ACHEMA2024

Action Area Digital Lab

10 – 14 June 2024
Frankfurt/Main,
Germany

www.achema.de

Welcome to the Action Area Digital Lab!

Get inspired on how efficiently and sustainably the laboratory of the future can be designed. Together with renowned partners, we present five classic laboratory processes in an optimized, digitalized fashion for maximum effectivity. Connected and automated processes in the lab do not aim to replace laboratory technicians; rather, they assist in simplifying daily tasks, making them safer, and increasing capacity and efficiency.

Look forward to collaborations and connections between software and hardware solutions, supported by cobot applications and process automation. Immerse yourself in a real-time inventory system managed by a single central remote control – the Laboratory Execution System (LES).

Learn how sustainable laboratory work can be achieved also in the area of High-Performance Liquid Chromatography (HPLC) and how it can be connected to automated solvent management.

Alongside daily laboratory processes, we address secure sample extraction and its necessary disposal. In one of the dedicated processes, we demonstrate how these steps can be risk-free, sterile, and flexible.

Effectivity and innovation in the field of food analysis are also presented in the Action Area Digital Lab. Explore the possibilities and technologies for barrier-free, precise, and seamlessly documented food analyses, making your work reliable and traceable at all times.

Automated Solvent Management

The social responsibility of increasing sustainability is already having an impact on laboratory work today. In addition to ecological harmlessness, this also includes economical working, the greatest possible occupational safety and optimum comfort criteria.

In this use case DÜPERTHAL, KNAUER and SmartLab Solutions jointly developed a sustainable process for preparative HPLC:

KNAUER, a leading manufacturer of liquid chromatography, is renowned for its innovative solutions. PurityChrom, the HPLC control software, offers two new features: i) barcode scanning of vials directly in the rack for automatic sequence insertion, and ii) integrated solvent level monitoring to alert users before chemicals deplete. Integration with DÜPERTHAL connect, the real-time chemical inventory system, directs users to the storage location of their needed chemicals without the hassle of searching through cabinets for the right quality.

At the HPLC's backend, Knauer's process control and DÜPERTHAL's service station interact. When the waste container nears capacity, chromatography pauses until exchange confirmation, ensuring safety and continuity. Enhanced ventilation and grounding in storage cabinets optimize waste collection.

This HPLC station is integrated into the flexible iHEX laboratory concept by SmartLab Solutions. The autonomous robot KEVIN from the United Robotics Group also supports logistics of samples and solvents. Thus, sustainable HPLC processes are linked with the laboratory of the future.

Integrated Products:

DÜPERTHAL connect	The HPLC service station is the solution for handling waste disposal and allows to comply with regulations and safety requirements.
KNAUER	Fraction collector FC 6.1: Versatile fraction collector for HPLC and bio-inert LC. Height-adjustable. Supports flow rates from 0.1 to 250 ml/min. Autosamplers for precise injections from the µl to the ml range. Analytical/prep liquid handlers for even more flexibility.
SMARTLAB SOLUTIONS	iHEX System: Modular bench-system for flexible laboratory infrastructure.
UNITED ROBOTICS GROUP the CobiotX company	KEVIN is a mobile lab robot, connecting instruments & workflows autonomously – usable with any common process management software.

Cobot AI Sample Sorting

Vision AI guided cobot to automate your sample preparation in a flexible lab infrastructure

Cost effective sample sorting was a big challenge in the past. Thanks to robot-based automation laboratories benefit from the efficiency and precision of robot-based automation of repetitive processes as well as the simple programming and flexible use of robots and cobots.

In the use case Cobot AI, ABB's 6-axis GoFa™ collaborative robot is utilized. GoFa is designed to handle payloads of up to 5kg within a range of 0.95m. The demonstrated process involves sample sorting and preparation: A batch of unsorted samples is filled into a centrifuge and then structured into a rack.

What may seem trivial for humans, demands high-tech solutions: Object recognition is achieved using a 2+ dimensional camera. The location, orientation, and height for each sample tube is identified precisely. The robot uses a vacuum gripper to pick a sample and deliver it into a top-loading centrifuge, which can automatically access each individual position. After centrifugation, the samples are sorted into a rack to be further processed.

This process takes place on the flexible iHEX System by SmartLab Solutions. The modular elements allow for quick repurposing of the laboratory infrastructure. This means elements can be rearranged to accommodate new processes – including robotics.

Integrated Products:

ABB	GoFa™ Cobot: GoFa enables efficient and precise robot-based laboratory automation of repetitive processes with simple programming and flexible use.
SMARTLAB SOLUTIONS	iHEX System: Modular bench-system for flexible laboratory infrastructure.

Smart Bee Lab

Precise food analyses with complete data integration!

Tired of monotonous, error-prone workflows in the lab? Our “Smart Bee Lab” workflow offers the solution! Experience a seamless integration of laboratory technology and software that revolutionizes everyday laboratory work. Workflow-based, you can analyze biological and chemical samples in parallel and without barriers.

Our workflow seamlessly combines the precision of a UV photometers and the advanced sensor technology of the mobile, autonomous Sens-o-Spheres microsensors from amensio. iLIMS from INTEGRIS LIMS takes over the consistent and efficient data aggregation and maintains control via the LES iCONTROL and manages the communication via actuators such as the magnetic stirrers from 2mag.

With “Smart Bee Lab” food sample analysis becomes a smooth, efficient process where precision and documentation go hand in hand. Increase your lab efficiency with the innovative combination of amensio, INTEGRIS LIMS and 2mag—for results you can trust!

