APPLICATION OF AN ELIPSE E3 MONITORING AND CONTROLLING SOLUTION IN WATER AND SEWAGE MUNICIPAL DEPARTMENT IN PORTO ALEGRE (DMAE)

This case presents the solution adopted by DMAE, in order to meet the requirements to improve control and supervision of its water and sewage treatment and distribution plants

Augusto Ribeiro Mendes Filho
Elipse Software's Communication Assistant

Needs

Water and Sewage Municipal Department (DMAE) is the body responsible for capturing, processing and distributing water, also collecting and treating sewage (cloacal) in Porto Alegre. DMAE is responsible for monitoring and maintaining these services, besides planning and promoting their improvement and expansion, providing the infrastructure needed for the city sustainable growth.

Nowadays, DMAE has about 2.5 thousand active employees and a structure that includes eight pumping plants of gross water and water treatment, 92 pumping plants of treated water, 99 tanks, nine sewage treatment plants and 17 sewage pumping plants. The department also includes about 3.5 thousand kilometers of water pipes and more than 1.6 thousand kilometers of sewage pipes.

This case presents the solution adopted by DMAE, in order to meet the requirements to improve control and supervision of its water and sewage treatment and distribution plants.

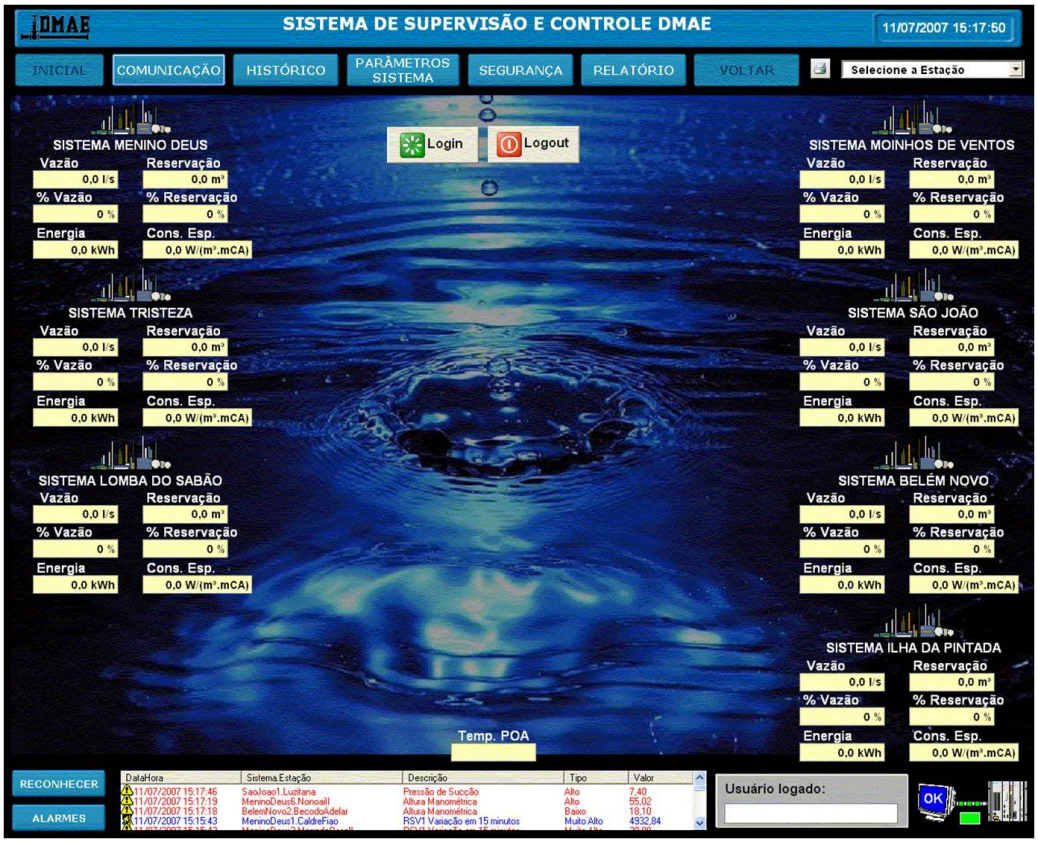

Figure 1. Initial screen of the DMAE supervision system

Solution

In the early phase of the project, supervision and control of DMAE's water and sewage treatment and distribution plants were performed by two or three independent monitoring systems. While part was controlled by a SCADA (Supervisory Control and Data Acquisition) system, the other one had a free software. "It was a real fruit salad", said DMAE's electrical engineer Adriano Roque de Arruda.

