LAB iQ

The Power of Process™ in Action

John T. Mather Memorial Hospital Leverages Automation Technology to Improve Service Quality and Efficiency

Laboratory Profile

- John T. Mather Memorial Hospital, Port Jefferson, New York
- Operates 24 hours a day
- Performs 1.3 million tests annually
- 58.5 FTEs in the laboratory
- Utilizes a Power Processor and two SYNCHRON LX®20 analyzers with a CHEMXpress module

While large, customized automation solutions have benefited large- and medium-sized laboratories since the early 1990s, they have typically been out of reach of smaller facilities such as John T. Mather Memorial Hospital because of their cost and personnel requirements.

With the advent of modular automation, however, smaller laboratories now have a greater opportunity to adopt "plug and play" capabilities that can be achieved through standardized configurations.

John T. Mather Memorial Hospital recently took advantage of modular automation technology from Beckman Coulter. With the implementation of the new system, the hospital became the first automated hospital laboratory on Long Island and discovered a key to unlocking higher productivity and increasing cost-effectiveness.

Overview of John T. Mather Memorial Hospital

John T. Mather Memorial Hospital, a 248-bed, not-for-profit hospital located in Port Jefferson, New York, serves Suffolk County. The region's population has grown rapidly in recent years and now contains 1.3 million people.

Since its establishment in 1929 as the first community hospital in its area, John T. Mather Memorial Hospital has met the changing health care needs of its community and created a variety of programs that are unique to Suffolk County. John T. Mather Memorial Hospital is a member of the Long Island Health Network (LIHN), which now includes 11 hospitals.

Time For a Change

Prior to implementing a laboratory automation solution, John T. Mather Memorial Hospital faced a rapidly changing environment. The demand for laboratory services grew quickly and the hospital's patient demographics shifted to an older, frailer population that required more resources.

Laboratory Goals	Laboratory Results
• Decrease turnaround time	• Drugs of abuse TAT reduced 79 percent
• Increase productivity	• Increased total testing volume by 82.6 percent, while maintaining the same number of FTEs
• Lower overall costs and increase profitability	• 17 percent decrease in cost per test between 1999 and 2000 • 152 percent increase in revenue since 1994

Since 1993, test volume increased 82.6 percent, without a commensurate increase in budget or staff. Between 1993 and 1998, the number of tests per FTE increased 34.4 percent.

To address these changes, the hospital laboratory planned a move from a traditional lab-bench setup (with separate testing stations) to an integrated laboratory delivery system, or core model.

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The laboratory successfully merged chemistry and hematology into one section, removed physical barriers, consolidated workstations, achieved increased efficiency, and reduced costs. However, the acquisition and implementation of automation proved to make the most radical difference in the plan.

Automation At Work

The laboratory chose an automation package that consists of the Power Processor and an in-line connection to two SYNCHRON LX®20 clinical chemistry systems – a solution that currently processes approximately 80 percent of the laboratory's test volume.

"We're very happy with the results so far, which indicate that you don't have to be a 1,000-bed institution to take advantage of technology.".

"We chose Beckman Coulter because it offered great breadth and depth of product, as well as comprehensive customer support from a single vendor," says Denise Uettwiller-Geiger, Ph.D., Administrative Director. "In addition, Beckman Coulter provided peripheral devices that enabled successful communication between the automation system and our LIS."

Thanks to this powerful solution, the laboratory has experienced significant improvements in its testing process, including:

- Elimination of errors associated with manual specimen processing
- Improved quality and reliability of laboratory testing
- Shortened and more standardized testing turnaround time
- Fewer variations in the processing of specimens
- Increased cost benefits

Dramatic Process Improvements

Automation helped streamline the lab's front-end sample processing by eliminating manual entry, centrifugation and specimen sorting. This helped reduce human error and improved safety for staff members by eliminating exposure to blood-borne pathogens.

The lab reduced test turn-around time because the instruments are less susceptible to human interruptions. And highly trained staff could focus on testing protocols that cannot be automated. Plus, providing results quickly to physicians helps expedite treatment of patients, improving quality of care.

The reduction of laboratory instruments also helped to decrease service costs, quality control costs, and simplify reagent purchasing. By partnering with Beckman Coulter as a single-source vendor, the laboratory reduced costs associated with multiple vendor contracts.

Measurable Results

The lab has achieved outstanding financial achievements:

- 17 percent decrease in cost per test, from $5.21 in 1999 to $4.44 in 2000 (and a 21 percent decrease between 1994 and 2000)
- 152 percent increase in revenue since 1994
- 82.6 percent increase in total testing volume

The laboratory has also maintained quality staff in spite of decreasing human resources. Without the automation system, the lab could not have accommodated the dramatic increase in test volume without additional FTEs.

"This automation solution has become a marketing tool for our hospital," said Dr. Uettwiller-Geiger. "Job applications have increased because people know we have robotics and they want to work on the line. Robotics is an enabling technology that's not found in every laboratory and it gives us an advantage over other labs."

The laboratory plans to improve turnaround time even more by acquiring an automated pneumatic tube transport system. Plus, the lab may consider additional renovation of existing floor space for greater integration of staff members and processes.

Conclusion

Based on the experience at John T. Mather Memorial Hospital, mid-sized laboratories should carefully investigate modular automation before dismissing it. Smaller hospital labs may increase productivity and cost-effectiveness significantly with automation.

"Modular automation enables laboratories to streamline the most labor-intensive part of the testing process – sample processing," said Uettwiller-Geiger. "Plus, modular robotics is a flexible option that allows labs to automate in stages – adding systems as their workload increases, and managing growth while also ensuring overall testing quality."

"We are continuously monitoring our performance, quality and financial metrics," said Uettwiller-Geiger. "We're very happy with the results so far, which indicate that you don't have to be a 1,000-bed institution to take advantage of technology."

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