Supermarkets
Case study

CIRCUTOR
Energy efficiency technology

Supermarkets

PROJECT
Improve the energy efficiency of a shopping centre

SECTOR
Chain of shopping centres

CLIENT
Shopping centre

Information of interest
Comparison between consumption centres, per square metre

More relevant results per centre

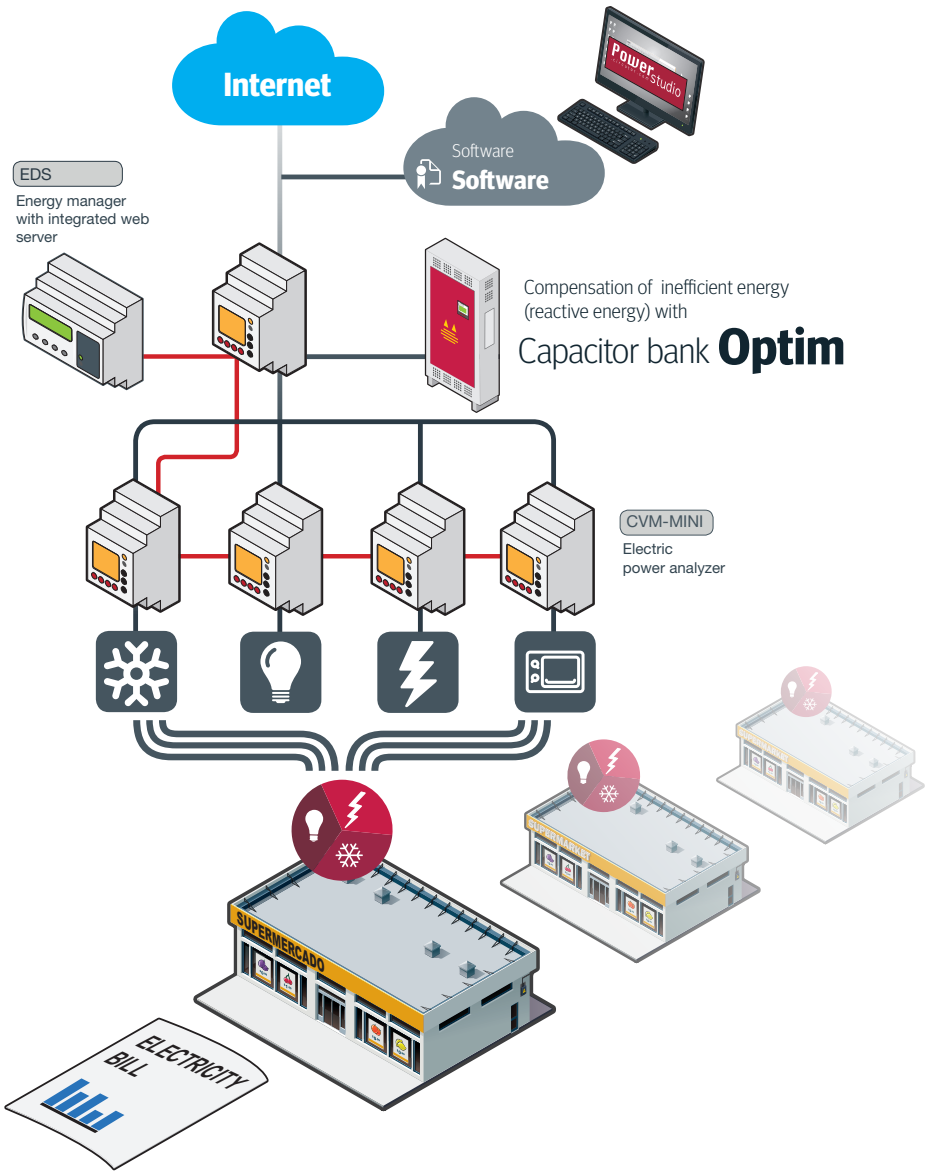
SAVINGS
€ 32 000 a year

INVESTMENT
€ 21 000

PAYBACK PERIOD
8 months

TARGET ACHIEVED :

Optimising energy consumption in each centre and reducing the electricity bill



Reduction
15% on average on the electricity bill for each centre

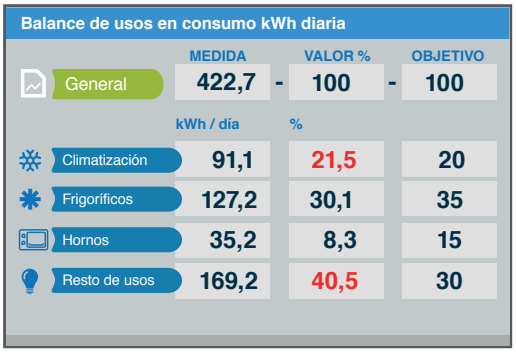
Initial situation

The energy systems manager of the shopping centre chain detected extra costs in electricity bills. This manager is responsible for establishing the objective to improve the energy efficiency of the installations. There was no energy consumption forecast or possible comparison between similar centres of the same chain.

