

AUTOMATION AT SULGÁS WITH ELIPSE E3 SOFTWARE

This case presents the solution adopted to monitor the different field variables involved in the distribution of natural gas conducted by Altus in the system of supervision and control of Sulgás

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Needs

The Gas Company of Rio Grande do Sul (Sulgás) is the responsible for marketing and distribution of piped natural gas in that Brazilian state. Founded in 1993, it operates as a mixed-capital company, whose shareholders are the state of Rio Grande do Sul Gas and Petrobrás S / A - Gaspetro. Currently, the company has a distribution network which covers 542.3 km (around 335 miles), serving nearly 5,000 industrial, commercial, and residential clients.

Because of their underground distribution lines, spread over urban and rural areas of difficult access, Sulgás needed to adopt a system that was capable of monitoring the field variables both remotely and in real time, with a SCADA system that could be controlled by a single operations center, thus eliminating the need for any travel to the locations to be monitored.

With that in mind, Sulgás has hired Altus Consortium and SYSPRO Quality for implementing the project, which uses E3 (developed by Eclipse Software) for their system of supervision and control. Altogether, five E3 copies were acquired: one with unlimited Server, one with unlimited Hot Stand-By Server, one with Viewer Control, and two with OPC Servers. In addition, two other drivers were purchased: an Eclipse SuperDriver, the company's newest technology, able to allow the use of more than one protocol in a single communication channel, and the Instromet 999, developed by Eclipse Software for this specific application.

Altus was responsible for customizing the software according to the needs of the project. It also provided, alongside Syspro Quality, technology for the transmission of data from Sulgás's distribution lines to the supervisory and control system.



Figure 1. System's set up screen

Solution

Sulgás's operators can supervise all the variables comprising the process of distributing natural gas via E3 screens and all the technology of data transmission via GPRS. Pressure, temperature, and gas flow are some of the variables that may be followed by supervisory's screens.

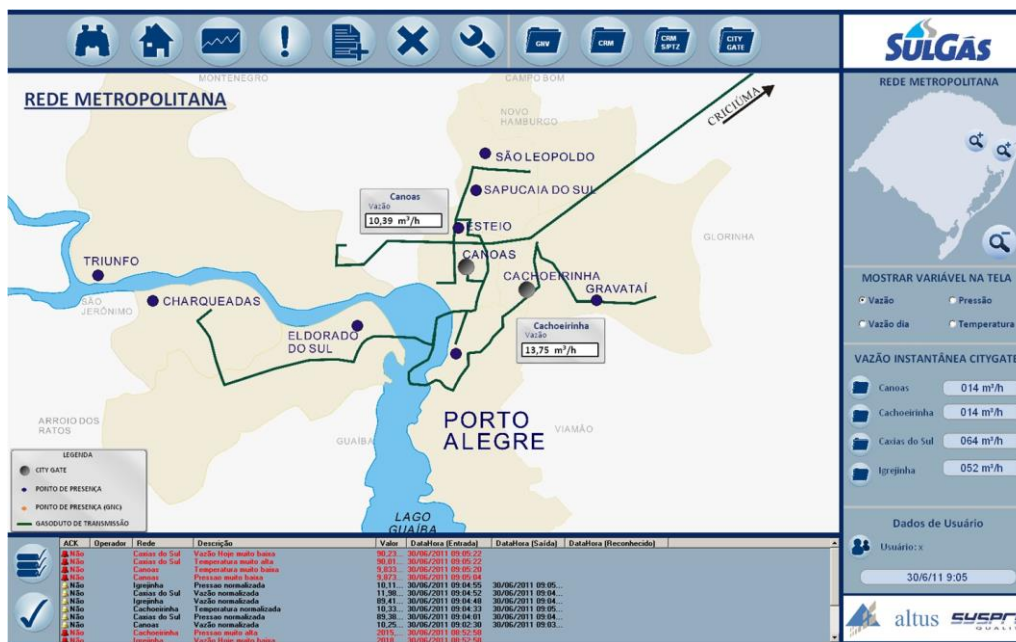


Figure 2. Screen flow control alongside the distribution networks installed in the metropolitan area of Porto Alegre

The volume consumed by customers, as well as the status of anti-corrosive system of ducts through which the gas is distributed, is also sent to the E3. In addition, the system provides data on sales for the PRU (Price Reference Unit) of the company.

