COST-EFFECTIVE WASTEATER CONTROL AT SEMAE SL WITH ELIPSE E3

Platform by Elipse Software allows SEMAE to control remotely, via new CCO, seven lifting stations and two sewage treatment stations in São Leopoldo, South Brazil

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Needs

The [Municipal Water and Wastewater Service (SEMAE in Portuguese)](#) is the responsible for the water and wastewater supply in São Leopoldo, municipality in the urban area of Porto Alegre, capital city of Rio Grande do Sul, in south Brazil. It features one water treatment plant, 37 reservoirs, and 25 treated water lifting stations that attend over 230,914 inhabitants. It also has five flood-control pump houses, in addition to five wastewater treatment plants and 19 sewage lifting stations.

SEMAE (São Leopoldo's Municipal Water and Wastewater Service)

In November 2023, SEMAE decided to modernize their Operations Control Center (OCC), which currently uses Elipse E3 to supervise and control seven lifting stations and two wastewater treating stations. The Elipse Software platform's selling point for SEMAE is how easily it allows adjustments, improvements, and expansions in the system.

Headquartered in Porto Alegre, Brazil, Elipse Software is a prominent international player for developing solutions for process management both remotely and in real time in several different segments, among which are water and wastewater. The solution provider is Alfacomp, responsible for implementing and customizing this application.

System's initial screen

Solution

As mentioned earlier, Elipse E3 allows SEMAE to control seven lifting stations and two wastewater treating stations in São Leopoldo both remotely and in real time. To make it possible, the automation system uses different IoT devices and technologies. For each monitored (remote) station, for example, there is a PLC and an HMI installed with input for 3G and 4G mobile chips.

Through the Internet provided by the chip, the HMI sends the data from the PLC to a cloud server (broker). Then, Elipse E3 collects this data in the broker and

sends them sorted out by level of importance back to the HMI. In the OCC, this information exchange takes place via SEMAE's Intranet.
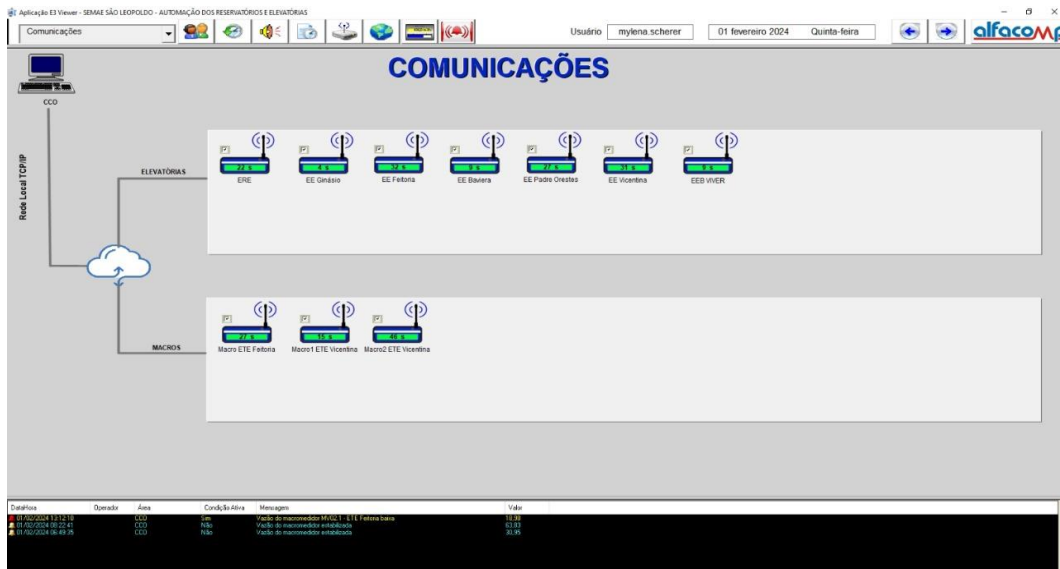
Controlling Elipse E3's communication time with each remote station

