96 percent of ID serology testing available on the VersaCell™ System

"Now, with the VersaCell System, we put a sample on one system that runs nearly all our tests in one day with one technician! This has led to improved diagnostic service, more timely results for the clinicians and, consequently, improved patient care."

Ferdinand Vlaspolder, MD, PhD
Medical Microbiologist, Head of Medical Microbiology Laboratory
Medical Center Alkmaar (MCA)

Medical Center Alkmaar (MCA) is a 900-bed institution in the Netherlands that employs nearly 3,100 people. Its microbiology laboratory serves not only the MCA facility, but also Gemini Hospital, a 300-bed hospital in Den Helder, plus outpatient testing for about 300 local physicians. Each year the lab receives about 40,000 serology samples and runs about 82,000 infectious disease (ID) serology tests on these specimens.

After recognizing the shortage of highly trained technicians, along with the need to improve efficiency and productivity in the lab, MCA connected an IMMULITE® 2000 XPi System* and an ADVIA Centaur® XP Immunoassay System with the VersaCell System and:

- Doubled the percentage of ID serology tests run and reported in one day
- Significantly reduced the number of technicians required to operate the system

* The IMMULITE 2000 XPi is not available for sale in the U.S.

The VersaCell™ System: A case study

Medical Center Alkmaar (MCA)

Answers for life.

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Enhancing the science of ID serology testing

As with most ID testing, MCA has traditionally relied on tried-and-true manual methods. "What we have seen in automation over the last 20 years in microbiology is different than in clinical chemistry," says Ferdinand Vlaspolder, Consultant Microbiologist, Head of Medical Microbiology Laboratory at MCA. "Most of our testing was done manually, but the volume of manual testing required more labor than our technicians could produce." Fortunately, new technological developments in methodologies, robotics, and computerization were rapidly advancing in the field of ID serology.

Until 2000, MCA's initial shift to automation depended primarily on its Dynex™ microtitre plate and Vidas® analyzers, while syphilis tests were processed manually. This approach worked well for nearly a decade, but the need for more technological advancement provided an opportunity. "We realized that highly trained technicians were getting harder to find," Vlaspolder says. "So, we continued to look for systems that could enhance our workflow while maintaining the highest level of diagnostic quality."

Transitioning from manual analyzers to random-access analyzers

"The IMMULITE 2000 XPi and the ADVIA Centaur XP systems are great for our lab because they are so simple to operate," Vlaspolder notes. "Most important, though, they generate reliable results. Plus, the menus these systems have onboard match the testing needs of our lab."

In 2000, MCA acquired an IMMULITE 2000 system, which was upgraded to an IMMULITE 2000 XPi System in 2009. "After reviewing comparisons of the IMMULITE 2000 with Vidas and IMx HBsAg analyzers, we chose the IMMULITE 2000 XPi based on reliability and the ID menu," Vlaspolder says. "The IMMULITE 2000 XPi has the same ever-expanding menu, plus some impressive upgrades. Our philosophy was to bring the IMMULITE 2000 XPi tests such as the manual syphilis, ToRCH, and EBV testing in-house."

At the end of 2008, MCA added the ADVIA Centaur XP system. "This way," Vlaspolder says, "we could do the whole package of hepatitis, HIV, and pregnancy testing panels on it. It was the perfect blend of logistics and quality."

Consolidating two random-access instruments into one work station

The ADVIA Centaur XP and the IMMULITE 2000 XPi systems have broad menus and have been designed for continuous operation, offering impressive throughput with great reliability. But that wasn't enough. Automation systems such as the VersaCell System have recently come into favor because of their ability to achieve even greater reliability and cost-efficiency. "In fact," Vlaspolder says, "automation is vital for diagnostic laboratories because it enhances workflow and results in a more reliable and reproducible process. Now, we can automate the majority of ID serology testing in a microbiology lab."

The VersaCell System, which was installed in the MCA lab in July 2009, completed the consolidation and automation of processes for the institution's ID serology testing. At MCA, the VersaCell System links the ADVIA Centaur XP and the IMMULITE 2000 XPi instruments to form one consolidated ID serology testing system.

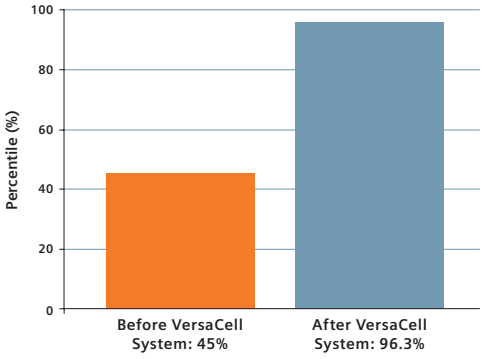
"Even before we installed the VersaCell System, we were responsive," Vlaspolder says. "Doing all the samples in two days showed a good turnaround. Now, it's even quicker."

Making a significant impact on laboratory operations

Before adding the VersaCell System in their laboratory, MCA was reporting 45 percent of its ID serology results in one day. While impressive, it took two dedicated technicians to accomplish this. With the new configuration, MCA can now complete 96.3 percent of its ID serology tests the same day the specimens arrive in the lab. What's more, they are able to do this with one technician. "This enables the other technician to focus on other important tasks," Vlaspolder says, "such as quality control initiatives and the expansion of our capabilities in molecular testing."

