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Siemens Global Headquarters

Siemens AG
Wittelsbacherplatz 2
80333 Muenchen
Germany

Global Siemens Healthcare Headquarters

Siemens AG
Healthcare Sector
Henkestrasse 127
91052 Erlangen
Germany
Telephone: +49 9131 84 - 0
www.siemens.com/healthcare

www.siemens.com/diagnostics

Global Division

Siemens Healthcare Diagnostics Inc.
1717 Deerfield Road
Deerfield, IL 60015-0778
USA
www.siemens.com/diagnostics



Spanish hospital harnesses the power of ultra-integration

Dimension Vista® Intelligent Lab System – A Case Study

Answers for life.

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The Dimension Vista system enhances efficiency to spur growth in testing

"Over the next ten years, the Dimension Vista analyzer will become one of the most competitive pieces of equipment in the global laboratory environment ..."

Dr. Vidal Pérez Valero
 Director, Clinical Analysis Service
 and the Diagnostic Management Unit
 Carlos Haya Hospital, Málaga



As one of the largest hospitals in Spain, the Carlos Haya Regional University Hospital Complex is a Level Three hospital in Andalusia that serves part of the Málaga province. The hospital provides care for a wide variety of patients – from primary healthcare patients to patients who have undergone multiple organ transplants – and in May 2007 was the first site in Europe to install a Dimension Vista® system at its laboratory. Since then, the state-run, 1,200-bed facility has increased its testing volume to about six million tests a year, at a growth rate of approximately six percent a year.

The hospital replaced six Dimension® RxL analyzers and a BN™ II nephelometric system with three Dimension Vista systems in its central lab, all of which are connected by the StreamLAB® Analytical Workcell. They then relocated some Dimension RxL systems to the two emergency labs the hospital operates in the city. The Dimension Vista and RxL platforms account for approximately 70 percent of the hospital's testing (4.2 million tests per year).

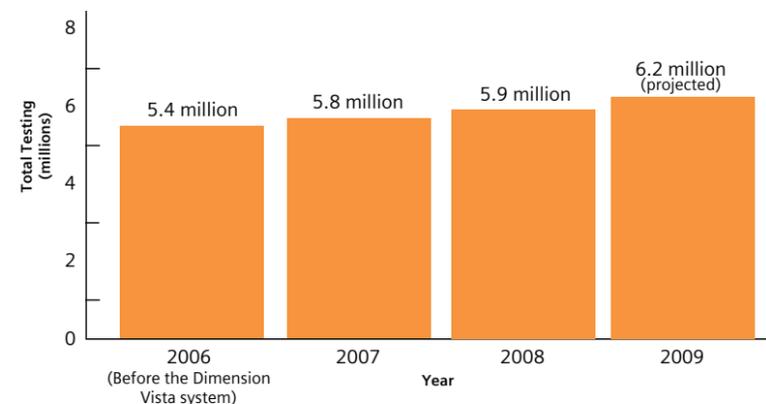
According to Dr. Vidal Pérez Valero, the goal in bringing the Dimension Vista system to Carlos Haya Hospital was to get "...a more consolidated platform with more powerful automation, as well as to reduce labor and human resource requirements." The Dimension Vista analyzer provides the hospital with the opportunity to consolidate more tests on one system.

Ultra-integration of multiple state-of-the-art technologies

The Dimension Vista system provides Carlos Haya Hospital with the ultra-integration of photometry, nephelometry, V-LYTE® multisensor electrolyte detection, and LOCI® advanced chemiluminescence in one intelligent workstation. It delivers accurate results as well as simplified and consolidated sample processing that minimizes TAT and sample requirements.

"Right now, it is a great advantage for us," says Dr. Valero. "Having these four technologies in a single platform is really important."

Testing Growth



Minimizing TAT while maximizing throughput

	Throughput	TAT
Dimension Vista 1500 Intelligent Lab System	Up to 200 primary tubes and 2,000 tests per hour	
Photometry Routine and specialty chemistry TDMs, DATs (with Syva OnBoard® reagents)	1,500 tests per hour	Method reaction time from 1 to 17 minutes
Nephelometry Routine and specialty plasma proteins	Up to 200 tests per hour	Method reaction time from 6 to 13 minutes
V-LYTE multisensor electrolyte detection Na, K, Cl	166 samples per hour	Method analysis time in less than 22 seconds
LOCI advanced chemiluminescence Fast, high-sensitivity immunoassays	Up to 180 tests per hour	Method reaction time results for cardiac markers Troponin I and NT-proBNP in 10 minutes

The patented LOCI chemiluminescence technology of the Dimension Vista system provides Carlos Haya Hospital ultra-integration with shorter turnaround times and better sensitivity, as well as the potential to develop the most complex immunoassays.