Once added to this automation architecture, Elipse E3 allows SEMAE's operation teams to supervise remotely and in real time all levels, outflows, pressure, voltages and currents that are measured and registered by the PLCs of the telemetry panels installed in each remote station.
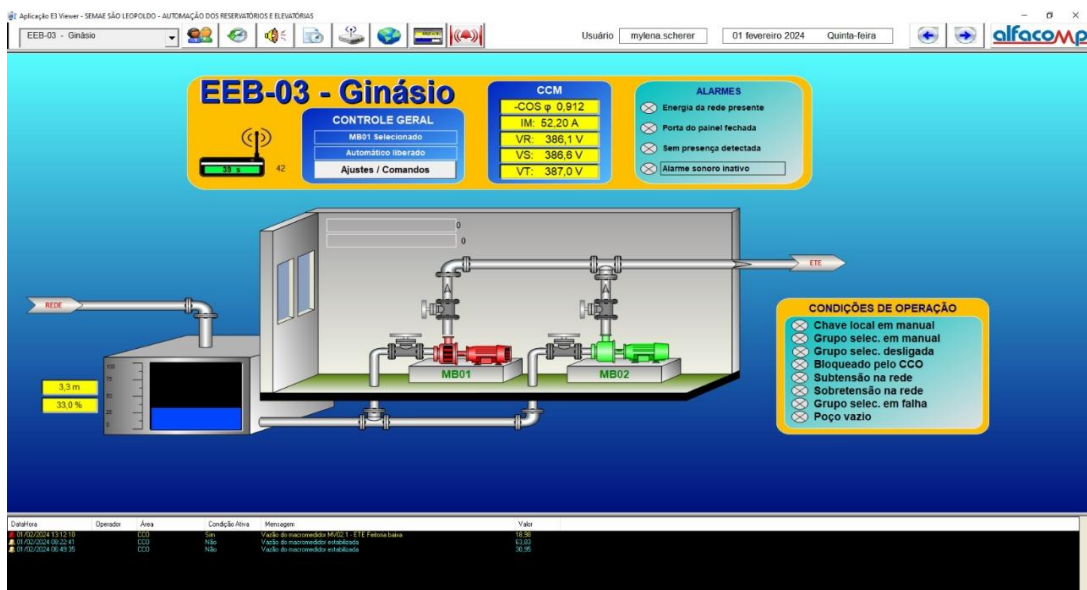

Control screen of one of the lifting stations

On the same Elipse E3 screen, it is possible to monitor or reset the time (in hours) of the operations of the motorized pumps, and their status (working/maintenance/not working). Additionally, it is also possible to visualize and set up the default pumping voltage, current, and pressure for this equipment.

Setup screen for motorized pumps

Another possibility with Elipse E3 is to monitor the values measured by macro measurers of system flow next to SEMAE's Wastewater Treatment Stations, thus making it easier to analyze and make decisions during the operation.
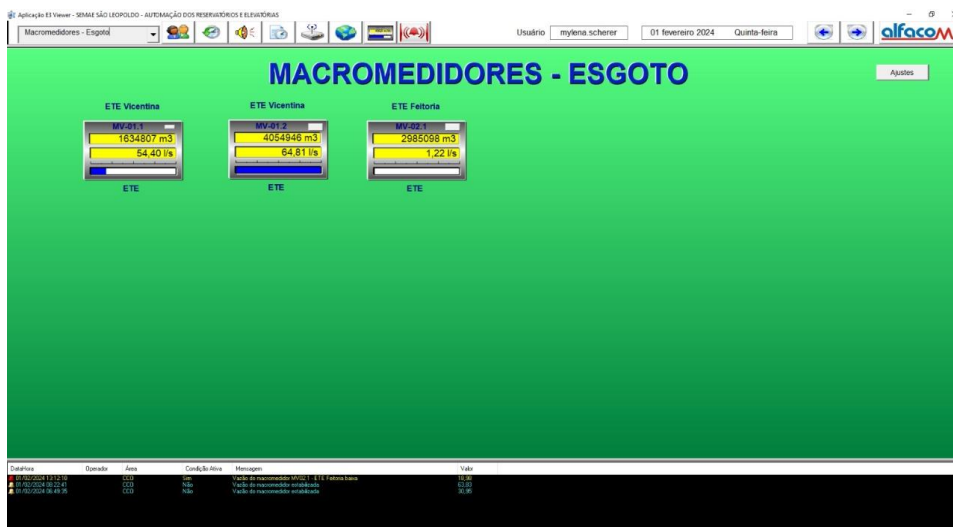
Control and monitoring of flow macro measurers at the WTSs