The alarm system is another feature offered by E3. This system alerts operators if any problem is found in the pipeline. For example, suppose the pressure is outside the normal standards. Once the problem is found, the software displays a message on the screen, telling the time, date and details of the occurrence.

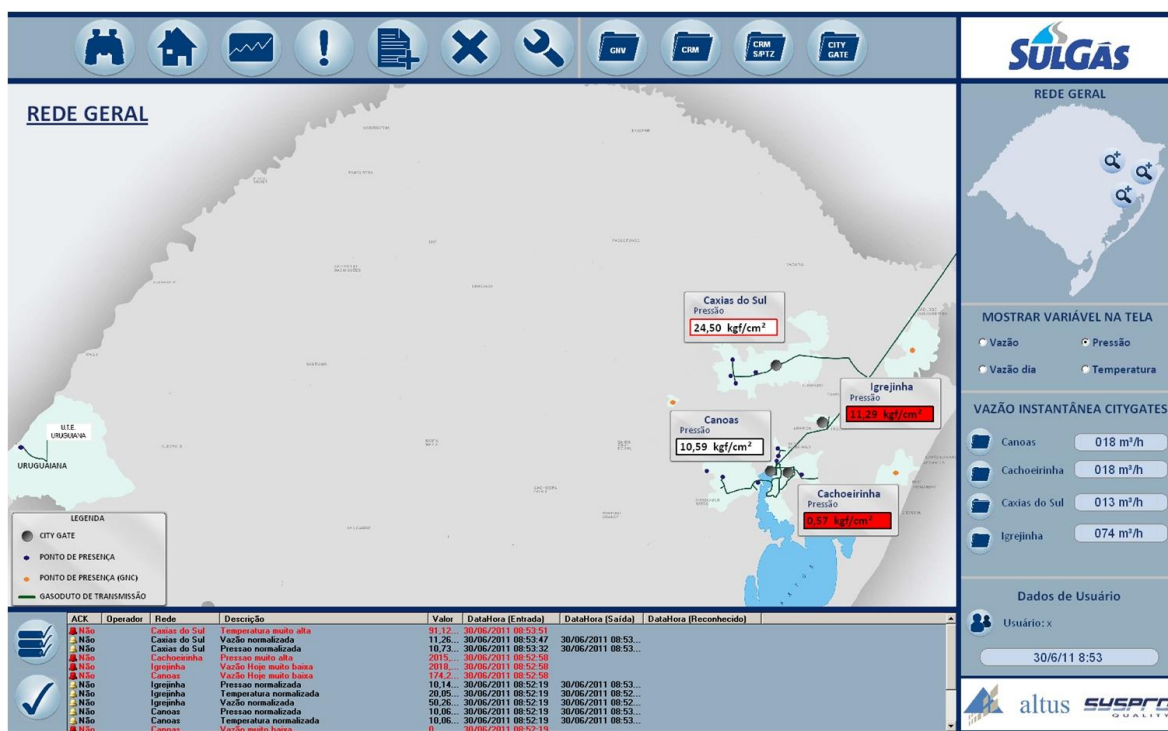


Figure 3. Pressure control screen marked with distribution networks installed in the cities of Caxias do Sul, Canoas, Cachoeirinha, and Igrejinha. In red, at the bottom, alarms checked by the supervisory

Finally, the E3 tool that issues historics and charts was used, all customized to the client's needs, and all both exportable to PDF and printable. About \$ 7 million was invested by Sulgás to develop the whole system's project and architecture. This project included the purchase of Elipse's supervisory, remote telemetry by GPRS, installation of devices at the users, assembling of the operating room, and spending on computers and labor.

