

CASE STUDY

# ELGA ensures largest medical diagnostic lab (DASA) in Latin America is working 24/7

Diagnósticos da América (DASA), Brazil

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# Largest medical diagnostic company in Latin America

**DASA is the largest medical diagnostic company in Latin America, fifth largest in the world, with 321 branches across Brazil catering for 55,000 patients daily. DASA offers over 3000 types of image diagnostics and clinical analysis tests, processing more than 10 million tests each month. DASA is CAP (College of American Pathologists) certified laboratory. ELGA needed to supply high volume consistent quality CLRW standard pure water to high throughput clinical laboratory analyzers.**

Until 2003, DASA's water purification systems to feed clinical analyzers in Sao Paulo, Brazil, treated the water in 2 steps: the pre-treatment system feeds the complete building, including many different auxiliary laboratories, followed by ELGA's MEDICA® purification systems.

### Step 1 – Pre-treatment system

Technologies used include mixed bed deionization (industrial scale), filtration (capable of removing particulates, organic compounds and ions). The production rate was 500 liters per hour.

### Step 2 – ELGA MEDICA water purification systems

3x ELGA MEDICA® 100 and 1x MEDICA® Pro water purification systems installed next to the automated clinical analysers (Biochemistry, Immunochemistry and Immunology) to further purify the water. Technologies used pre-treatment, reverse osmosis, UV, deionization, in-line filtration and recirculation.

**Chemist Claudette Magalhaes Motta – Process Manager Biodoctor Audrei Bertini – Process Manager (Automation)**

'The installation went smoothly, and the MEDICA-R 200 is easy to operate and maintain. The improvement to the layout eased the circulation of personnel, work flow as well as improved quality assurance for the analytical processes.'



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# Challenge and Solution

**Business began to grow leading to the increasing volume of performed tests. The sensitivity of the tests also increased which meant that the current 2 step water purification process was no longer suitable to their volume and quality needs.**

Therefore, in 2003, DASA invested in a new pre-treatment water purification system, increasing the production rate from 500L/hour to 1,000 L/h.

The number of clinical analyzers also grew to cope with the growing demand of tests, however only 4x MEDICA® water purification systems were still being used to deliver the water required for the tests. This led to constant interruptions to the performed tests in the analyzers. DASA wanted to install more MEDICA® systems but were challenged due to lack of available space.

In order to solve this problem, in 2008/2009, DASA decided to centralize all the MEDICA® systems into one specific and separate area. The solution was to install 4x ELGA MEDICA®-R 200 water purification systems which have been designed specifically to feed high throughput clinical analyzers. The 4x MEDICA®-R 200 systems are capable of producing and distributing a total 800L/hour of CLRW standard water in a closed recirculating distribution loop, directly feeding into to several clinical analyzers (Biochemistry, Hormonology and Immunology).



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# Project Delivery

**The first step of the project was to select water purification systems which could feed high throughput clinical analyzers with no interruptions to the tests.**

**ELGA's MEDICA®-R 200 system was chosen due to its capability of producing 200L/hour purified water (CRLW standard) and other added benefits including 350L internal reservoir, easy installation and operation.**

The designated space for the installation of the new MEDICA®-R 200 systems was a 23 m<sup>2</sup> room which offers the possibility of installing 2 additional systems when required. The structure of the building was verified to ensure that it could support the fully operational weight of the 4x MEDICA® systems (up to 2120kgs). Electrical installations, water piping (feed water, treated water, waste water) were added, together with a temperature control system. A water barrier was created to prevent any water leakage. This infrastructure project was followed according to Nova Analytica and ELGA's installation recommendations.

### Performance

For complete validation external testing is also completed in addition to the in-house water quality monitoring. This confirms that the MEDICA® R-200 systems comply to CLRW standard quality, meeting all requirements from Clinical Laboratory Standards Institute, Programa Acreditação para Laboratórios Clínicos, RDC 302/05 – (Resolução do Ministério da Saúde), and the feed water requirements of the analyzers.

The MEDICA® water is distributed to the laboratory (Analyzers) via a special polypropylene, thermo-welded piping network, which allows a continuous recirculation of the water. Normally, each MEDICA-R 200 delivers purified water to only one line of analyzers at a time. However, all 4 systems are all interconnected via valves, allowing a very quick redirection of the purified water in case of a breakdown of a system.

DASA currently consumes about 15m<sup>3</sup> per day of reagent water and about 2m<sup>3</sup> per day of CLRW standard water. Besides the interconnection of all systems, a remote sound and visual alarm alerts the maintenance technical personnel in case of a system failure. Everyone within the team has been fully trained to service any unit.

The equipment guarantees the distribution of 15L/min of water at approximately 40 psi up to 200m of closed loop piping. The water quality is maintained at all times due to its recirculation capability.



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# Service

**The water obtained from these systems meets all the specifications for CRLW standard water and also the feed water requirements of each analyzer. The physical, chemical and biological quality of the water is strictly controlled. Conductivity is measured daily while Silica, total chlorine and bacterial growth are measured weekly.**

In addition, there is a daily check of the water purification system and distribution loop. The checklist includes the verification of the correct functioning of the pumps, UV lamps, water pressure on production, distribution loop and water resistivity.

The MEDICA®-R 200 systems are sanitized once a month and the consumables are changed according to ELGA's recommendations. As the units are all interconnected, the sanitization can be done without the necessity of shutting down a line of analyzers therefore causing no additional downtime.

### Analyzers Fed:

- 18 ROCHE (Hitachi) MODULAR E
- 01 ROCHE (Hitachi) MODULAR P
- 12 SIEMENS Healthcare Advia Centaur XP
- 06 SIEMENS Healthcare Advia 2400
- 03 SIEMENS Healthcare Immulite-DPC
- 02 SIEMENS Healthcare UniCap-Phadia
- 01 Beckman Coulter (Olympus) AU640E



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