THE AUTOMATED LABORATORY

Turnkey metals automation

ARCELORMITTAL HOCHFELD GMBH

Module selection grid

Sample announcement	Sample preparation	Analysis methods	Control and communication	Environment
Airtube systems	*Solid samples* • weighing • *cooling* • *milling* • grinding	*XRF analysis*	*SamTracs* *Sample tracking and control system*	*Turnkey - customized (container-based buildings)*
Manual announcement	*Automatic metal chip generation for combustion analysis*	XRD analysis	*LIMS* *Laboratory information management system*	Turnkey - standard (20 - 30 feet based container solutions
Bulk announcement	*Powder samples* • weighing • *cooling* • *milling* • grinding	OES analysis	*Level 2 communication*	In-house placement
Automated announcement	Automated announcement	*Radioactivity analysis*	*Customized analysis results transmission and printing*	
Barcode (RFiD)	Barcode (RFiD)	*Machine vision sample surface analysis*	Automatic signage & narrowcasting	

Module written in italic were used in this project

Malvern Panalytical
a spectris company

THE AUTOMATED LABORATORY

The solution

After the old PANalytical automated laboratory at ArcelorMittal had been working 24/7 for more than 20 years, the company needed a new laboratory for their steel analyses.

The development of the new laboratory was a turn-key project, including the laboratory building itself, the automation system and air tube transportation for 7 lines, connecting to 2 separate factories. The new laboratory has been fully working since March 2014.

PARTS OF THE AUTOMATED LABORATORY:

- A complete 300 m^2 laboratory building including laboratory, kitchen, toilets, workshop and storage rooms.
- 7 air tube lines to two factories, including 2000 m of total tube length and a transport speed of 20 m/s.
- Two completely redundant automated laboratories, connected to each other to form one automation with built-in redundancy.
- Cell-structured system for optimal versatility with automatic rerouting of samples when units are serviced or not available.
- Fully automated control of the complete system.
- All automated and non-automated analyzers are connected to the SPARCS LIMS system for easy data storage, reporting and communications.
- Automatic sample production for off-line combustion analyzers.
- All results communicate to the Level 2 systems of the steel plant.

All contracting, supply, engineering, installation and commissioning services were part of Malvern Panalytical's scope of delivery. Malvern Panalytical was chosen for its technical know-how, the reliability of the systems, and for the quality of its customer support. This unique laboratory was designed and built in close cooperation with ArcelorMittal.

Automated process

Both raw iron, steel and slag samples are treated automatically. Sample cooling, milling and sample analysis surface inspection are integrated in the automation setup. All analysis data (including information about the sample surface and the processing time) are collected and checked using Malvern Panalytical's SPARCS LIMS package, which also communicates with the Level 2 production control system. Contamination-free production and collection of chips for combustion-based analysis is an integral part of the automation.

The concept

The automated laboratory is a multi-disciplinary strategy to increase the productivity and reduce lab process cycle times of our customers by making the best use of technology. Based on customer needs, the automated laboratory is designed for the customer and with the customer.

Our automation projects can cover all steps involved in the process control and quality control.

Since 1994 we have built automation projects, surpassing 90 installations worldwide.

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