



Business benefits of LIMS in the metals laboratory

Laboratory Information Management Systems (LIMS™) use a relational database to collate information gathered in a laboratory. The type of information stored can vary, but often includes tests, results, samples, instruments and staffing, and the LIMS provides the tools to allow this information to be entered, tracked, documented, audited and reported.

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QUALITY, ANALYSIS & TESTING

Streamlining laboratory processes is important to maximise efficiency in manufacturing and processing industries, not least in metals. Organisations are looking for new ways to improve productivity, reduce costs and time, and meet customer expectations without compromising data accuracy.

Within the metals industry, the laboratory environment is used for the testing of raw materials and for process analysis to ensure that materials meet customer specifications. Environmental analyses are also carried out to ensure that processes meet regulatory requirements.

For more than 20 years, the use of Laboratory Information Management Systems (LIMS) has been broadly extended in the metals industry as a critical tool to achieve the objectives of quality, productivity, performance and environmental requirements demanded by national and international markets.

In order to ship their product, whether within the country of origin or around the world, metals producers must certify the final goods are in compliance with regulations, standards and user requirements. LIMS is the tool to collate the data and provide the certification.

Beyond this, LIMS deliver the additional benefits of completely organising and managing and forecasting performance associated with metals production. The data is accessible not only to laboratory staff monitoring the production process, but also to business decision-makers, suppliers, even customers. LIMS can provide web access to visualise online data, production status, end products, and reports – extending the benefits of the system beyond the laboratory.

One important benefit of a LIMS is that it maximises value from laboratory operations by improving laboratory efficiency and assisting compliance with regulatory and quality standards. By using a LIMS, laboratory workers can reduce the time spent on locating samples, entering and reviewing data, calculating results, producing reports and communicating with the laboratory's customers.

A LIMS can also help the laboratory comply with quality standards such as ISO 9000 and ISO 17025, regulatory standards like GxP, FDA 21 CFR Pt 11 and environmental standards including ISO 14000. This feature of a LIMS is also beneficial for laboratories producing data that is used to confirm that a product is within commercial specifications, data that confirms the safety of a product or data that is submitted to a court of law.

Functional areas of a LIMS include the organisation of static data such as the management of the laboratory environment, including information about personnel, instruments, analytical procedures, sample types, customers, products and other IT systems. Another main benefit of a LIMS is that it manages dynamic data, such as recording the progress of samples through the laboratory, thereby improving sample processing and reproducibility. From the initial login of a sample, the LIMS tracks the sample's progress through the laboratory, registering as the sample is assigned tests, recording the results that are entered, comparing the results against specifications, reviewing and

authorising further tests, and generating reports or certificates of analysis based on information already in the database.

A LIMS can also be part of an overall system, which interfaces with external systems such as ERP, PIMS and MES. One customer integrates their LIMS with process information systems from PI and AspenTech).

Combining the use of a LIMS with other time saving techniques such as bar-coding and laboratory equipment integration to the LIMS improves productivity gains. A LIMS can also help laboratories with regulatory compliance in areas such as security, operator approval, instrument calibration and maintenance – including AQC, SQC, E-sigs and vendor qualification.

LIMS IN STEEL

Using a LIMS is extremely beneficial for companies within the metals industry. Corus uses the Thermo Scientific *SampleManager LIMS™* in its sections, plates and commercial steels business. As one of the largest businesses within Corus, the division produces almost 8Mt of liquid steel each year at its UK sites.

The division's main laboratory functions are raw materials testing and in-process analysis, facilitating production processes and ensuring that customer needs are met. The business is provided with a continuous supply of quality data from analytical testing laboratories, meaning that organising the collected laboratory data is an essential part of maintaining product consistency. Using the LIMS, the business's Analytical Service can register, track and report every sample and test that enters the laboratory.

In addition to streamlining the site operation and improving productivity, the main benefits for Corus from implementing a LIMS include:

- Reducing transcription errors due to the automated system;
- Faster turnaround times for customers;
- Electronic data transfer of results directly to customers or customer systems;
- Statistical data that controls processes and closely monitors the performance of service to customers;
- Reduction in manpower by removal of paperwork systems and direct capture from instruments;
- Improved documentation and records for audits;
- Easy access to historical data;
- Better service to customers by providing an ad hoc service;
- Ability to more easily quantify and cost analytical work.

Thermo Fisher Scientific, a world major in serving science, has extensive experience in supplying enterprise LIMS solutions to meet the needs of manufacturing industries. Its wide range of LIMS solutions helps to increase productivity in the laboratory by enabling bar-coding, instrument integration, location tracking, workload and resource planning and technical architecture. Thermo Fisher Scientific can also help companies to achieve regulatory compliance by integrating security, operator approval, instrument calibration and maintenance and vendor qualification into its LIMS solutions.

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