Dow R&D has succeeded in installing a Y2K-compliant system and improving workflow processes and productivity in a cost-effective and flexible way.

John O'Neal, Senior Research Specialist at Dow R&D in Michigan, comments: "Since the implementation of Nautilus, we have enabled laboratories to better manage their workloads, and provide access to testing results more easily which also improves customer responsiveness. Additionally, a key requirement for us when choosing a replacement LIMS was flexibility and Nautilus was the only system which could fulfill this."

## For More Information

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