

BERTOLINI SHIPPING COMPANY'S DATA CENTER MORE ACCURATELY, EFFICIENTLY CONTROLLED WITH ELIPSE E3

Elipse Software's solution controls access to the facilities; monitors lights, temperature, firefighting centrals, air conditioning, generators, no-breaks, PUE index, and others

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Needs

Headquartered in Manaus, in the heart of the Amazon forest, and with 35 branches throughout the country, Bertolini Shipping Company Ltd. (Transportes Bertolini - TBL) specializes in road and water transportation, logistics, and warehousing. Their ground modal fleet comprises more than 2500 vehicles whose routes cover the whole Brazilian territory. Their water modal convoys have more than 220 tugboats that travel the Amazon Basin carrying oil, grains, and mineral barges, among others.

The TBL group also comprises the following companies: BECONAL (shipyard in Manaus that manufactures equipment for water transportation), BAL (plant in Manaus that manufactures equipment for road transportation, ECOLOGÍSTICA (specialized in full truckload shipping), AIAPUÁ (specialized in transporting dangerous cargo), BAG (warehousing company), and BEAL (agribusiness company).

For their Data Center's automation project, TBL has decided to employ the Elipse E3 technology. Developed by Elipse Software, a Brazilian software developer for process management solutions, the system allows monitoring and controlling the many different variables and devices comprising the DC. The solution was implemented by **Ideal Home**, a company specialized in developing smart, integrated automation projects.



Solution

The Eclipse E3 application contemplates all environmental routines in the Data Center. A great number of sensors (motion detectors, thermostats, humidistats, flood sensors, automatic doors, power meters), integrated via ModBUS, SNMP, and dry contact, are responsible for monitoring not only the work environment, but also power generators, no-breaks, air conditioning, systems, biometric readers, and fire panels, among others.

Large screens display a real-time, integrated overview of all the data in Eclipse E3, and any anomalies in the system will trigger notifications to the NOC (System Management Center) via e-mail, SMS, and voice messages. These occurrences are also shown on the screen's footer, blinking in red, on the verified events' list.

Additionally, the software can generate reports listing all events and alarms recorded from any selected variable and/or device, from any time period. If necessary, these reports can be exported to Excel or PDF.