The idea was to find a solution for easy implementation and good reliability, providing a good cost-benefit relation to the sanitation area. A software capable of promoting a more standardized control, in order to unify and centralize the process. Therefore, the first challenge was to replace old systems by another one based, exclusively, in Elipse E3 solution.

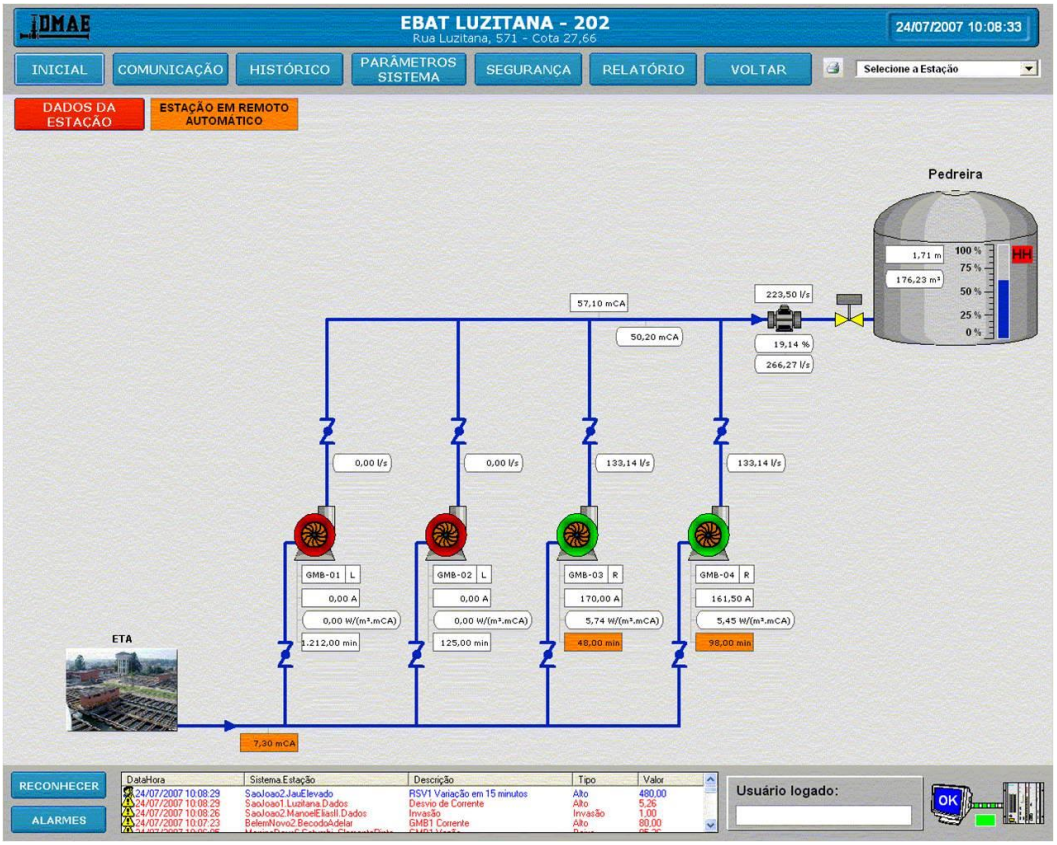

Figure 2. Supervision screen of the treated water pumping station

Among the advantages brought by E3, is its network capabilities. Another positive point is the similarity with other systems such as Visual Basic and Visual Studio, facilitating its programming. These factors have made DMAE started to monitor and control the plants in a single E3 platform, network based, enabling the development of enhancements to the system. Another benefit provided by E3 is to allow using more than one type of database, enabling the implementation of more detailed analysis of the system.

In total, DMAE presents nine copies, distributed in the following sectors: one running on the operating room, four viewers in the operating control system, a viewer in the maintenance division, one programming copy in the maintenance division and one copy for Hot-Standby in the water division. Today, DMAE has 71 automated plants, located near the pumping houses and water reservoirs. Electrical engineer Roque Adriano de Arruda, said the idea is to automate an average of 89 stations in 2009.