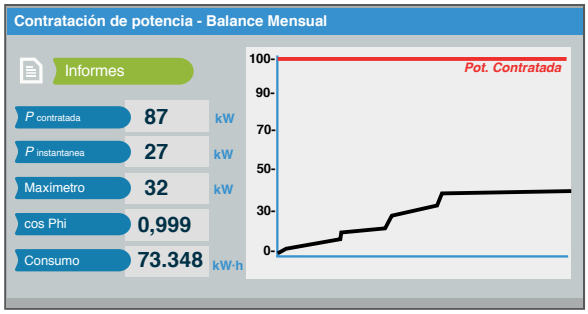
Objectives

The main objectives were to achieve maximum energy efficiency and maintain the level of comfort for customers. These two objectives can be divided into the following:

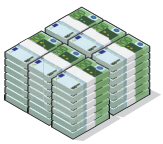
- Electric energy supervision and management of each centre: to optimise energy consumption in each centre and reduce the bill through both lower consumption and reducing the amount of power contracted.
- Comparison of energy consumption between centres: to control those that deviated from the average ratios.
- Monitoring and controlling electrical energy billing parameters: to simulate electrical energy billing and draw up cash flow forecasts.
- Finding out the actual consumption during different time periods to contract the best company and energy tariff.
- Improving energy efficiency and reducing inefficient energy consumption (reactive energy).



› "Knowledge of actual consumption in relation to the objectives set in each area enabled more accurate correction and better final energy adjustment"



› "By monitoring the actual power consumed, it was possible to reduce the amount of power contracted in some centres, achieving a reduction of €12,000 a year on the electricity bill"



Saving per centre
€32,000
TOTAL

More information about the solution

CVM-MINI energy measurement and control units were installed in the stores, one for each line: general consumption, air conditioning, fridges, ovens and the rest of the store.

An **OPTIM** capacitor bank was also connected to the header of each installation, to compensate inefficient energy (reactive energy). These banks resulted in a 15% saving on the electricity bill.

All the data relating to the **CVM-MINI** were included in the **EDS** energy manager which includes an integrated web server. This unit supplies the data locally to a computer installed in the **SCADA PowerStudio energy management software**. The same **EDS energy manager** sent the data to the central computer via the normal Internet installation. Alternatively, the **EDS 3G** version was installed if there was no telephone line in the area, so that the data could be sent wirelessly.

Information per store and a summary of all the data:

- Quantification in kWh per hour of consumption with the store open and closed.
- Knowledge of actual consumption in relation to the objectives set in each area enabled more accurate correction and better final energy adjustment.
- If the instantaneous power in hours for "Stored Closed" exceeded 20% of the contracted power, an alarm was activated.

By monitoring the actual power consumed, it was possible to reduce the amount of power contracted in some centres, achieving a reduction of €12 000 a year on the electricity bill.

With the integration of the energy consumptions of all the centres into the central computer, the best ratios between the centres in equivalent areas could be compared, and improvements in consumption could be implemented, by improving units and their control, and implementing more rational electric energy management schedules.

- Improving customer satisfaction through better control of the energy factors of the installations, ensuring correct air conditioning and lighting quality levels.

Results

Desde el primer mes tras la instalación, el ahorro de consumo eléctrico fue ya del 15%, y todas las medidas de mejora permitieron un ahorro medio por centro de 32.000 € el primer año. El plazo de amortización del proyecto fue de 8 meses. From the first month following the installation, there was already a 15% electrical energy consumption saving, and all the improvement measures resulted in an average saving per centre of €32 000 the first year. The payback period for the project was eight months.

"The detection of inefficiencies caused by inappropriate consumption schedules, such as air-conditioning at night, enabled a saving of €8,000 a year through awareness, and the programming and/or remote control of those systems".

Other savings were also confirmed, both in terms of use and maintenance, which facilitated a rational use of energy in the installations, including remotely via the WEB platform. Other improvements were achieved through the use of calendars to rationalise seasonal consumption.

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