

Implementation of energy management system at Papelera Brandia yields significant savings



ABB conducted an energy audit at the Papelera Brandia mill in Santiago de Compostela, Spain, that recommended the implementation of energy efficiency monitoring and optimization software in order to reduce downtime caused by power consumption limits set to avoid penalties. As a result, ABB Ability™ Energy Management System was installed, improving energy efficiency, saving the cost of electricity and natural gas and reducing emissions.

Papelera Brandia SA produces machine-glazed (MG) kraft paper ranging from 24 to 140g/m². Their kraft paper is ideal for wrapping and packaging due to its mechanical properties. The brightness of the glazed side of the paper optimizes printability.

At their customer's request, Brandia adapts paper to end-use, providing high smoothness, wet strength, high opacity and other stock treatments depending on the application.

Background

In 2012, Papelera Brandia started to have problems with maxi-meters tripping. These are devices used to automatically block power consumption after having reached a pre-determined limit, in order to avoid penalty payments to the local electrical utility for consuming too much energy. The maxi-meters became faulty due to old age and lack of servicing.

Due to the commitment of the ABB team on site, and the confidence of the customer, Papelera Brandia explained the issue in a series of follow up meetings. ABB suggested an Energy Audit as the strategic approach to document the customer's energy consumption and recommended a follow-up plan with identification of potential opportunities for efficiency and savings.

The process

As Papelera Brandia was aligned with ABB's approach, the first order was placed to perform the energy audit. The audit consisted of the following:

- On-site assessment
 - One week on site with two ABB experts focused on electrical and thermal energy; this included checking the power plant, pulping process and paper machine energy sources. Papelera Brandia did not have an energy meter, so the first target was to measure the actual values for each area.
 - Interviews with quality, production, maintenance, purchasing, plant managers were held to understand how they managed their operations and their knowledge about energy policies.
 - Collecting information such as invoices from various utilities and other energy supply companies.
- Off-site analysis
 - Preparing the final report, energy map, baseline consumption and list of opportunities

After the assessment and analysis, ABB and Papelera Brandia worked together to define a master plan with prioritization of opportunities, categorization and a feasibility analysis.

One of the crucial needs identified was a monitoring and targeting system. This was turned into a proposal to implement ABB Ability™ Energy Manager.

ABB's proposal included:

- Delivery and commissioning of energy meters
- Delivery of a regular industrial server that included the Energy Manager software (monitoring and targeting template)
- Programming of functions; this included communications with quality control, production, plan systems.

According to the UNE 216501:2009 standard, an energy audit is defined as a systematic, independent and documented process aimed at obtaining and objectively evaluating evidence in an organization or part of the organization, with the following objectives:

- Obtain a reliable evaluation of the energy consumption and its associated costs.
- Identify and characterize the factors affecting the energy consumption.
- Detect and evaluate savings opportunities, efficiency improvements, energy diversification possibilities and their repercussion in the energy and maintenance costs, and also other possible benefits and their associated costs.

As a summary of the energy audit conducted for Papelera Brandia by ABB, 21 opportunities were identified as priorities. Savings results from the actions taken include:

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| • Total energy savings: | 288.830 €/year |
| • Global energy savings: | 9,25% |
| • Electrical savings: | 9,9% |
| • Natural gas savings: | 7,9% |
| • Savings in tons of CO ₂ : | 1.467 tons/year |
| • Investment: | 600.000 € (approx.) |
| • Average ROI: | 2,1 |
| (92k in less than 18 months) | |