



AUTOMATED PLATE READER

AUTHORS

F. RIEGER, B. SYMANSKI

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AGENDA

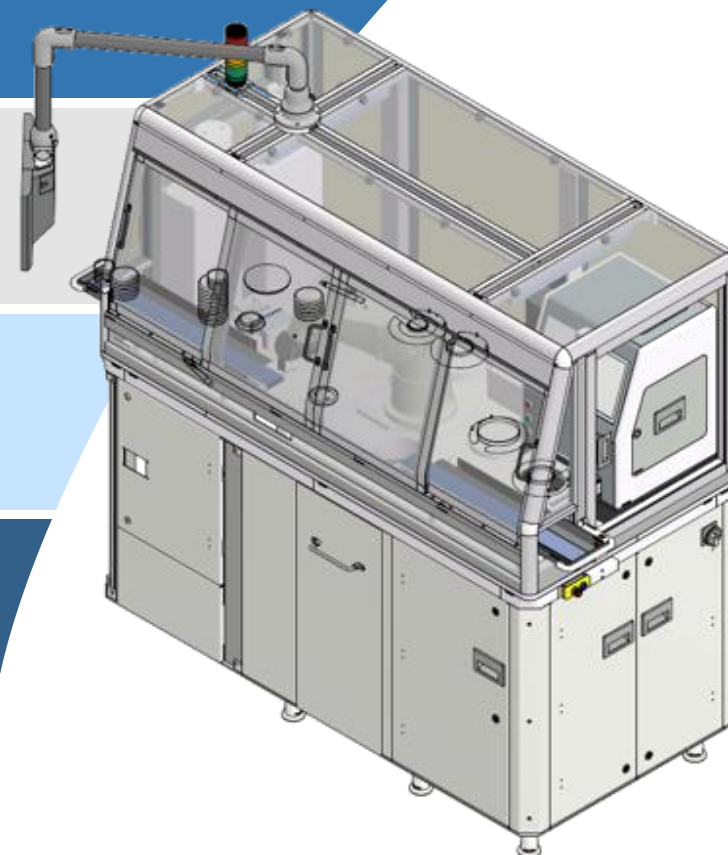
AUTOMATED PLATE READER

PROFILE

PROCESS

ATTRACTIVENESS & EFFECTIVENESS

SUMMARY



PROFILE

AUTOMATED PLATE READER



TASK

Agar plates for environmental monitoring are inspected and separated into conforming and conspicuous plates automatically. The results are transferred directly into the LIMS.



TECHNOLOGY

The robot application is based on Stäubli TX2-60 integrated by VMT.