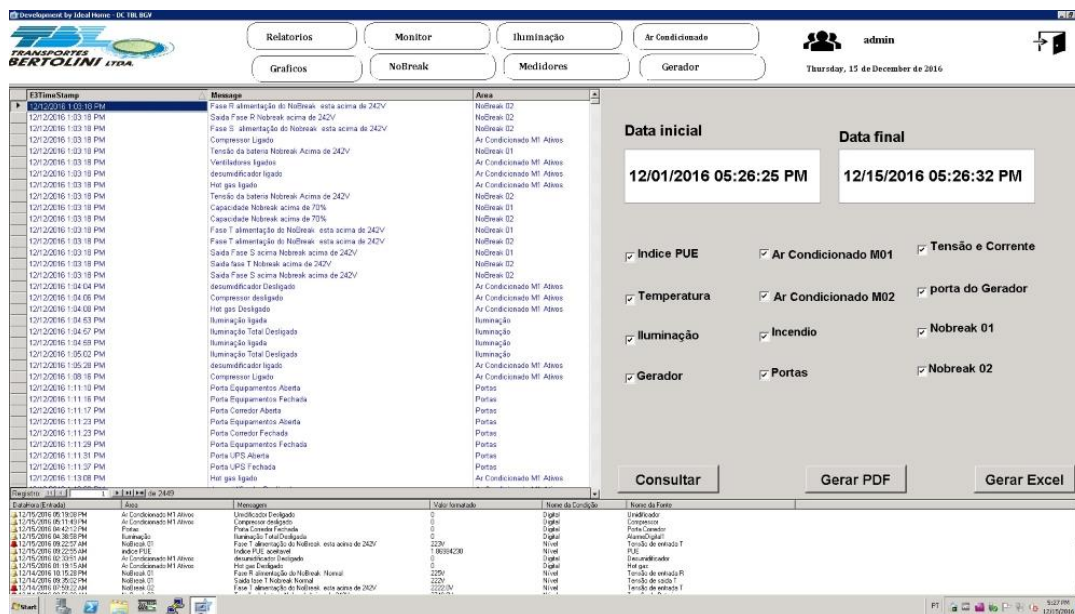


Figure 3. Example of a report generated for a specific time period

PUE

Power Usage Effectiveness (PUE) is a measure of how efficiently a data center uses energy, that is, how much energy is used by the computing equipment in contrast to anything other than a computing device in the data center (for example, lighting, cooling, etc.). An ideal PUE is 1.0; its acceptable range goes from 1.0 to 2.0.

Air conditioning

The Data Center features a precision air conditioning system, designed to work with large, constant workloads and sensible heat (generated by machines), not latent heat (generated by people). The DC's temperature and humidity are controlled by two precision air conditioning centrals working redundantly.

Each air conditioning device comes with a RS-485 bus for reading the memory map. With an Ethernet gateway, TBL is able to convert Modbus RTU into TCP in order to read the devices' memory maps. Alarms and devices (and their statuses) are monitored on an E3 screen.

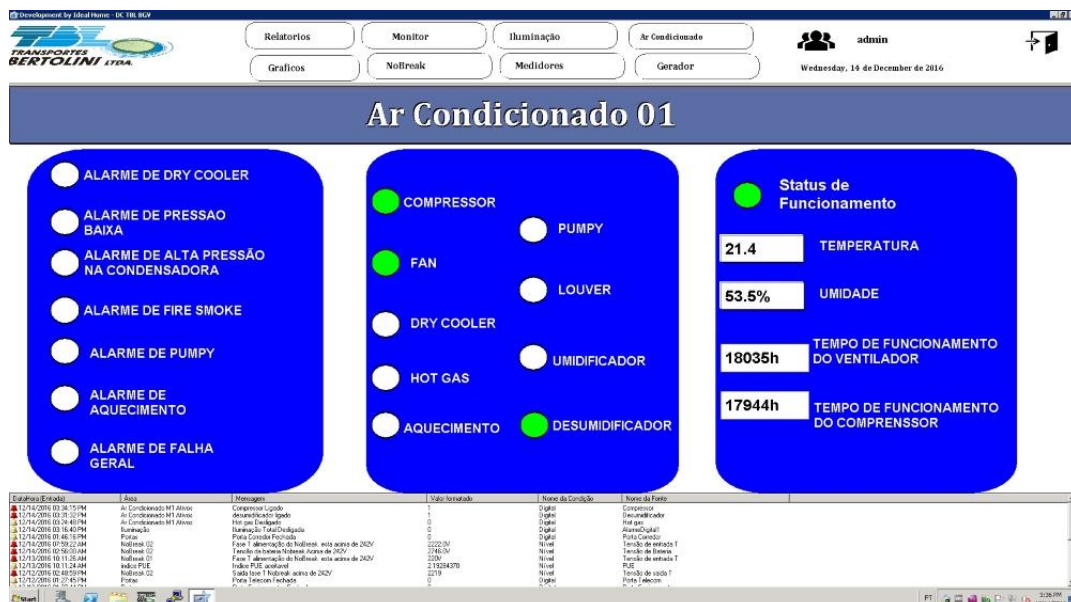


Figure 6. Air conditioning monitoring

Generator and distribution board

The generator's general status (input voltage and current, frequency, battery voltage, diesel fuel levels) is monitored by Elipse E3, in communication with DSE (Deep Sea Electronics) manager, via protocol SNMP. This control also indicates whether it is being power-generated by the DC or the energy supplier.

