



Importance of Traceability in Life Science applications

Chur, 09.09.2024
Pantic Boris

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Hamilton Company

Subsidiaries

Medical

Respiratory devices and accessories for different medical cases



Storage

Low temperature automated biobanking storage system



Process Analytics

Sensor systems for bioprocess monitoring (pH, CO₂, ORP)



Robotics

Laboratory automated devices with liquid handling functionalities

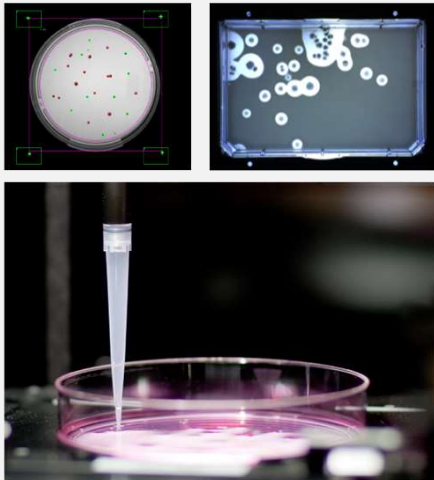


Vision & Data Science Team

With Vision in a new technological future

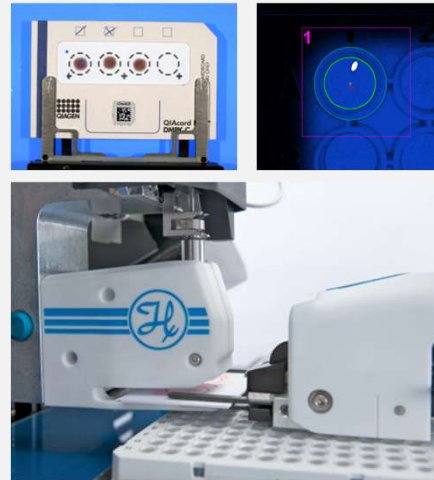
easyPick

Bacteria colony feature detection with different picking possibilities



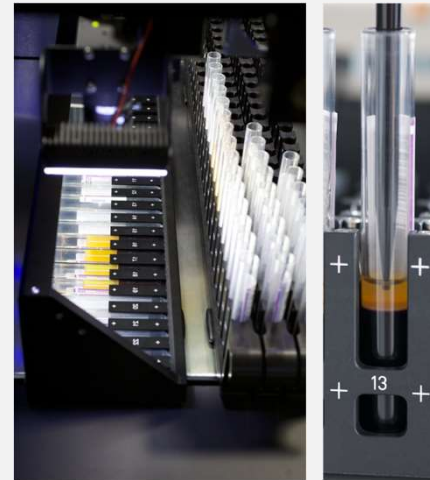
easyPunch

Sample detection and extraction on card-based sample source



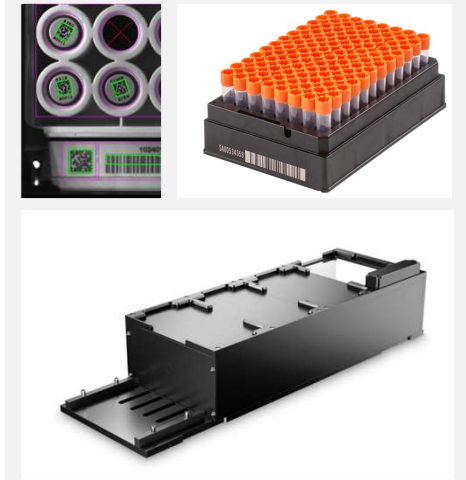
easyBlood

Detection of centrifuged blood fraction levels for separation process



easyCode Carrier

Identification and decoding of different 1D/2D code types

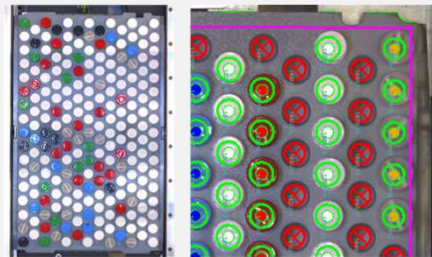


Vision & Data Science Team

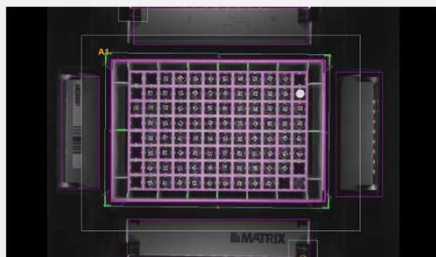
With Vision in a new technological future