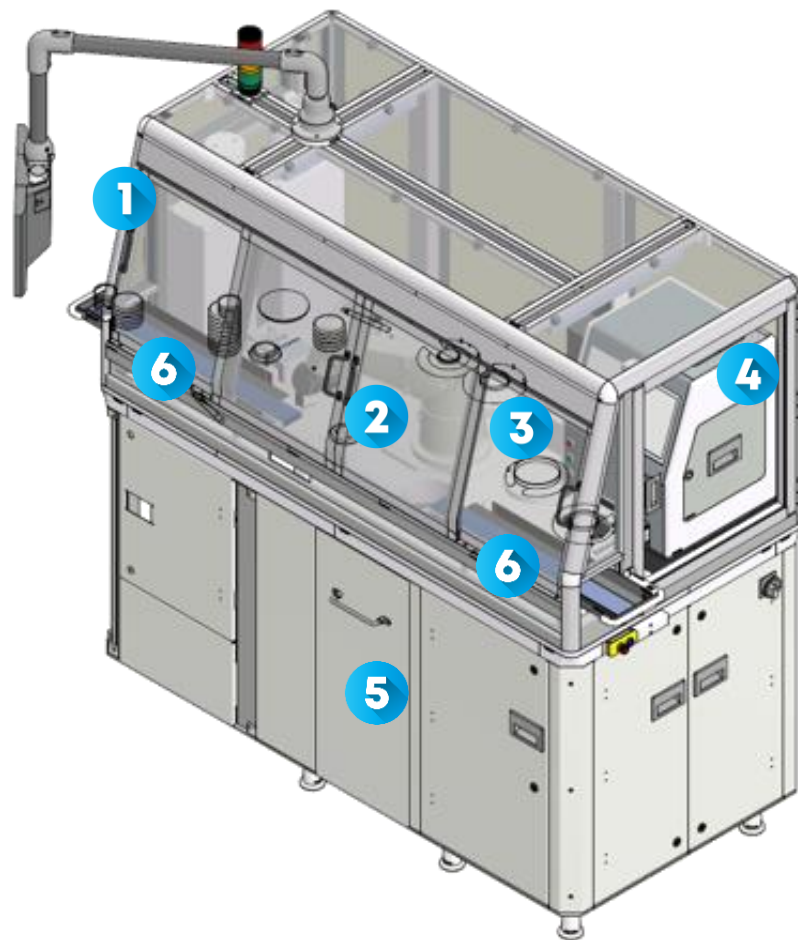


EFFICIENCY

Once the agar plates have been loaded manually the system can run self-sufficient for 1.5 hours thereby performing the work of up to 4 operators.



PROCESS LAYOUT



- 1 Infeed of agar plate stack
- 2 Main unit with robot
- 3 Lid handling unit
- 4 Camera system with AI for evaluation
- 5 Outfeed of the conforming plates
- 6 Outfeed of the conspicuous plates for further evaluation

PROCESS

PROCESS DESCRIPTION



Operator

Fills the agar plate storage with stacks of incubated agar plates, selects the correct plate sizes and starts the program.



Stäubli

Performs automatic format part change if required based on the selected agar plate sizes.



Stäubli

Picks up the agar plate and places it in the lid handling unit where the lid is opened fully automated.



Stäubli

Places the opened agar plate in the camera system where a picture is taken to detect potential microbial growth and abnormalities using AI.



Stäubli

Takes the inspected agar plate back into the lid handling unit which closes the lid. Depending on the result of the inspection the plate is either placed on a conveyer belt or disposed.



Operator

Evaluates the conspicuous plates.

PROCESS

GRIPPING OF AGAR PLATE



- 1 Gripping of agar plate from infeed
- 2 Opening and closing of agar plate prior to and after evaluation
- 3 Inspection of the agar plate
- 4 Placing of inspected agar plate on conveyer belt for further evaluation or disposal

PROCESS

LID HANDLING



- 1 Gripping of agar plate from infeed
- 2 Opening and closing of agar plate prior to and after evaluation
- 3 Inspection of the agar plate
- 4 Placing of inspected agar plate on conveyer belt for further evaluation or disposal

PROCESS

LID HANDLING



- 1 Gripping of agar plate from infeed
- 2 Opening and closing of agar plate prior to and after evaluation
- 3 Inspection of the agar plate
- 4 Placing of inspected agar plate on conveyer belt for further evaluation or disposal

PROCESS

AGAR PLATE OUTFEED



- 1 Gripping of agar plate from infeed
- 2 Opening and closing of agar plate prior to and after evaluation
- 3 Inspection of the agar plate
- 4 Placing of inspected agar plate on conveyer belt for further evaluation or disposal

PROCESS

VIDEO

ATTRACTIVENESS

APPLICATION ACROSS PHARMA



The Automated Plate Reader is a versatile unit that can be employed in scenarios where plates or similar containers undergo a visual inspection process regarding different error patterns. The system is capable of handling varying plate sizes, ranging between a diameter of 55 to 150mm.



Due to the flexibility provided by use of AI, the system can be trained and qualified on various test sets and different error patterns.

ATTRACTIVENESS

FLEXIBILITY OF THE SYSTEM



Form Factor

The system is very compact and can be moved to different positions by a pallet truck



Integrated Parts

The control cabinet, compressed air and vacuum generation are located inside the machine.



Format Change

Different plate formats can be fed in parallel. Format change is then performed automatically by the robot.



