

Real Time Traceability in Microbiology at Westward Laboratories Cornwall

Automation and Mechanisation are key requirements in high throughput environments such as analytical laboratories. A recent project completed at Westwards Microbiology Laboratory by Kiestra Lab Automation (The Netherlands) and Autoscribe UK Ltd demonstrates how such projects, can lead to increased productivity, reduced human errors and improved tracking and traceability.

Westward's microbiology laboratory processes hundreds of samples each day for microbiological analyses such as total viable count, yeast and mould, coli, e-coli, entero, salmonella, etc. Thus there was a requirement for a system which would not only automate the actual testing process but also track and trace the samples and associated results.

Matrix LIMS and real time bar coding with BarcodA

The key to this real-time automation is real time barcode labelling of all sample carriers (such as bags, tubes, dishes, bottles) provided by Kiestra's BarcodA system. This is used in conjunction with [Autoscribe's Matrix LIMS](#) system (a fully configurable LIMS system with tracking functionality).

Real time bar coding dramatically reduces the transcription error rates to only 1 in 36 trillion characters. Compare this to manual coding / reading / writing where there can be an at least 1 error in 300 characters and the necessity for bar coding becomes obvious!

BarcodA is a system that automatically places an optical barcode on all tubes, bottles and petri-dishes. This code contains all important information like composition, sell-by date etc. With this barcode, every sample carrier is unique and recorded meaning full traceability for the laboratory. Samples are also provided with a barcode which is generated by Matrix LIMS



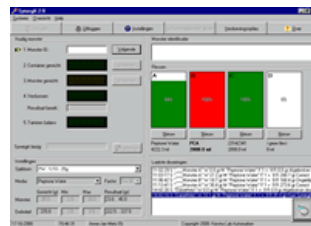
Automated sample preparation and dilution with SynergA and TraceA

The first step of each sample's preparation is dilution. This is performed by Kiestra's gravimetric dilutor, the SynergA (the fastest dilution system available). This gravimetric dilutor is connected to a PC via "TraceA" software which allows full traceability of all dilution operations.



In full automatic mode, the sample barcode includes information about the type of dilution required (sample information including the weight of sample, diluent, dilution factor is also recorded giving improved accuracy). When the sample barcode is scanned, the system automatically checks to see if the starting weight is within the predefined limits, selects the bottle of media to be used (if several are connected at the same time), makes the dilution and checks if the accuracy is correct.

At the workstation the TraceA software package makes sure that all relevant data is stored automatically (date, time, analyst id, sample id, weight of sample, media batch number, weight added, and media). This data is then automatically exported to Matrix LIMS.



The next stage is testing. Every sample tested requires a Petri dish (apart from pathogen samples that are tested in a separate laboratory). Barcode labelling of each dish is an automated process performed by Kiestra's BarcodA system at an amazing speed of 1000 dishes per hour.

Sample barcodes are scanned at the pipetting bench with a barcode scanner. Autoscribe LIMS then sends the tests associated with the particular sample to BarcodA so that the Petri dishes can be labelled with a barcode specific for each test. The technician then instantly receives the right set of test plates per sample.

Automated Agar plate preparation with AgarrA

After pipetting the sample into the Petri dishes and assignment of the associated tests, the Kiestra AgarrA module comes into action. AgarrA is used for automatic agar pouring, mixing, solidifying and stacking. This system automatically scans the barcode on each dish and pours the plate with the correct molten media for the test, after which mixing, solidifying, and stacking takes place. AgarrA enables users to save 30% of agar costs each day, thanks to the exact dosing system. Matrix LIMS receives all the relevant data from BarcodA and AgarrA, in order to keep track of the whole history per sample to an individual dish level.



During the whole process, an automatic check is also made at each step to determine if all required samples have passed the required step before proceeding to the next step. This ensures that all the necessary steps in the process are completed. Based upon this principle Westward Labs can generate complete daily audit trails for every sample. This provides an excellent management reporting tool for Westward

Increased efficiency, throughput and traceability

Kiestra's automation concept is "It's the sample that moves!". Westward is able to process more samples in a shorter time window by adopting this concept, creating a substantial increase in efficiency and throughput. With real time interaction with Autoscribe's Matrix LIMS, Westward is sure that all samples are processed as they should be and are fully audit trailed to meet the increasing demands of their customers and UKAS.

About Autoscribe

Autoscribe Limited is a world leader in the development and supply of successful LIMS (Laboratory Information Management Systems) and software solutions for the scientific laboratory and business markets.

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Autoscribe pioneered the use of innovative LIMS configuration tools within the LIMS market and today Matrix Plus LIMS software is seen as the industry standard to which others aspire.

Autoscribe offers a wide portfolio of products and services including systems for LIMS, sample tracking, instrument calibration and maintenance, stability testing, customer complaints management, ISO9000 protocol driven training records management and resource planning. Our customers include leading analytical, oil, pharmaceutical, biotechnology, chemical, and consumer products companies as well as academic research institutes, hospitals and many others.

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About Westward Laboratories

Westward Laboratories was established in July 1992 following the Food Safety Act of 1990 which required food manufacturers to monitor their processes, practices and finished products. The company rapidly grew into one of the UK's premier independent food testing laboratories.

Having been accredited by UKAS since 1997, in 2001 Westward Laboratories achieved accreditation to international level and now holds the ISO17025 standard, assessed by the UK Accreditation Service. The scope covers testing in numerous microbiology and chemistry methods for Food and Environmental Analysis.

Originally the lab tested products for many external companies as well as companies within the Samworth Brothers group. Since 2000 however, group work has formed the majority of the business as the group business has expanded.

The team at Westward Laboratories includes qualified chemists and microbiologists, who conduct daily routine microbiological testing and chemical analysis on finished products; regular pathogen tests for evidence of Salmonella, Listeria, E. coli and other food poisoning organisms, as well as environmental monitoring. Administrators ensure accurate and timely sample logging and reporting.

Each month the lab handles over 20,000 micro tests, 3,000 pathogen tests and 400 chemical analyses.



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About Kiestra

Kiestra Lab Automation BV is the thinking partner for laboratories which need to reduce cost and/or raise quality of laboratory analyses. For 30 years, Kiestra have been the forerunner in the development of automation and robotisation for microbiology laboratories. Kiestra was founded in 1961 and is located in Drachten in the North of the Netherlands.



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