

Laboratory Information System

In the past the classical materials inspection with its main topics mechanical inspections, surface inspections (using optical or scanning electron microscopes), and chemical analysis of material composites was more or less neglected by software development companies. Therefore AHP has picked up the subject and developed iQ-LIMS – a solution that is targeted especially to the requirements of a typical materials laboratory.

iQ-LIMS completely fulfills any relevant requirements arising from DIN/ISO 17025 for test laboratories and offers significant saving potentials resulting from avoiding time-consuming manual procedures.

Workflow

iQ-LIMS covers the complete laboratory inspection process beginning with entry of an order by a customer over the inspection itself to the presentation of the inspection results. This includes a detailed cost accounting, a comprehensive date management, and an almost automatic reporting. The laboratory order is received via Internet or Intranet, in case of internal orders directly over iQ-LIMS or in the classical way of verbal and written communication and manual entry on side of the laboratory. Reports for example provide an overview of door-to-door times or costs. The usage of iQ-LIMS is not limited to one single laboratory but suited for multiple laboratories within a plant that offer their own service portfolio because of different laboratory equipment.

The process begins with receiving the laboratory order. The order already contains the required services and inspections as well as the target dates proposed by the ordering party. Required samples are either sent along with the order or in parallel and received by laboratory personnel. Before the order is processed it is validated regarding completeness and feasibility (samples received, dates realistic, etc.) If the requirements are met the inspections are prepared. During this phase grindings are created and it is documented which materials have been used and where the grindings can be found. Also, the upcoming tasks are automatically queued in the to-do lists of the intended work places. The inspection itself is performed using the established *iQ-FEP* module (inspection during production) of iQ-BASIS that leads the inspector into the inspection by doing a mouse click. The inspection can refer to attributive or variable characteristics that often require controlling measuring devices and automatic receiving of measuring values. For attributive characteristics it is possible to assign a failure code. Any results can be documented by the inspector by adding photos and documents. After finishing inspections the ordering party needs to be informed about the results. For this purpose the software provides a short report that is created automatically without any manual action, or an extensive report that is generated automatically but needs to be completed manually to meet the needs of the ordering party and also contain analysis results. Sending the report can also be done automatically by email while an alternative way is an optional download from the Internet or Intranet.

Important Features at a Glance

General features

- Entry and reuse of service data (preparation tasks, creation of extensive reports and so on)
- Inspections for attributive and variable characteristics
- Support of free-text services
- Assignment of existing equipment to inspections
- Regular monitoring of used devices according to DIN/ISO 17025 by integrating the gauge management module *iQ-PMV* and showing this information in iQ-LIMS

Service portfolio

- Description of regular laboratory activities
- Specification of services (e. g. creation of grindings, ordering of samples, or chemical handling) and inspections (attributive, variable, EMR, x-ray analysis, hardness, tensile strength, etc. including corresponding nominal values and tolerances)
- Specification of costs on a per time basis or using fixed rates (working units)

The laboratory order

- Entry via Internet/Intranet, using the iQ-LIMS user interface in case of internal orders, or manually by an iQ-LIMS user
- Taking over independent analysis and samples in any number of single order positions that can contain multiple positions from the service portfolio or positions that have been added manually
- Storage of any dates that belong to the laboratory order
- Simplified editing of a laboratory order by using a reference order whose contents are copied into the laboratory order
- Recurring orders for periodically recurring tasks

Important information stored in the laboratory order

- Unique identifier that can be generated automatically
- Short description
- Status (created, released, in process etc.)
- Order type (internal or external)
- Ordering party; supported by MS Outlook integration
- Optional specification of a second contact person
- SAP number, customer order number

- Description of the intention of the ordering party; comment of the laboratory, inspection parameters
- Motivation for the inspection (first sampling, special inspection, serial inspection, machine capability, etc.)

Dates (and other details)

- Entry of the order, entry of the sample(s)
- Order processing
- Target date of the ordering party
- Target finishing date, target date of laboratory
- Release for inspection, finishing of inspection
- Closing report

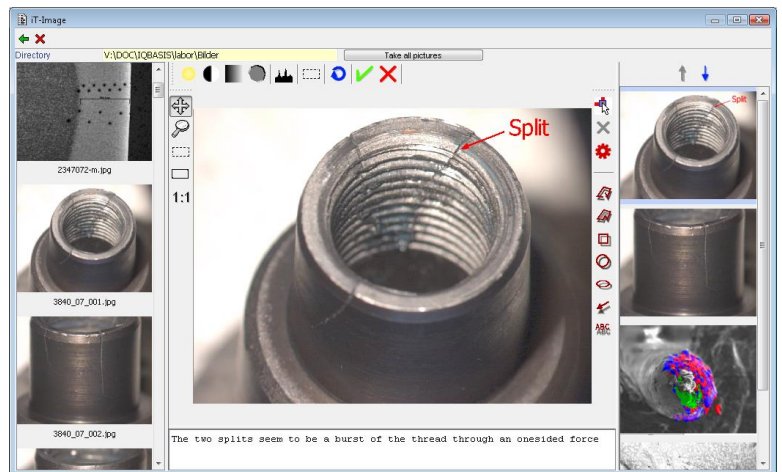
Details of grinding and tempering

- Grinding parameters of the ordering party
- Parameters of the laboratory management
- Number of required grindings
- Disposition of grindings (warehouse, scrapped, etc.)
- Per grinding: ID, creation date, contained materials, material before/after tempering
- Tempering: Pre-process data, oven-related data, treated material, oven-coordinates of taken samples
- Optional output of these details

The inspections

- Entry of attributive characteristics using failure groups and codes
- Variable characteristics for all physical measurements. Consideration of tolerance limits.

- Entry of additional information for both types of characteristics: photos, scanned measurement series, PDF files, etc. Optional editing of photos using the iQ-BASIS redlining tool (see screen shot) and adding of explanations/remarks
- Entry of texts and photos for services



Reports

- LIMS-specific statistics: processed laboratory orders evaluated by several criteria, processing and door-to-door times, costs and time efforts, etc.
- Evaluation of inspection results (original value overviews, graphical flow of measurements, failure statistics, and more) using the iQ-FEP module

Interfaces to Other Modules

- *iQ-PLAN* for a detailed inspection planning
- *iQ-FEP* to perform inspections and control measuring devices
- *iQ-PMV* for managing the gauges that are used in the laboratory
- *iQ-GL* for a centralized maintenance of all master data that is relevant in other modules, too
- *iT-MAIL* for automatically sending emails (e. g. to notify the ordering party)
- *iQ-DOKU* for document management features
- *iQ-INFO* if you need to create reports on your own- for example using Crystal Reports