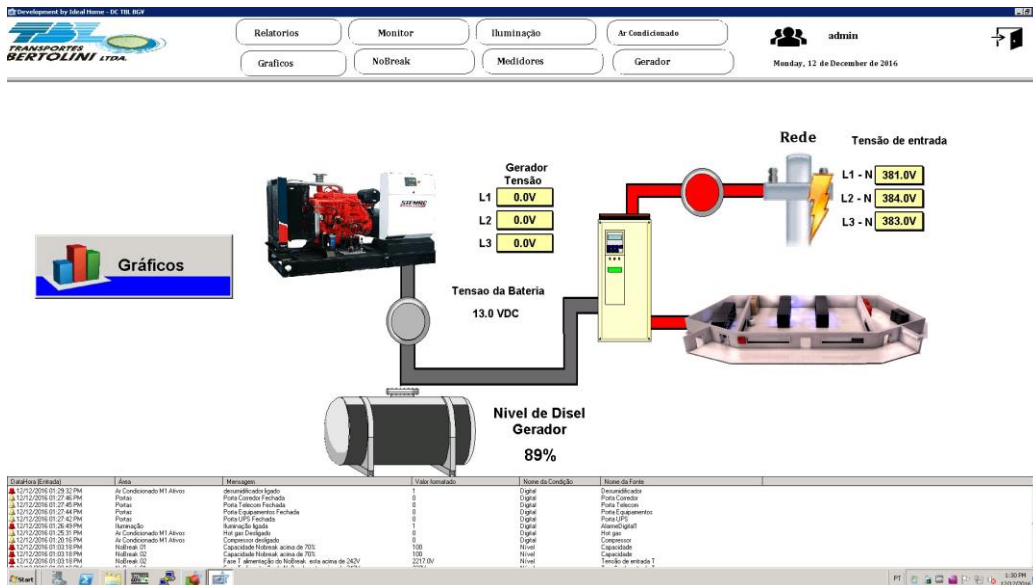


Figure 7. Screen depicting the DC's power feed (in this case, by the energy supplier)

In case there is a fuel shortage or overflow in the generator, in addition to the alarms normally sent to the NOC, a window pops up in the software with all the information about the event. The Elipse E3 also monitors the general distribution board, reporting on voltage, current, and potency provided by the energy supplier.

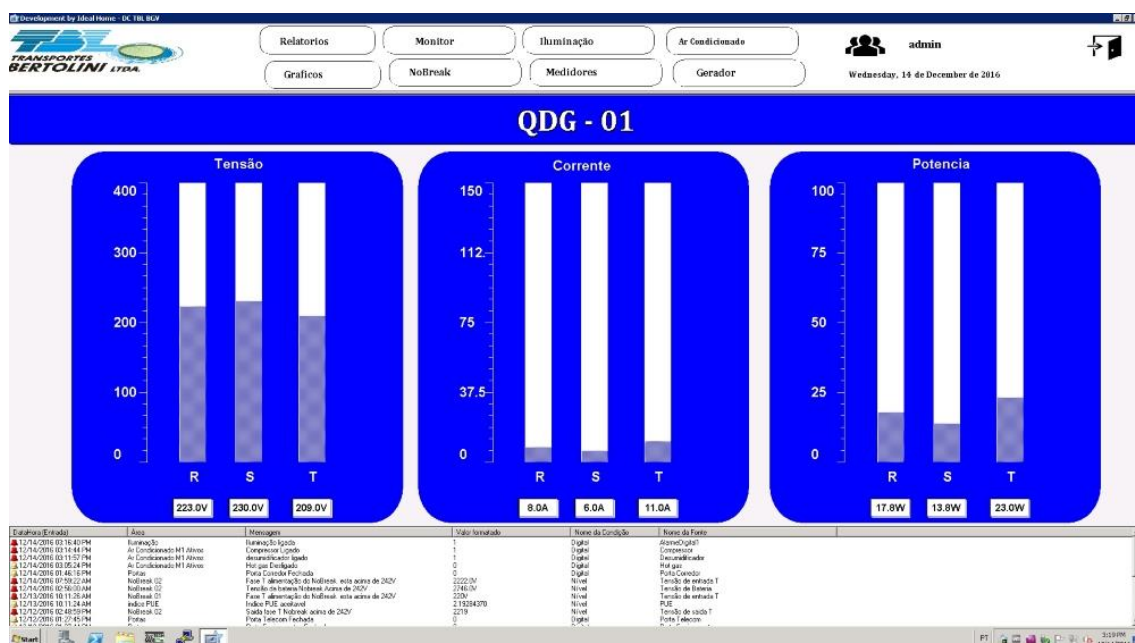


Figure 8. Monitoring the power distribution board

No-breaks

The Data Center has individually modulated, redundant, three-phase no-breaks (N+1 settings), with total capacity of 160 kVA, and each one operating on its own battery bank. With Elipse E3, the no-breaks' voltage, current, and frequency are monitored, as well as their batteries' voltage, potency, and capacity.