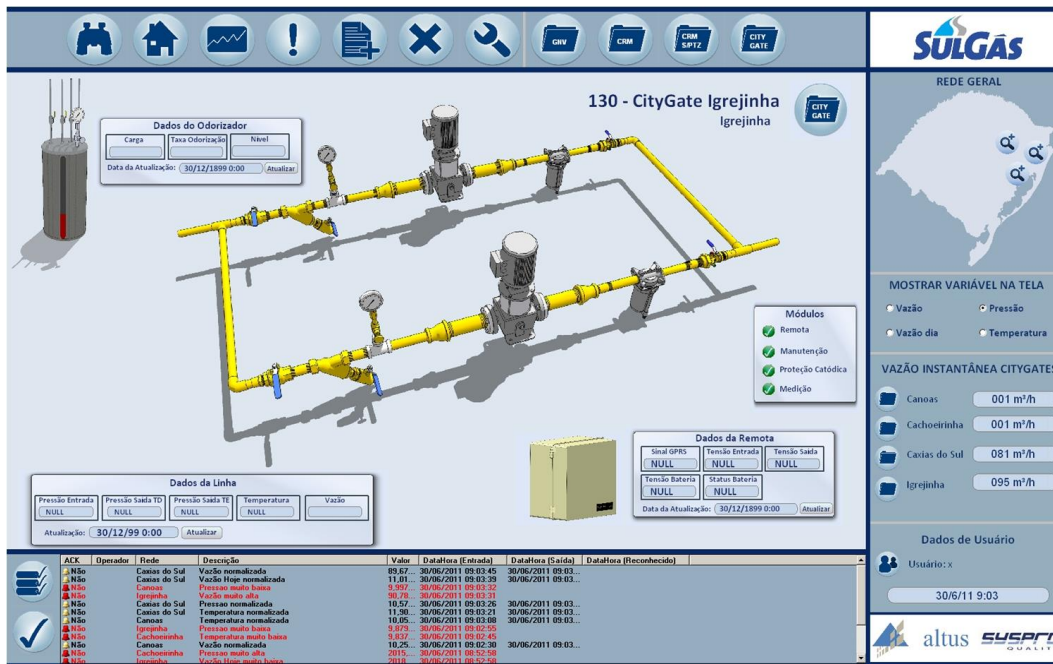


Figure 4. Sample screen showing one of Sulgás's distribution station

"The software allowed the implementation of a robust and reliable architecture, thus allowing the integration with Sulgás's internal systems. During the project, studies have been conducted that seek to use usability features, resulting in interfaces of enhanced functionality," said Samuel H. Rosa, the analyst at Sulgás responsible for conducting the project.

Elipse SuperDriver

In order to improve communication between different devices that integrate the system responsible for the automation of field variables and devices involved in the distribution of gas, Sulgás has decided to adopt the newest technology developed by Elipse for this purpose, the Elipse SuperDriver, a driver can allow using more than one protocol in a single communication channel.

The Elipse SuperDriver has a structure that can join multiple drivers, generating items called Slaves, whose configuration settings are isolated by individual driver profiles. Thus, the I/O tags in the application, referred to these Slaves for any field of settings, will have their parameters passed to their appointed driver's instance.

Please notice that the Elipse drivers that can be subordinated to the SuperDriver must necessarily be the one that have been developed for the IOKit, and their topology is required to provide the Ethernet interface as the immediate communication layer for the application.

Benefits

- Remote and real-time monitoring of pressure, temperature, and gas flow distributed by Sulgás;
- Supervision of the volume of gas that is consumed by customers and by the anti-corrosive system of ducts through which the gas is distributed;
- Alarm system that alerts operators on any issues that may affect the process, showing the date, time, and details of the event on screens;
- Provision of data regarding Sulgás's PRU billing;
- Issuing customized historics and charts, which can be exported to PDF and printed, containing all the information about any of the process' variables;
- Better communication between the different devices that comprise the system responsible for the automation of field variables and equipment involved in gas distribution through use of the Ellipse SuperDriver.

TECHNICAL INFORMATION

Client: Sulgás

Systems integrator: Altus Consortium and Syspro Quality;

Ellipse Package used: Ellipse E3

Number of copies: 5

Platforms: Microsoft Windows Server 2008 and Microsoft Windows 7

Number of I/O points: Up to 50 000 tags (initially 400 remote points, but expandable to 10,000 points of telemetry with GPRS technology)

I/O driver: Enron Modbus; Modbus RTU; Instromet 999 (driver developed for this application by Ellipse Software)