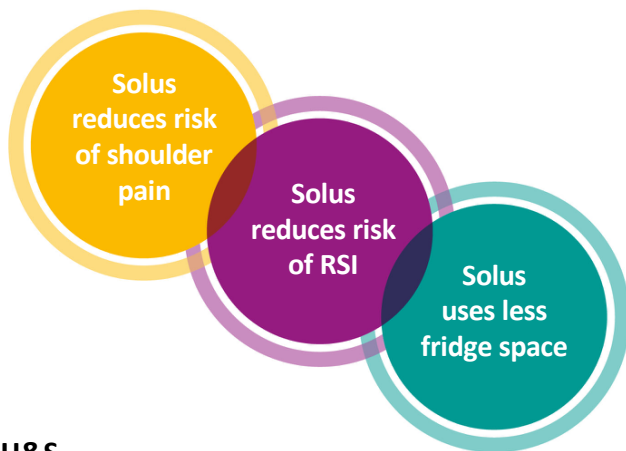


Increasing pathogen testing throughput and efficiency at ALS Rotherham by employing the Solus™ Pathogen Testing System

ALS Rotherham test over half a million samples each year. Samples include raw and cooked meats and fish, dairy, chocolate and a number of ready-to-eat products. The laboratory offers a mixture of conventional culture methods and automated immunoassays to process over 2000 samples per day.

Tipping Point

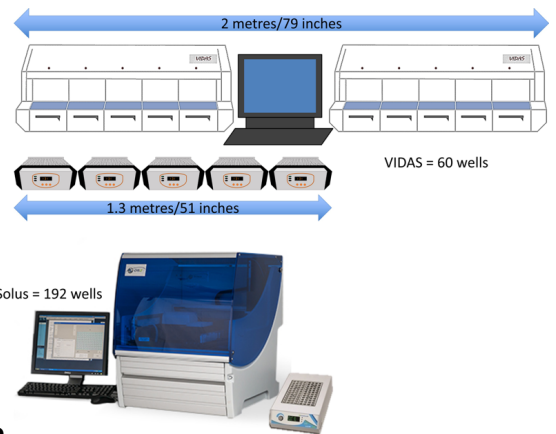
The ALS Rotherham pathogen laboratory originally performed their pathogen testing using four VIDAS units but as sample numbers increased, two additional units were brought into the laboratory. However, with a maximum testing capacity of 30 samples per unit per run, full testing capacity of 900 samples per day was rapidly reached. To further increase testing capacity either further units and staff would be required or an alternative working method found.



H&S

To maximise space, the ALS Rotherham pathogen laboratory arranged their six VIDAS units on two shelves one above the other. However, this had implications for working conditions as the upper units were too high whilst the lower units were too low. As a consequence, stretching, bending, squatting and leaning were all common practice for the technicians running the units. This created a risk of shoulder pain for users.

Repetitive strain injury was also a potential threat as pipetting thousands of samples every day required the isolated use of the thumb for many hours at a time.



Space

Bench space was already at a premium and with over 2.5 meters of bench space used just for 'Heat & Go' heating blocks, adding more VIDAS units was not an option.

The volume of space required for storing the kits for the VIDAS was also a problem. With an average of 16 kit boxes required every day and only one delivery per week, more than 621,000cm³ of fridge space was used just for the weekly volume of kits. Any increase in sample numbers would have required more frequent kit deliveries and the associated costs.

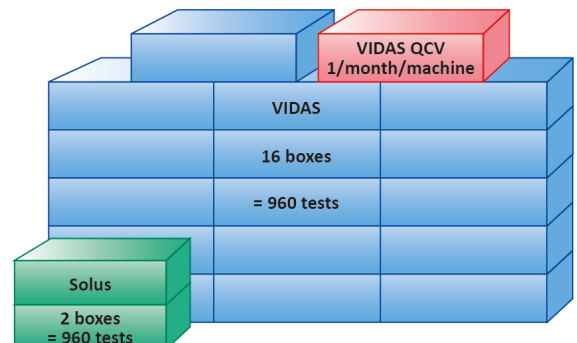


Figure 1. Comparative space occupied by Solus and VIDAS kits required to test 960 samples.

The Solus Solution

The solution to ALS Rotherham’s problem was the Solus Pathogen Testing System which comprises: Solus Pathogen ELISA kits and Solus DS2 automation with associated consumables and dedicated media. To match existing throughput, 3 Solus DS2 machines were recommended as a replacement for the 6 VIDAS units, plus Solus Salmonella™ and Solus Listeria™ ELISA kits, at an average of just over 2 boxes per day.

Implementation

Solus staff were on site at the ALS Rotherham laboratory to help achieve a smooth transition. By the end of the first day, the technician had completed 12 assays with minimal input from the Solus representatives.

Six weeks after implementation, sample throughput had further increased by around 95%, necessitating installation of a fourth DS2.



Solus Pathogen Testing System

Samples are enriched in a non-selective broth overnight. They are then sub-cultured into broths that are selective for the target organism and incubated again. The broths are decanted into boiling tubes, heated to 85-100°C, cooled and loaded on to DS2. The rest of the ELISA process is completely automated and carried out by DS2.

The DS2 software provides easy to follow step-by-step instructions to ensure the machine has everything required for the assay, including instruction on where to place tips and plates and even how much reagent is required in each dispensing tube. It also features an on-board barcode scanner to allow direct traceability from the original sample to the published results when barcode labels are applied to the boiling tubes.