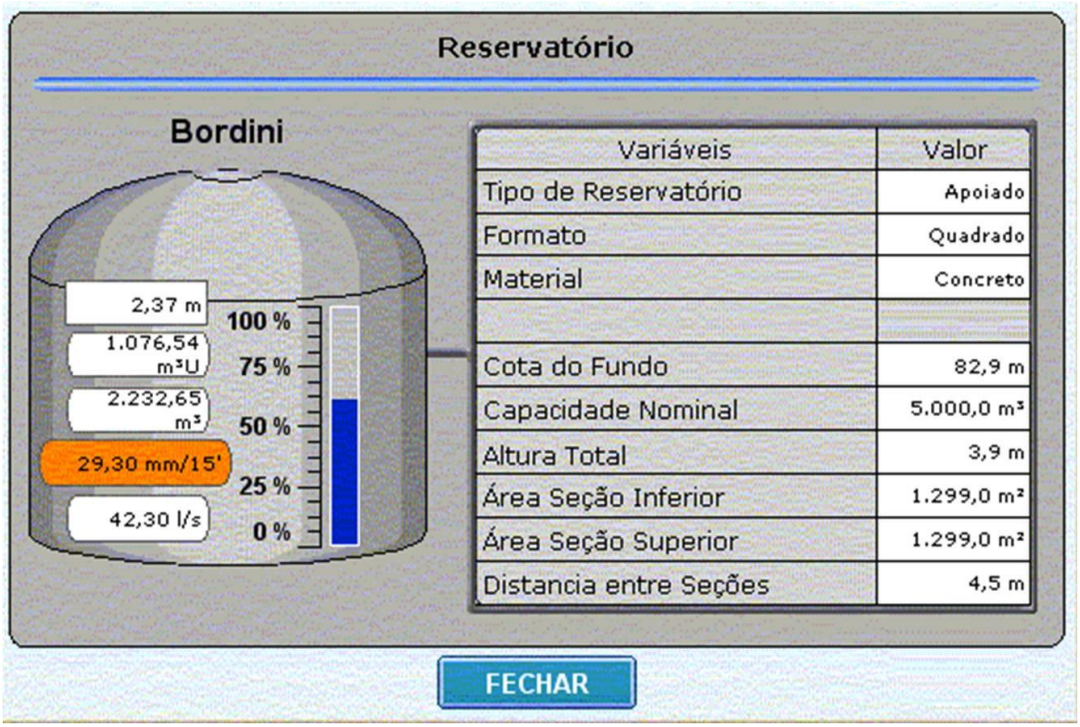

Figure 3. Monitoring screen of the treated water tank

For Web System

Thinking about improving visibility and access to information collected by E3, DMAE hired the services of Bits, a company specialized in developing web environments. With this goal, an intranet was created. A portal that provides a whole vision of the plants and reservoirs behavior which make up the water system in Porto Alegre. A complete monitoring system of the plants conditions controlled by Elipse E3.

From a database, updated every three minutes, the system provides many different features. Through a friendly user interface, you can monitor the operational performance of the existing supply systems in the stations. All in real time. This feature is limited to monitoring, it is not possible to make any direct controlling intervention in the process.

Figure 4. Screen supervision of treated water pumping station in a web environment

Another feature provided by the system is the generation of historics through fully interactive charts, with the ability to zoom and select periods and dates. Several standard charts can also be generated, containing main system behavior, to provide more intelligible information about plants and reservoirs.

Furthermore, the system generates reports with the possibility of separating by periods and dates, even allowing to select multiple plants, depending of the selected report. In short, the portal provides access to important data about the system, with ability to export them to Excel to enable information scalability. Thus, it extends, in a web environment, the functionalities and information generated by Elipse E3.