Integrated Products:

2mag magnetic motion	MixDrive15: Inductive magnetic stirrer, 15 pos, 100% wear-, maintenance-free, stainless-steel housing, water-, dust-, germ-proof, up to +200°C.
amensio measure to move	Sens-o-spheres is a location-independent, fully autonomous, minimized microsensor technology.
INTEGRIS LIMS	Laboratory software iLIMS, device server INTEGRIS LIMS, INTEGRIS ERP: Discover iLIMS: flexible, customizable lab management with efficient solutions and expert support for seamless lab digitization.
SMARTLAB SOLUTIONS	iHEX System: Modular bench-system for flexible laboratory infrastructure.
SPECTARIS German Industry Association for Optics, Photonics, Analytical and Medical Technologies	OPC UA LADS: Laboratory and Analytical Device Standard (LADS), a Companion Specification of OPC UA (Open Platform Communications United Architecture), a manufacturer-independent, open standard for analytical and laboratory equipment – the “common Language” for Lab & Analytical Devices.

Trendsetting Safety

The laboratory process begins with sampling, ensuring end-to-end safety. Samples undergo sterile analysis, maintaining integrity and accuracy. Contaminated waste is safely disposed of with Berner's SealSafe®, which seals toxic waste directly.

Sterile sample analysis takes place in the claire® neo safety cabinet from Berner. This innovative safety cabinet is designed to adapt the needs of future labs. With the grid dimensions for optimum laboratory planning and the modular work surface that includes integrated functions, the new generation of safety cabinets offers maximum flexibility.

SmartLab Solutions further enhances the workflow by integrating a pH measurement station, complete with an integrated 2mag stirrer, into the Berner safety cabinet claire® neo. Guiding the process is the Laboratory Execution System LABITUDE, which oversees operations and provides a detailed data history. LABITUDE's extensive interfaces make communication with devices and the lab environment seamless.

Integrated Products:

2mag magnetic motion	luMIX: Inductive magnetic stirrer with luminescent LED-plate, 100% wear-, maintenance-free, robust stainless-steel housing, up to 3 liter.
berner	claire® pro - safety cabinet: The new generation of safety cabinets that sets completely new standards in terms of performance, function and design. SealSafe®: Heat-sealing systems for toxic and infectious waste.
LABITUDE	Labitude is a software solution for controlling and managing laboratory equipment. iHEX System: Modular bench-system for flexible laboratory infrastructure.

Precision at its Peak

Robotic Sample Prep Meets Advanced Temperature Monitoring

Experience the multifunctional remote control for your laboratory: process automation assisted with a robot arm and digitalization of solution preparation using IoT sensors & actuators and the real-time inventory system managed by one central remote control – the Laboratory Execution System (LES).

Expect these solutions:

- Sens-o-Spheres by amensio: smart, small and mobile liquid temperature sensors with wireless technology.
- MixDrive15 by 2mag: industrial magnetic stirrers dedicated for thick vessel bottoms or double-jacketed vessels. They support large mixing quantity.
- GoFa robot by ABB: General-purpose robotic arm known for its high performance and precision. It's the best fit for customized solutions.
- Düperthal Connect by Düperthal:
  Connected lab fridge with real-time inventory management system for lab safety.
- COOL standard XLby Düperthal: The COOL line combines a cooling device incl. ex-proof interior space with a maximum fire resistance type 90 acc. DIN EN 14470-1.
- Spot & Spider by essentim: Wireless system to monitor biotechnological processes. Several parameters can be monitored – Temperature, pH, (etc.).
- LABITUDE by SmartLab Solutions: the Laboratory Execution System (LES) ensures the integration of multiples devices and workflow control.
- iHEX System by Smart-Lab Solutions: Modular bench-system for flexible laboratory infrastructure.
- KEVIN Robot by United Robotics Group: KEVIN is a mobile lab robot, connecting instruments & workflows autonomously – usable with any common process management software.infrastructure.

DÜPERTHAL connect

2mag magnetic motion

essentim essential improvement

ABB

SMARTLAB SOLUTIONS

amensio measure to move

UNITED ROBOTICS GROUP the CobiotX company

Daily use case presentations: 10:30 in German | 14:00 in Englisch

	10:30	14:00
Mon, 10 June	Smart Bee Lab	Automated Solvent Management
Tue, 11 June	Trendsetting Safety	Precision at its Peak
Wed, 12 June	Cobot – AI Sample Sorting	Smart Bee Lab
Thu, 13 June	Automated Solvent Management	Cobot – AI Sample Sorting
Fri, 14 June	Precision at its Peak	Trendsetting Safety

Partner of the Action Area Digital Lab:

berner

Moritz Lübke,
Productmanager,
m.luebke@berner-safety.de

KNAUER

Peter Slaby,
Product Manager Purification,
Slaby@knauer.net

2mag magnetic motion

Michael Fischer,
CEO,
michael.fischer@2mag.de

DÜPERTHAL connect

Benjamin Sauer,
Head of Internal Sales,
benjamin.sauer@dueperthal.com

SMARTLAB SOLUTIONS

Ulrike Gerecke, Business Development, ulrike.gerecke@smartlab-solutions.de

ABB

Max Novotny,
Sales – CSSR,
max.novotny@de.abb.com

essentim essential improvement

Matthias Schuh,
Managing Partner,
matthias.schuh@essentim.com

SPECTARIS
German Industry Association for Optics, Photonics, Analytical and Medical Technologies

Janina Bolling, Head of Analytical, Biotech and Laboratory Technology,
bolling@spectaris.de

amensio measure to move

Tim Lauterbach,
CTO,
tim.lauterbach@amensio.de

INTEGRIS LIMS

Robert Koschitzki,
CEO,
vertrieb@ilims.de

UNITED ROBOTICS GROUP
the CobiotX company

Tim Otto, Head of Marketing,
Industrial robots,
t.otto@unitedrobotics.group