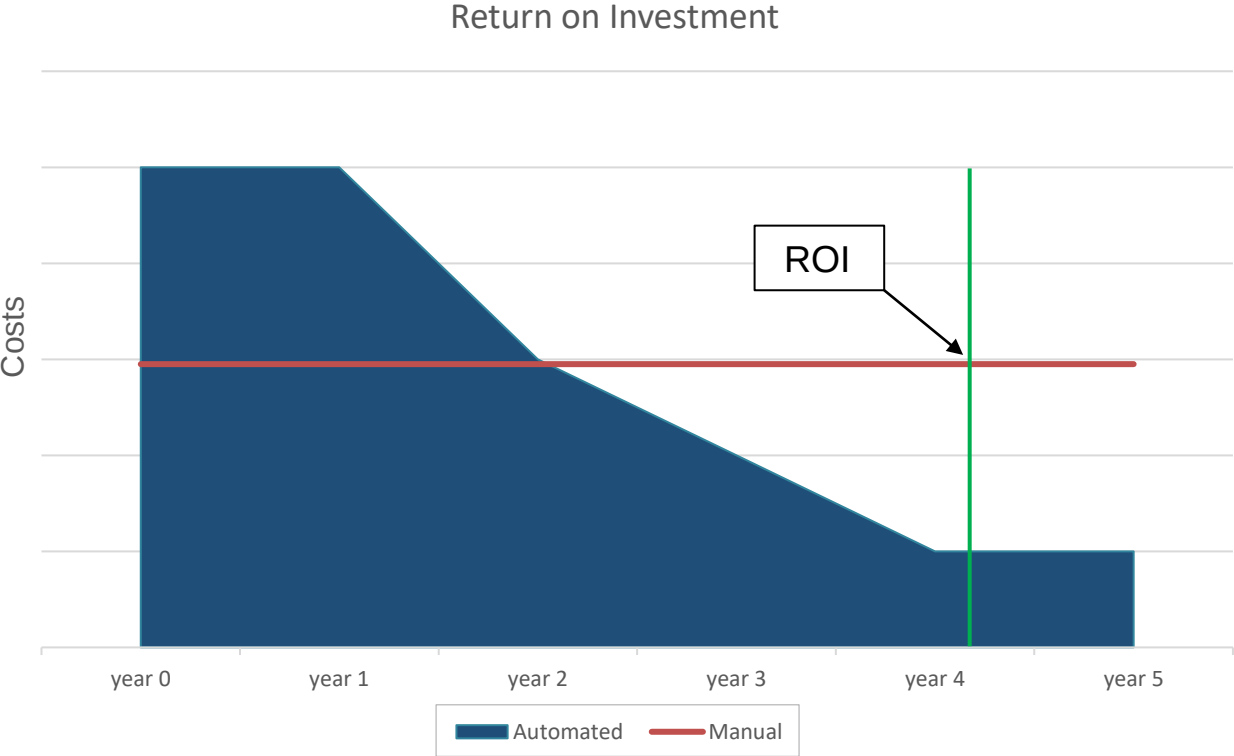
Integration

Only power and network connectivity are required. The AI is customizable.



EFFECTIVENESS

RETURN ON INVESTMENT



EFFICIENCY AND RETURN ON INVESTMENT

Due to the high level of automation, one automated plate reader can **reduce the number of operators from 4 down to 1**, once the system is qualified. For this reason, the system has already paid for itself after 4.1 years.

SUMMARY

AUTOMATED PLATE READER



TECHNOLOGY

The robotic application with its six-axis movement replaces tiring and monotonous tasks.



EFFECTIVENESS

Results are generated faster and are transferred automatically to the LIMS.



RETURN ON INVESTMENT

The system has a ROI time of 4.1 years.



SUMMARY

AUTOMATED PLATE READER



CURRENT STATUS

The robotic application is currently in finalization and will be implemented in different locations.

The Automated Plate Reader should win because ...

- ... it is easy to operate.
- ... it is using a flexible AI solution adaptable for many different use cases.
- ... minimal user interaction is required during operation.
- ... it is easily maintainable due to robust industry grade design.





THANK YOU FOR YOUR
ATTENTION!

ISPE SIG Robotics