Test Methodology

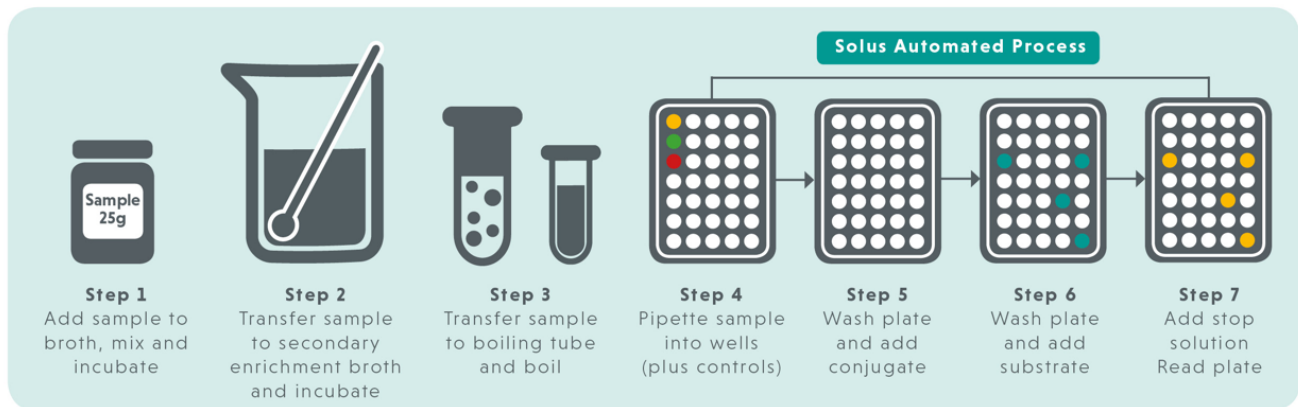


Figure 2. The Solus Pathogen Testing System uses a two-step enrichment followed by an automated ELISA protocol on DS2.

Sample throughput

Each DS2 unit can process two 96-well-plates simultaneously. Three wells from each plate are used for internal quality control allowing 186 customer samples (tests) to be processed at any one time. The large sample capacity and protocol length allows up to 90 minutes for the technician to carry out other laboratory tasks while the protocol is running.

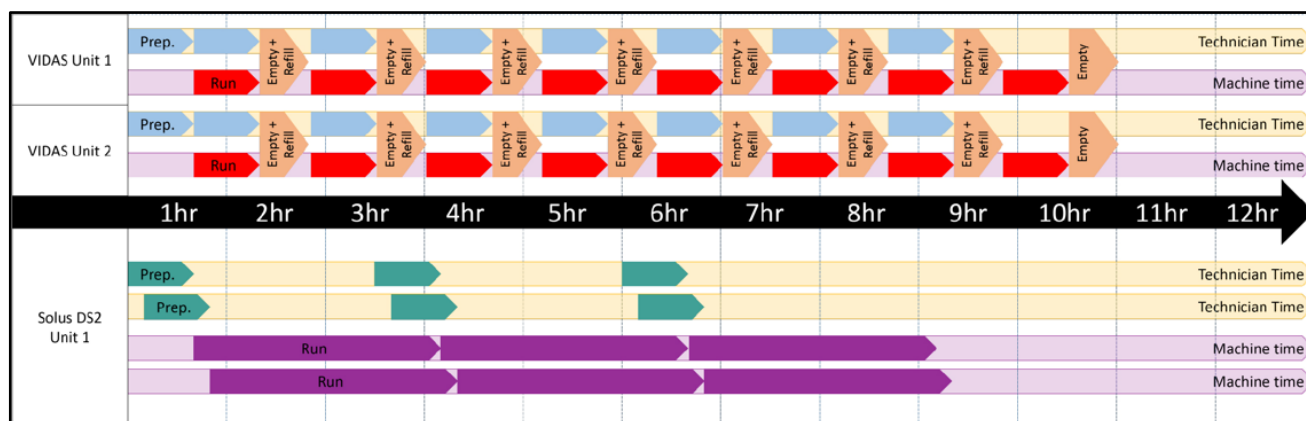
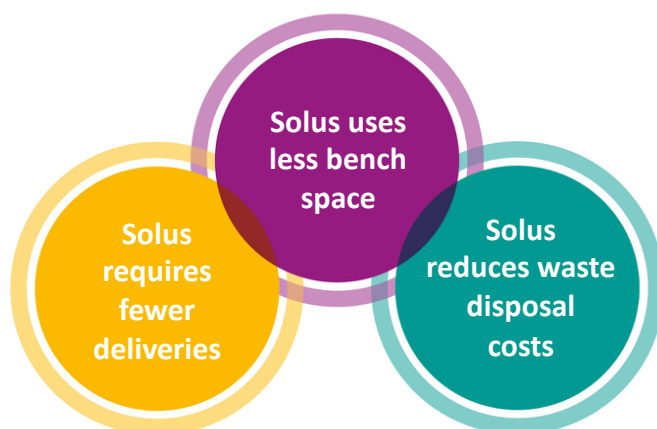


Figure 3. Two VIDAS units can process 60 samples per run and require constant hands-on technician time. A single Solus DS2 processes two 96-well plates simultaneously, allowing the technician up to 90 minutes for other tasks.

Conclusion

By switching to the Solus Pathogen Testing System, ALS Rotherham are testing 186 samples per automated run. With four DS2 units, they are now processing nearly twice as many samples per day with lower associated costs. Fewer kit deliveries are required and refrigeration space has been reallocated to other stock. Space has been created within the laboratory by removing bulky equipment and replacing it with fewer, smaller units. Technicians have time to carry out other tasks during the working day and are less likely to suffer physical consequences of running the automated system all day.

For ALS Rotherham, switching to the Solus Pathogen Testing System to achieve food safety testing excellence truly made scientific and commercial sense.

"The SOLUS Pathogen Testing System has bedded down well in the laboratory equaling and soon surpassing the productivity achieved with alternative methods. The cost and time savings are significant." ALS lab manager