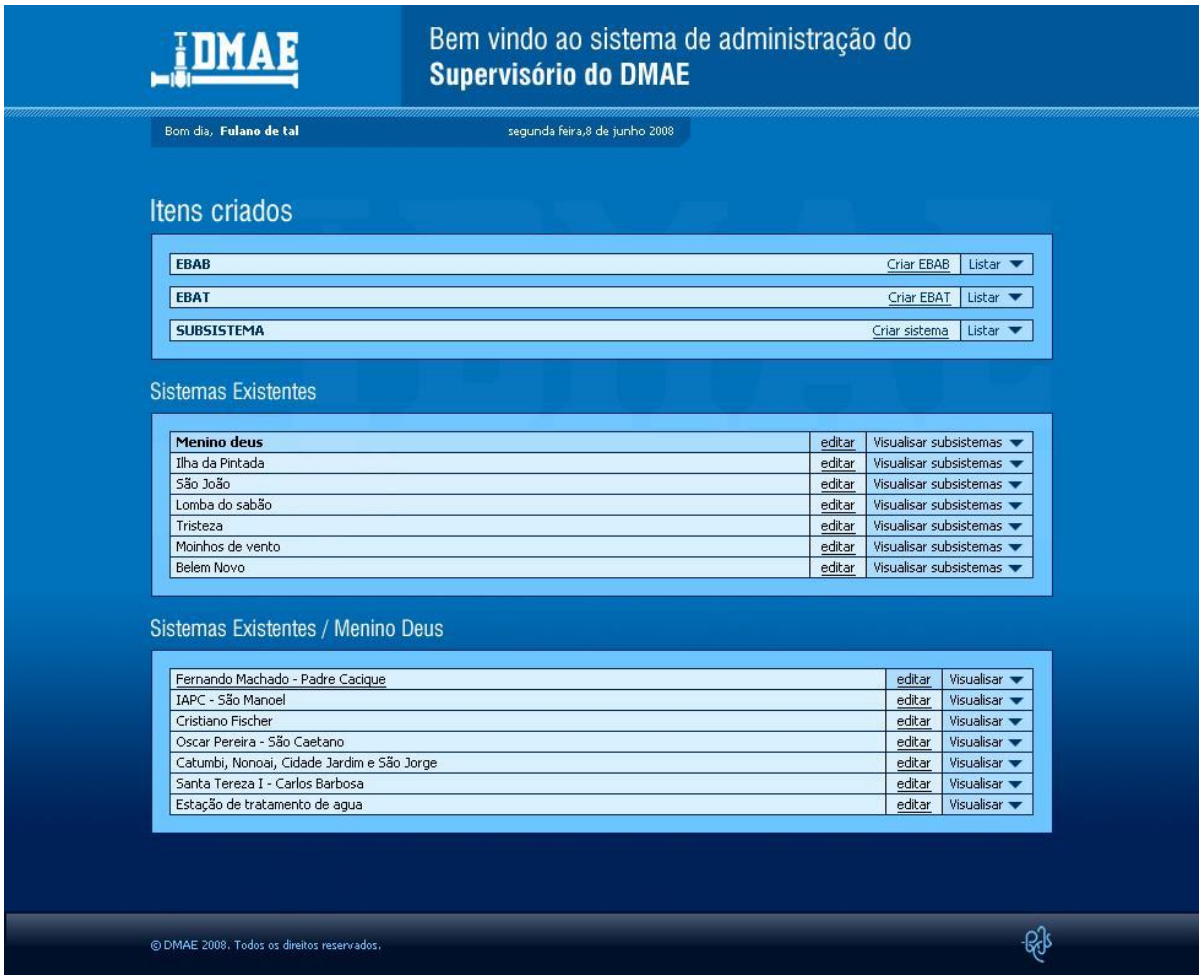

Figure 5. Management screen of web supervisory software

Benefits

- Controlling and supervising plants through a single E3 platform, via networking, which allows extending the system.
- Similarity of Elipse E3 solution with other systems such as Visual Basic and Visual Studio, facilitating its programming.
- Use of different databases, having access to reports and historical data to perform the most precise analysis of the system.
- Quick and free access to information about water stations to DMAE superintendents, through the association between E3 and For Web System.
- System data presentation in a more modern, clear and attractive way.
- Easy application and good reliability software, providing a good cost-benefit relation.

Final Considerations

E3 brought several information that were not visible about the 71 automated plants. Thanks to the solution, there were improvements in the quality of water supply to the population and greater rationalization of power spending. The application together with the For Web System, made DMAE network users to have access to variables and calculations monitored by Elipse E3. All in a quick, reliable and updated way.

"The results were positive. E3 brought a number of details that were not visible. Nowadays, the idea is to negotiate with Elipse to use the system on monitoring and controlling new ETs (treatment plants)", said Verineu João Tedesco, DMAE process engineer in automation area.

"The software presents a reliable system, easy installation and programming, with good visibility. A simple application solution with excellent reliability, which fits very well in the sanitation area. This is so true that other integrators are already using this tool in other parts of the country, as in Joaçaba-SC and in the northeast region of Brazil, for example", completed Adriano Roque de Arruda, DMAE electrical engineer.

TECHNICAL INFORMATION

Client: Departamento Municipal de Água e Esgoto de Porto Alegre-RS (DMAE)

Systems Integrator: Fluxotec, Bits, Autômata Engenharia LTDA e Alfacomp

Elipse package used: Elipse E3

Number of copies: 2

Platform: Windows

Number of I/O points: 5.000

Driver: Altus TCP/IP