"Now, with the VersaCell System," Vlaspolder says, "we put a sample on one system that runs nearly all our tests in one day with one technician! This has led to improved diagnostic service, more timely results for the clinicians and, consequently, improved patient care."

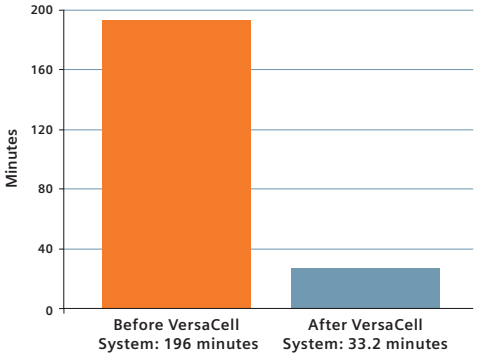
ID Serology Testing Completed on Same Day



In an effort to quantify the impact the VersaCell System had on laboratory operations, Dr. Vlaspolder and his staff conducted Time/Motion Studies before the VersaCell System was installed and compared the data to their workflow after installation. What they found was staggering:

- Significant improvements were seen in hands-on time with the IMMULITE 2000 XPi system

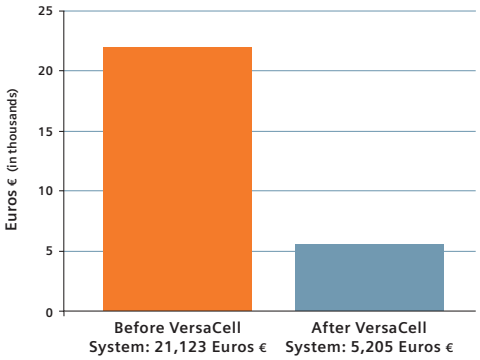
Daily Hands-on Labor Minutes



"A predictable turnaround time can significantly contribute to cost reductions in the laboratory," Vlaspolder says. "Before the inclusion of the VersaCell System, our daily hands-on labor was 196 minutes for 253 tests. Our daily hands-on labor dropped significantly to 33.2 minutes for 286 tests after we installed the VersaCell System."

- Annualized labor costs for ID serology testing were reduced by nearly 15,918 Euros, based on the Dutch annual technician costs, which is approaching the cost of 0.5 FTE.

Change in Labor Costs



By connecting two high-throughput instruments, the VersaCell System complements the capabilities of each stand-alone system to increase efficiency and productivity by:

- Enhancing efficient sample handling with a single point of entry that minimizes the need for tube sorting and aliquoting
- Automatically prioritizing and managing samples by analyzing the workload and using a robotic arm to intelligently move samples within the system
- Enabling continuous loading and unloading of specimens from a single location through easy-access drawers
- Providing consolidated reports on all the analyzers and samples in the system
- Reporting results directly to the LIS

Easy to use, with fewer opportunities for errors

The VersaCell System provides a highly reproducible process, with minimal direct interaction. With the VersaCell System, you have a central area for sample processing. All the technician has to do is open the sample drawer, load the sample tubes, and close the door. The VersaCell System does the rest. From a LEAN perspective, this has a major impact on non–value-added tasks, while significantly reducing the potential for human error.

"When you have one system running as we have now," Vlaspolder says, "bringing samples and placing them on the system is easy to do. Anyone in the lab can operate the system. So, we don't need to dedicate the highest skill level technician for daily routine use. A laboratory supervisor with knowledge of software, adjustment, and troubleshooting is enough to ensure continuity."

Because the system uses a primary tube, it generates fewer errors than are generated with a manual approach on several systems. "No sample splitting is required with the VersaCell System," Vlaspolder says, "so we don't have to worry about technicians pipetting a sample into the wrong tube. As long as the primary tube is coded properly, the VersaCell System takes care of the rest."

Microbiology will always be a mix of manual and automated testing. "Microbiology technicians have a high level of education," Vlaspolder says, "and pipetting is not the most challenging or the most rewarding of tasks. I always try to take away the boredom of repetitive tasks, which are a source of errors. We give our staff the choice of doing serology in combination with bacteriology or parasitology. Some prefer to look through a microscope, so for them the low volume of manual tests isn't boring. From the moment we incorporated the VersaCell System into our lab, the staff has appreciated it."

The reliability of the VersaCell System has given Dr. Vlaspolder more confidence in the results generated from his lab. "The system is more accurate, so you don't have to do things twice. Because there are fewer manual errors when using the VersaCell System, there is a reduced need to repeat tests, and it helps keep blood draws to a minimum. This translates into savings associated with minimizing the amount of tubes, labels, and pipettes that need to be purchased."

The future – room to grow

"By restructuring the test mix," Vlaspolder says, "we have gained efficiency and now have greater testing capacity. For example, our IMMULITE 2000 XPi system has the potential to accept 65 percent more work, and the ADVIA Centaur XP platform can do 82 percent more. What's more, the VersaCell System is more than just a sample-handling robot. It has the ability to manage samples in order to facilitate primary testing as well as add-on and reflex testing."

Vlaspolder reports that MCA gets 70 to 90 samples for approximately 200 assays a day. "With the VersaCell System's ability to accept up to 200 samples at once on the system," he says, "we could double our testing capacity." This enables the laboratory to manage anticipated growth in test demand while maintaining existing staff levels. What's more, even greater workflow improvements are expected with higher test volumes.

"If a colleague wants to move to automation," Vlaspolder says, "the VersaCell System is the best combination available."

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