



Gerencia Energética S.L.

ENERGY EFFICIENCY LAB: INTEGRATED SOLUTION FOR TEACHING ENERGY MANAGEMENT AND FOR POWER MONITORING AND CONTROL

Project Thumbnail

Application

- Energy Manager EXT
- Nexus® 1252 Meters
- Shark® 200 Meters
- Shark® 100 Meters

System

- RS485 allows communication using MODBUS protocols
- Specifically designed SCADA in LINUX system

Benefits

- Accurate data and information to reduce energy costs in educational centers
- Students receive training in energy management
- Students learn to operate Electro Industries' (EIG's) meters and energy management systems



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OVERVIEW

Approximately half a million Spanish students are currently studying in roughly 510 Technical Training centers around the country. These centers need to produce workers skilled not only in their particular fields but also in energy efficiency, in order to address the continuous rise in energy prices. Gerencia Energetica has developed an energy efficiency laboratory that can be placed in the training centers as a means of teaching energy management.

Spain is currently immersed in an educational change as more and more young people are obtaining technical training in order to meet the need for qualified workers: the number of technical training students is expected to rise to one million by the year 2020. To accommodate this growth, training facilities must be built.

After analyzing the available options for energy labs, Gerencia Energetica found that EIG's energy management products offer the best solution both for teaching energy management and for monitoring the centers in which they are installed. The energy laboratories consist of a SCADA system integrated into the building's energy installations and a laboratory where teachers and students can conduct energy experiments.

BACKGROUND AND CHALLENGE

Technical Training center directors were concerned about how best to integrate high efficiency energy teaching into their current courses. The directors had a need for a training laboratory where teachers and students could conduct energy experiments. Gerencia Energetica provided the solution using state of the art technology to combine an energy laboratory and an energy SCADA system to monitor the training centers, allowing students to learn and conduct experiments, both in the lab and in the real-world energy use. EIG's meters and energy management software provide reliable, advanced metering capabilities with open protocol communication for a seamless SCADA integration.

After extensive analysis, Gerencia Energetica designed an energy laboratory where the students and their teachers could conduct multiple programmable experiments.

LABORATORY COMPOSITION

The laboratory consists of two parts:

- Building energy systems monitoring:** A Nexus® 1250 meter and two Shark® 100 meters are integrated in the building in order to monitor and analyze energy consumption. Water, natural gas and compressed air generation are also integrated in the SCADA system. The Nexus® and Shark® meters interface seamlessly with most of the Building Management Systems (BMS) in the training centers and support SCADA via MODBUS TCP/IP and MODBUS RTU. EIG's easy-to-use RS485 MODBUS protocol allows integration of the EIG meters into the educational SCADA system designed by Gerencia Energetica.



- Energy efficiency laboratory:** Shark® 200 meters are installed in the laboratory, which is used for experiments on efficient lighting technologies, power quality analysis, electrical equipment efficiency and control, variable speed control and reactive power compensation. The students can conduct experiments and analyze the results using both the Shark® 200 meters and the educational SCADA system. The results of the experiments can be exported to worksheets for further analysis.



INTEGRATED BENEFITS

Gerencia Energetica's laboratory provides a perfect solution for training centers as it offers a teaching tool as well as an energy control and reduction system. Students can learn about energy consumption in buildings and conduct experiments in the laboratory that lets them acquire advanced knowledge in energy efficiency. Teachers can design experiments in a wide range of difficulty levels. Students can also learn how to work with EIG's equipment so that they can be technically competitive in the workforce. Additionally, maintenance professionals at the training centers have a useful tool for reducing electric, water and gas consumption, and analyzing associated costs in order to provide solutions for cost reduction.

FUTURE

The use of MODBUS technology allows for integration of Gerencia Energetica's system in industrial as well as educational environments. The flexibility of the SCADA system allows it to be adapted to other student communities, industrial teaching and University teaching. Additionally, the ability of EIG meters to be integrated into most Building Management Systems allows power control and cost reduction for the building in which the laboratory is located.