Hamilton

Tray inspector

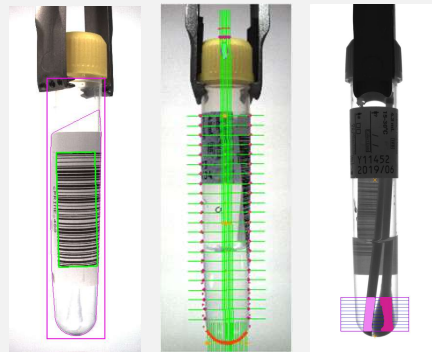


Labware & Code Reader



OEM

Sample preparation device

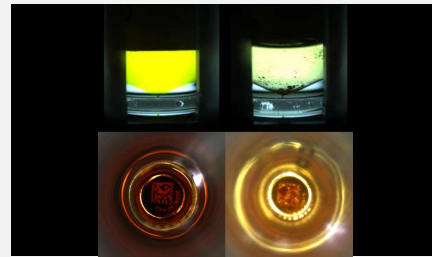


APE

Colour nuance detection

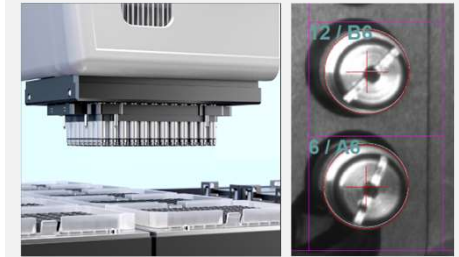


Solubility detection

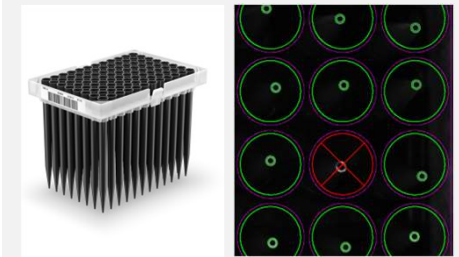


Manufacturing

96 pipetting head check



Tip rack inspection



Sample preparation device

Functionality

Input

Arbitrary input of different tube types containing variable sample volumes and codes



Processing

Tube type classification and processing with liquid handling functionalities



Output

Standardized tubes containing defined sample volume.
Ready for automated sample analysis.



Sample preparation device

Vision Modules

Tray Layout Cognition (TLC)

Input:

- Arbitrary loaded tray
- Other tray type input capabilities

Output:

- Classification of tube type per position
(*Standard-, Middle- & Big-sized*)



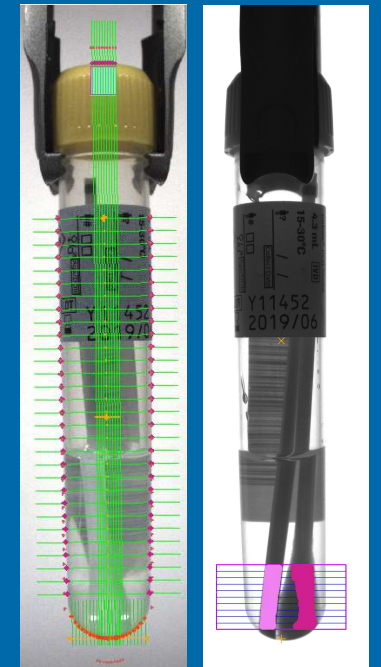
Automaten Sample Check (ASC)

Input:

- Tube

Output:

- Regripping
- Tube dimensions
- Cap presence
- Cap shape classification
- Cap color
- Bottom shape classification
- 1D & 2D code reading
- Content detection
(*swap, dry blood spots*)



Analysis traceability

Variety of detection

- Time & Date
- Instrument SN
- Module SN
- Firmware & Software versioning
- Error information

Tray Layout Cognition (TLC)

- Tray identification
- Detection information per Tray type
- Tube classification per position on Tray
- Workflow information
- Additional measurement data
- Error information
- Original images



Settings

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11 September 2024

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Traceability data

Sample Preparation Device - Data Storage

Embedded System

Analysis

- Settings
- Images
- Results
- Log-Files

For each Tray separately (TLC)

For each Tube separately (ASC)

Short-term storage (ca. 2GB)

Instrument PC

Store

- Embedded System Analysis
- Other module data
- Process workflow

Sort and group Analysis data

Create Reports of desired data

Mid-term storage (ca. 2TB)

Server

Archiving of complete instrument data

Compliance with medical regulations

Long-term storage (extendable)

Ca. 3000 MB of data is produced every hour

Utilisation and benefits of data

What data can be used

Problem reconstruction

- Exact reproduction of erroneous analysis result

Documentation

- Archiving purposes for proof

New Features

- Image database
- Ensure detection correctness

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