



# 10 Things to Consider When Exploring Automation for ELISA



Have you reached the conclusion that automation is no longer **a luxury, but a necessity**? And yet you find yourself at a crossroad, not knowing which path offers the right solution for your lab?

With limited resources, multiple improvements to implement, other demands that require your attention, and automation solutions that all sound the same, you might be enticed to let your budget lead the way!

## Do not give your budget the driver's seat

Reduce background noise by considering these ten factors during your automation selection journey. Based on applying the rigors of a problem-solving mindset and an analysis of your current ELISA workflow processes these help identify **wastes and bottlenecks** and **compensating step or behavior**.

The right solution should remove the most critical barriers, enabling you to reach your automation goals **with** the flexibility to modify and expand. After all, change is the key to progress and growth.

Ten things to consider:

### 1. List the improvements you want to implement. Top reasons for automating ELISA methods:

- **Increase Throughput**
  - i. Reduce hands-on time
  - ii. Reduce need for duplications
  - iii. Reduce turnaround time
- **Increase Lab's Efficiency**
  - i. Eliminate manual data entry
  - ii. Improve scheduling processes
  - iii. Strengthen assessment and adoption of new methods
- **Improve Quality and Consistency**
  - i. Reduce imprecision and increase productivity
  - ii. Reduce data inaccuracy
  - iii. Enable traceability
- **Talent Retention**
  - i. Replace manually intensive tasks
  - ii. Expand the expertise of scientists in automation
  - iii. Prevent output reduction due to loss of experience

### 2. Map out your ELISA workflow(s) and identify the bottlenecks/wastes with your current processes. The main wastes associated with ELISA methods are:



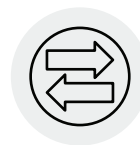
#### Waiting

- Do you need to standby during incubations because time is too short to start or attend to another task?
- Are you waiting for data entry verification before release to verify accuracy of manual data entry?



#### Lead time

- Do you perform extra steps to overcome manual pipetting mishaps, such as using a contrast background under well plates to verify the right reagent was added to the right well?



#### Repetitive motion

- Track your footsteps and identify repetitive motions. Are you going back and forth from the incubator to the washer, processing a handful of plates at a time due to different incubation times or capacity to carry/process a few plates at a time?



### Over-Processing

- Are you taking multiple measurements during specific steps? An example is running calibrators and controls in quadruplicates and samples in triplicates to control and/or overcome manual pipetting errors.
- Have you implemented an extensive system of checks and balances to verify accuracy of manual data entry associated with varied data report formats of different analyzers?



### Quality Issues

- Have quality outcomes been impacted by steps in your workflow?
- Have you experienced data loss or lack of traceability due to misplacement of notebooks or analyzer's printout?



### Unused creativity

- Would your lab benefit from faster adoption of new methods?
- Have you lost talent due to burn out and/or manual and mind-less work?

## 3. Identify the sources for each waste/bottleneck, current compensating steps/behavior, and their impact on reaching your lab's main goal.

Example of a lab with compensating steps to improve quality issues while negatively impacting their goal of increasing throughput:

Waste	Source	Compensating Behavior	Negative Impact on Increasing Throughput
Quality issues	Lack of reproducibility: manual pipetting	Over processing: calibrators & controls n=4; samples n=3	Med
	Manual data entry verification	Data entry each day from 4-5	High
	Inconsistent plate handling due to scheduling mishaps	2 x day scheduling verification; 30 minutes each round Use of sticky notes as a reminder	High
	Lack of traceability	Electronic notebook	Low

## 4. Ensure automation can remove the bottlenecks. Below are two examples to consider if automation is the right approach:

- Your desired outcome is to reduce turnaround time. While automation can help improve throughput, depending on your processes and level of automation, it can reduce the turnaround time as its goal is increasing the efficiency of processing all plates.
- Your goal is to improve test accuracy. This factor is driven by the ELISA method/reagent accuracy and the accuracy and detection range of the reader. It might be time to upgrade your reader!

## 5. Define your required throughput (# of plates/tube per day). The volume of labware you are processing impacts the liquid handling deck size, additional equipment needed such as plate and tip storage, and level of integration.

## 6. Identify sample source for each method (plates, tubes, tube size) to select the right accessories.

**7. Assess the experience and readiness of your team to determine the support level needed.**

Automation Experience	Comfort with learning new equipment and SW			Support Needs		
	Low	Med	High	Private class room training	On-site training	Application support
Novice	X		X	X	X	X
Highly experienced			X		X	

- 8. Select a super user. This ensures faster adoption of the automation regardless of your lab's readiness.**
- 9. Do not forget about scheduling to help you maximize the usage of your automation and data management; automation can cause a data avalanche!**
- 10. Remember, you can start with automating a few steps that have the highest impact. Select solutions that are expandable as your team gains experience and find new ways for further improvement.**

**Don't have time for this analysis?**

Contact us at [Beckman.com](http://Beckman.com) to consult with automation experts who have years of experience automating a wide range of ELISA methods. Our approach is consultative, providing solutions for a wide range of automation, from a simple solution of timely plate reading via our "Automation Assistant" software to a full, walk-away automation solutions, enabling consistent and timely plate processing of multiple ELISA methods with data acquisition and reporting capabilities.



Biomek automated workstations are not intended or validated for use in the diagnosis of disease or other conditions.

© 2019 Beckman Coulter, Inc. All rights reserved. Beckman Coulter, the stylized logo, and the Beckman Coulter product and service marks mentioned herein are trademarks or registered trademarks of Beckman Coulter, Inc. in the United States and other countries.

For Beckman Coulter's worldwide office locations and phone numbers, please visit Contact Us at [beckman.com](http://beckman.com)

AAG-5388FLY05.19