Elipse E3 also allows issuing reports of events, historics, and alarms from any period chosen by the user. In the case of alarms, if any value set up in the default configurations is disregarded, the software will alert the operators with visual and audible alerts on screen.

Alarms control

And finally, Elipse E3 allows analyzing the units' performance in chart format. Both reports and charts can be exported to PDF or Excel, and both are extremely valuable tools for surveillance audits.
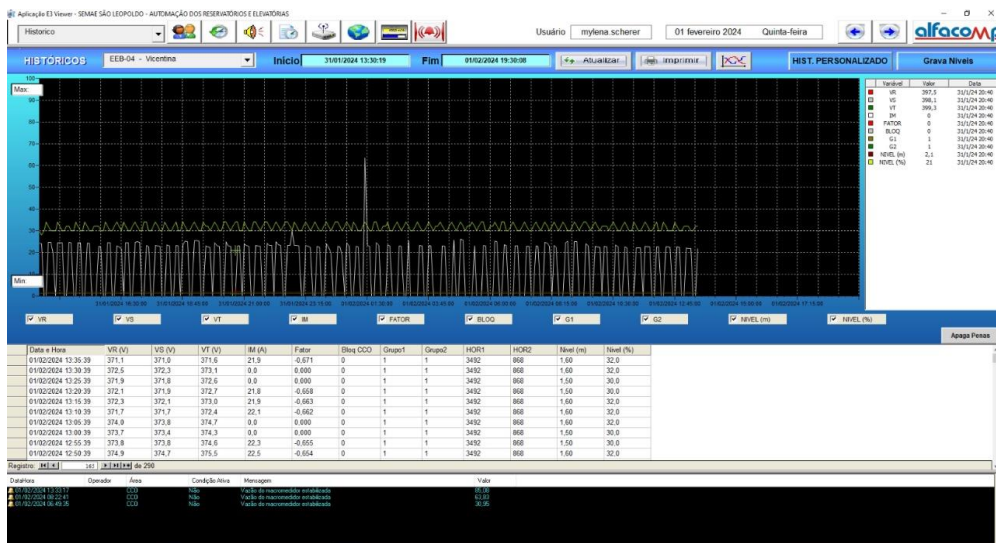

Chart analysis of historics

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Benefits

Among the main benefits Elipse E3 has brought to SEMAE, we highlight the following:

- Improved monitoring: real-time follow-up of the effluents supply system.

- Greater precision: history follow-up charts with records, per minute, of alarms and events.

- Greater agility for spotting failures and inconsistencies: more control over reservoir levels, fewer power outages, fewer failures in the motorized pumps sets, fewer problems with pumping pressure and flow.

- Process speedup: remote operation commands, which demand on-site visits to the stations only for one-off adjustments and maintenance.

- Failure alarms: system issues are easier and faster to spot.

- Customized programming: setpoint configuration for electrical quantities such as overcurrent, undercurrent, voltage, and frequency.

- Cost savings: less spending on water, energy, and gas, since the remote control allows for fewer trips to the field for monitoring duties.

Datasheet

Client: SEMAE São Leopoldo

Solution provider: Alfacomp

Elipse product: Elipse E3

Platform: Windows 10 Pro

Number of copies: 3

I/O points: 203

I/O driver: MQTT