

Automation helps a mega-laboratory process 12,000,000 tests per year with one solution

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Marie Buchmann, MD, PhD
Medical Director
Fürst Medical Laboratory

The Fürst Medical Laboratory is a privately owned routine laboratory serving approximately 6,000 physicians in southern Norway. The staff at the laboratory currently performs about 12 million tests a year, running an average of 8.5 tests on each of the 5,000 tubes that are put on the track daily. The lab's test volume has increased by 55 percent in just four years.

The lab also used a number of analyzers from multiple manufacturers, which added to their operational pressures. “Because our analyzers were from different manufacturers, we had to carry the samples around a lot and rack and re-rack the tubes to a significant extent because the vendors all had different racks,” says Dr. Marie Buchmann, Medical Director, who has worked at Fürst Medical Laboratory for 11 years. “This meant we used close to two man-years just racking and re-racking tubes.”

Fürst Medical decided to automate its laboratory with the ADVIA® Automation Solution, enabling it to meet the challenges of an increasing and complex workload, maximize throughput, and maintain cost-effectiveness.

“We selected the ADVIA® LabCell® based on the number of instruments we could put on the system and the capacity of the instruments,” Buchmann says. “We were able to reduce the number of instruments our workload demanded from 17 to 10 analyzers and still do the same amount of work. The ADVIA LabCell does approximately 70 percent of our total testing.”



Siemens Healthcare Diagnostics, a leading clinical diagnostics company, is committed to providing clinicians with the vital information they need for the accurate diagnosis, treatment and monitoring of patients. Our comprehensive portfolio of performance-driven systems, unmatched menu offerings and IT solutions, in conjunction with highly responsive service, is designed to streamline workflow, enhance operational efficiency and support improved patient care.

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ADVIA® Automation Solution: A case study

Fürst Medical Laboratory

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Consolidation means less work, lower cost



Fürst Medical Laboratory began looking at options when its current chemistry and immunoassay analyzers were nearing the end of their expected lifespan. "We had to replace our older immunoassay and chemistry systems from various manufacturers and wanted to streamline our current operations model of grouping three instruments together with a technologist supervising each section," Buchmann recalls. "At that time, the laboratory was also using instruments for aliquoting and sorting of samples."

"When looking into possible vendors, we realized that most now have automation systems," says Buchmann. "Ten years ago, we saw an automation wave that kind of died out. My feeling was that automation was more mature now. So, we looked into this and decided we wanted to do it."

Fürst Medical's goals:

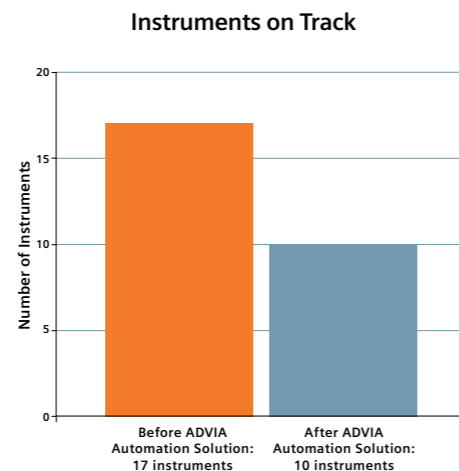
- Consolidate the busiest area of its lab
- Reduce the number of processing steps
- Reduce the manual work done by its most expensive resource – its staff
- Generate cost efficiencies to stay competitive in bids for patient work

Other vendors cautioned that one track would not be sufficiently robust, so the staff considered adding a second. "Siemens convinced us that we only needed one track system," notes Buchmann. "Further, the flexibility of the ADVIA LabCell was important. It had to adapt to the size and shape of our laboratory."

After installing the ADVIA Automation Solution on September 7, 2009, the lab reduced its analyzers to seven ADVIA Centaur® XP systems and three ADVIA 2400 Systems. The ADVIA Automation Solution also has two decappers and two sample managers. "We discovered that we didn't need a backup track system," Buchmann says. "The ADVIA LabCell is very robust. We've had no technical problems with it; it handles our needs very well."

