

ALCOA

LABVANTAGE Delivers More than Expected at ALCOA Instrument Integration, Database Tracking

Company Background



ALCOA is the world's leading producer of primary aluminum, fabricated aluminum, and alumina. The company is active in all major aspects of the industry including technology, mining, refining, smelting, fabricating, and recycling. Alcoa ALCOA's aluminum products and components are used worldwide in aircraft, automobiles, beverage cans, buildings, chemicals, sports and recreation, and a wide variety of industrial and consumer applications, including such Alcoa ALCOA consumer brands as Alcoa ALCOA® wheels, Reynolds Wrap® aluminum foil, and Baco® household wraps.

Key Challenges

The Analytical Chemistry Section at the ALCOA Technical Center in ALCOA Center, Pennsylvania, needed a modern LIMS that met the corporate standards for hardware and software, and was flexible enough to meet the diverse needs of the testing laboratories. The inhouse-developed LIMS had reached maturity, and several other LIMS had been implemented with limited success. It was clear that a modern, extensible, and flexible workflow-oriented LIMS had to be implemented.

System Sought

The Analytical Chemistry Section processes a large number of samples 18 hours a day, 6 days a week. The LIMS needed to be robust enough to handle the large sample load, and require little maintenance from the inhouse staff. In addition, a large proprietary analysis package needed to be rewritten and integrated into the LIMS, along with interfaces to standard metal analysis instrumentation, which is not typical of modern analytical laboratories.

System Selected

Several companies made presentations, and LABVANTAGE was selected after a test run in the mechanical testing laboratory (physical properties testing). The selection was based on the developmental capabilities of the LIMS, and the inherent extensibility of LABVANTAGE, which would allow for implementation of the proprietary analysis package.

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LABVANTAGE CASE STUDIES
ALCOA

System Delivered

The LABVANTAGE system went live in October of 2001, with the analysis module added in January of 2002. The system currently has 50 users and is processing 53,000 samples per year, yielding in excess of 450,000 determinations on these samples. This is the result of more than 8000 internal jobs at one site with multiple laboratories. Implementation utilized LIMSLink, as well as custom Visual BASIC Tasks for instrument interfacing, and includes the following interfaces:

Reports used to support the lab and refinery operations include:

- Automated ARL Quantometer (an electronic spectrographic analyzer)
- Automated Fluoride Analysis Instrumentation
- Semi-Automated Inductively Coupled Plasma Instrumentation
- Manual Wet Chemistry Analysis
- Manual Gas Chromatographic Instrumentation
- Manual Differential Scanning Calorimeters
- Manual Thermo Gravimetric Analysis Instrumentation
- Semi-Automated Customer Job Submission from an Interactive Web Form

Key Benefits

Once the LABVANTAGE system was implemented, the staff experienced and appreciated the flexibility of LABVANTAGE as a multi-faceted laboratory development tool. Since the initial successful implementation, in fact, ALCOA has implemented functionality that was not originally in the scope of work. They include:

- A Business Metric and Tracking System, which is not typically a LIMS function
- A Non Conformance Reports Database used to track products or processes which do not meet conformance requirements

Ongoing development of additional functionality includes:

- A Training Database used to track the training of the technicians An Analyst Certification Database, which similarly tracks the certification and re-certifications of the laboratory technicians
- An Instrument Calibration database which tracks the calibrations of instruments in the laboratories
- A Job Safety Analysis (JSA) database that tracks the creation, updates, and reviews of JSA documents
- A Precious Metals Database to track the inventory of precious metals used in analytical testing
- A Toolbox Meeting Database to track and share the details and action items that are discussed at weekly safety meetings in each analytical area

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