Possible fails to the no-breaks are also monitored by E3; UPS equipment memory map reading takes place via Modbus TCP, directly on the devices Ethernet ports.

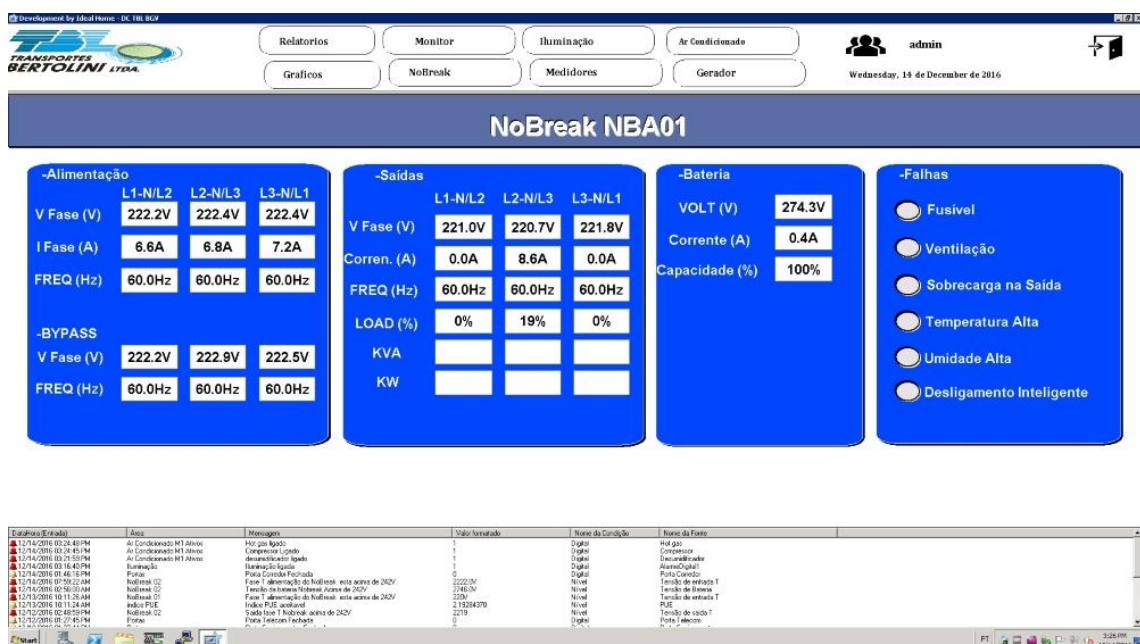


Figure 9. No-break control

Benefits

TBL's new Data Center has undergone a profound change in its structure: from a purely reactive environment to a highly pro-active one, where sensors, equipment, and systems are now fully integrated. And Elipse E3 was instrumental in this change: the software is the key piece in the DC's architecture, responsible for allowing several different indexes (such as PUE) remotely and in real time.

Among the other benefits brought by Elipse E3 are:

- Easily integrated with devices from different vendors;

- Pro-active environment: any alarm, even in its initial stages, is sent to the IT team very quickly via e-mail, SMS, and voice messages, according to their severity level;
- PUE index monitored in real time and with historic storage, which allows the company to better plan their costs with energy by identifying which periods demand more supply than others;
- Remote control of access and lighting;
- DC's temperature, humidity, air conditioning, no-breaks, generator, and distribution panel are fully monitored;
- Events and alarms are recorded in reports that can be exported to PDF and Excel.

TECHNICAL INFORMATION

Client: Transportes Bertolini Ltda.

Systems integrator: Ideal Home

Elipse package used: Elipse E3

Platform: Windows Server 2008 R2

Number of I/O points: 1000

I/O drivers: Modbus TCP and SNMP