"Our experience with LOCI and our evaluation of Troponin, TSH, and hsCRP (nephelometry) showed us that the results were really very good – better than with the classic ones," says Dr. Valero. "For me, the tests are very competitive."

Another advantage cited by Dr. Valero is the consolidation of plasma proteins: "Consolidation is important. The speed we had already achieved was excellent. However, having them grouped and having proteins measured with a technology like nephelometry, which is the standard for measuring these parameters, is indeed very important."

Minimizing manual tasks means fewer errors and lower costs

"In a lab as large as ours, with the volume of samples and patients, it is very important that the menu portfolio be broad enough to carry out more than 200 different testing methods (includes various specimen types) and that the menu allows you to look at the parameters of tests for a specific disease."

Dr. Vidal Pérez Valero
 Director, Clinical Analysis Service
 and the Diagnostic Management Unit
 Carlos Haya Hospital, Málaga



With the Dimension Vista analyzer, Carlos Haya Hospital can avoid errors from manual handling.

According to Dr. Valero, a majority of the errors in its labs are in the pre-analytical phase. Although Carlos Haya Hospital has not quantified the reduction of errors, Dr. Valero reports that the "...error rate is lower with the Dimension Vista system because it has reduced the number of pre-analytical processes."

The Dimension Vista system also automates calibration and QC normally performed by the operator, reducing daily preparation tasks to fewer than ten minutes and eliminating maintenance with self-alignment of probes.

Dr. Valero goes on to say, "Calibration and other manual tasks add little value, but consume considerable human resources. By automating these tasks, the Dimension Vista system frees resources that can be directed to more critical tasks. The fact that each task can be programmed directly through the machine, is controlled chronologically, and the equipment initiates the process itself frees up resources and, to a certain extent, helps avoid errors."

By grouping everything together, it also allows the hospital to reduce costs, particularly in an environment of overall staff reduction.



Staff reallocated even as testing grows

With the Dimension Vista system, Carlos Haya Hospital has been able to reallocate staff and bring more testing in-house to help drive volume.

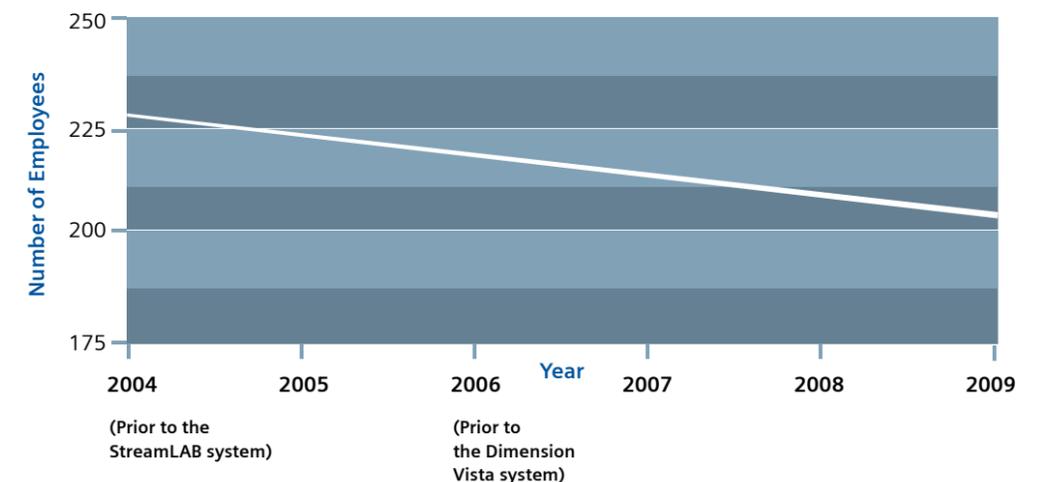
After installing the StreamLAB system and the Dimension Vista analyzer, the hospital has:

- Added allergy testing
- Added automated drug analysis and drugs of abuse analysis
- Improved assisted reproduction testing
- Commissioned a "fast response lab" for oncology and transplantation patients

"More test requests are being made, new tests are being performed, and all of this is being handled by fewer staff," says Dr. Valero. "With the improvements that the Dimension Vista system provided, we have been able to successfully redeploy resources into other lab areas."