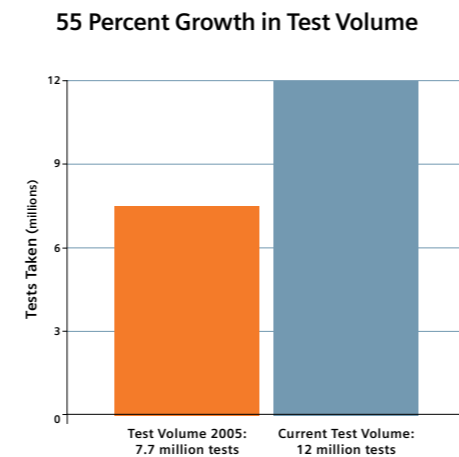
The ADVIA Automation Solution easily consolidated the analyzers into one sophisticated system that integrated into its LIS. "The ADVIA 2400 and the ADVIA Centaur XP systems are suited for our lab because they're built for automation," Buchmann says. "We now run around 45,000 tests through our ADVIA LabCell every day, which is up to 70 percent of our total testing."

There is also less maintenance because of the reduction in the number of analyzers. "However, the impact of reduced maintenance," she says, "will be more visible after we run the systems for a couple of years."



Improved efficiency enables higher throughput

The ADVIA Automation Solution handles Fürst Medical Laboratory's workload with ease. "In 2005, we did 7.7 million tests," Buchmann says. The most common are creatinine, liver enzymes, and electrolytes. They also perform many routine hormone tests for hypothyroidism. "The capacity of the ADVIA LabCell allowed us to increase the number of tests we put on the system. Currently, we run 12 million tests from approximately 10,000 tubes per day because we get more than one tube per patient and we run approximately 10 tests per patient." The ADVIA LabCell handles about 5,000 of these tubes per day.



Error reduction, expanded test menu, and reduction of manual steps—benefits gained

Automation streamlines workflow and minimizes errors by reducing the manual steps required to sort, process, and archive samples. "When you consider going to an automation system, you look at your processes and the opportunities to simplify the workflow routine," Buchmann says. "In my opinion, all automation reduces the potential for errors. The number of process

steps has been reduced by the automation of pre-analytics with the sample manager system we use. **Previously, the potential for introducing errors when manually aliquoting the primary sample was a big issue. Now, we don't have to re-rack the tubes. That makes for a lot less handling.**"

Buchmann goes on to say, "by reducing the manual handling of samples, we have also reduced the potential for biological exposure to infectious material."

The ADVIA Automation Solution further increases efficiency with its extensive test menu and ability to use primary tubes for both initial resulting and additional tests. "We have done a lot of education with physicians where we only need one big tube instead of several," Buchmann comments. "We have also changed our routines in a way in that we don't aliquot until after the sample has been processed on the ADVIA LabCell. So, we can send the primary tubes into other areas of the lab after the testing has been completed on the ADVIA LabCell. **As a result, we've had a 50 percent decrease in aliquoting, which reduced the number of tubes used by 30 to 40 percent.**"



Automation enhances productivity

"Automation helped us reduce the number of hours spent handling tubes by 30 percent, so the techs

can be redeployed to where more skilled responsibilities are required," Buchmann says. "In an environment where highly skilled technologists are becoming more and more scarce, this can have a significant impact on any laboratory. We have very skilled staff performing high-volume testing. The staff was excited to see how the system works and how they can change their routine and do more."

Buchmann says that automating a lab is a lot of work, especially for programming and IT. "Doing this well," she says, "has been essential for us to gain the benefits of automation."

Customer-driven innovation

The ADVIA Automation Solution has many valuable features:

- Maximizes flexibility using multi-sized primary tubes
- Provides full sample availability because the sample never leaves the track
- Enables repeat, reflex, and STAT testing without additional sample management. Sample tubes travel in a single tube carrier, not a rack, so each tube travels its own direct route to the appropriate system without blocking the flow of other tubes
- Reduces the number of tubes drawn from patients
- Optimizes specimen analysis and management with high speed and high performance
- Provides uninterrupted processing and enhanced system reliability because each instrument can function independently from the track
- Integrates assay menus from multiple disciplines
- Customizes flexible configurations for your lab

Lab automation is a core business at Siemens, a leader with more than 600 placements worldwide! This vast experience is built upon:

- Award-winning service and support with specialized automation and informatics engineers
- A healthcare consulting team that optimizes operations by focusing on the lab's needs during the selection, installation, and post-installation process
- Remote Services — a suite of web-based service and support products to help optimize day-to-day operations

Laboratories can automate confidently, knowing that Siemens has the expertise to help them achieve their goals. Siemens continues to invest in the future with new software updates, new products, instrument connectivity, and continuing R&D investments.



"We recognized that once we had implemented the ADVIA LabCell, it would be helpful to get as many tests as possible on them," Buchmann says. "However, we also understood that there will come a time when we will have to increase the capacity of our system. When that time comes, we have the confidence that the ADVIA LabCell will be able to expand to accommodate our needs."