Since 2004, the hospital has reduced its laboratory staff by 11 percent (from 227 to 202), despite an annual increase in patients and test volume.*

Dr. Valero stresses the importance of the broad menu of the Dimension Vista system, especially for a large lab like the one at the Carlos Haya Hospital complex. "In a lab as large as ours, with the volume of samples and patients, it is very important that the menu portfolio be broad enough to carry out more than 200 different testing methods (includes various specimen types) and that the menu allows you to look at the parameters of tests for a specific disease."

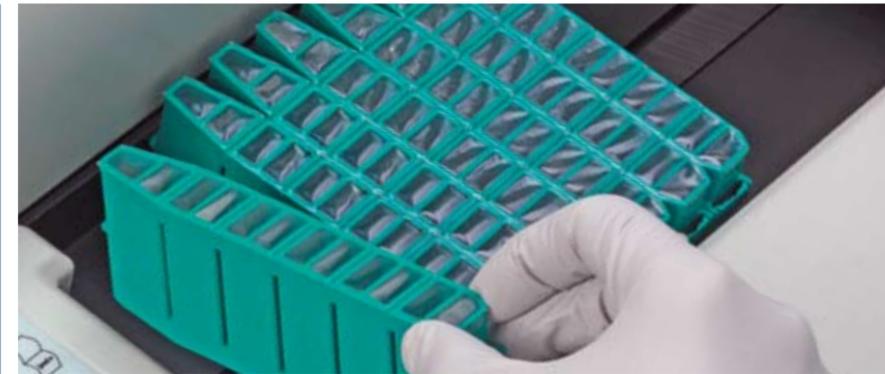


*Individual results may vary.

Increased productivity and efficiency enhance workflow

"Siemens listens to the labs and investigates what they need. That's one of the things to keep in mind when making decisions."

Dr. Vidal Pérez Valero
Director, Clinical Analysis Service
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The Dimension Vista system provides advantages that help improve productivity and efficiency in the lab, including the flexible configuration in which each Dimension Vista analyzer provides a throughput of up to 2,000 tests with 200 primary tubes per hour to meet peak time demands.

"Before the technology consolidation, virtually all of the most frequently used processes lacked speed, so our efforts focused mainly on accelerating the response time of these frequent or routine processes," notes Dr. Valero. "When technology consolidation was achieved with the Dimension Vista system, these response-time related problems were resolved."

Carlos Haya Hospital's use of the StreamLAB Analytical Workcell, with an input/output area of more than 600 tubes, has been impacted by the Dimension Vista system. With consolidation from six Dimension RxL systems to three Dimension Vista analyzers, the hospital is planning to add an ADVIA Centaur® XP Immunoassay System and an IMMULITE® 2000 system on the automation platform, enabling even greater productivity in the laboratory.

Equally important, Dr. Valero found Siemens to be supportive and helpful in training staff on the Dimension Vista system.

Carlos Haya Hospital also benefits from remotely monitored intelligent device management. "Having the ability not just to control, but to act on all the software processes that the equipment controls remotely, has been very helpful," says Dr. Valero.

Key Dimension Vista system features:

- Onboard capacity for more than 200 methods (includes various specimen types)
- Capacity for up to 166 reagents
- STAT samples that can be processed in less than two minutes
- More than 40 assays that require <4 µL of sample
- Ability to handle 600 to 800 sample aliquots onboard simultaneously
- Over-range dilutions and reruns, reflex testing, and panic repeats that can be processed without operator intervention



Designed with extensive customer input

In choosing the Dimension Vista system, Carlos Haya Hospital considered the high level of quality it found with the Dimension RxL Integrated Chemistry System. "Knowing Siemens manufactured both platforms is a win for the customer," says Dr. Valero.

The Dimension Vista Intelligent Lab System is the product of hundreds of interviews with laboratorians worldwide who influenced the development of capabilities that optimize laboratory workflow.

"Siemens listens to the labs and investigates what they need," Dr. Valero says. "That's one of the things to keep in mind when making decisions."

Dr. Valero identified additional Dimension Vista system advantages for Carlos Haya Hospital

Intelligent Sample Management

- "These are very fast machines that allow you to make decisions about reflex testing and the aliquoted sample without having to go back to the primary tube. That's an advantage."
- "HIL index alert informs technicians of potential interference from hemolysis, icterus, and lipemia without using reagents – and with no impact to system throughput."

Intelligent Reagent Management

- "This system is especially helpful with our low-volume techniques, such as magnesium and apolipoprotein A and B."

Flex® Reagent Cartridges

- "Since all Dimension systems have this advantage, the transition from the Dimension RxL analyzer to the Dimension Vista system went smoothly."

Auto-verification

- "Auto-verification of results is performed according to user-programmable rules, allowing technologists to focus on other value-added tasks such as abnormal results."