iSERVcmb Best Practice

Electricity HVAC savings of 32% per year by adjusting the operation of the A/C equipment.

UP-Porto 33

33 – PT

Introduction

This report summarizes the results for UP-Porto 33 School building participation to the iSERVcmb project with regard to its HVAC system energy consumption. The report refers to consumption between apr/2013 and feb/2014.

iSERV Achievements

Energy Savings
Electricity: 6.7 kWh/m^2.year

43 %
Electrical consumption reduction

Cost Savings
Electricity: 1 €/m^2.year

Emissions Reductions
Electricity: 0.96 kgCO2/m^2.year

Investment to achieve savings
0.6 €/m^2.year

	Key Figures
Location	Estarreja, PT
Sector	Secondary School
Construction Date	2013
Project Size	4,707 m²
EPC	N/A
Sub-metering Level	Party Metered
Data Frequency	Hourly
Data Collection Protocol	Meters and sensors attached to BMS
Data Sending Protocol	Automatically extract data & manually send to an email address
Nature of Savings achieved	**Improved Operating Schedule** **Improved HVAC Control**
No. HVAC Systems	14
HVAC Components	☒ Heat Generators ☐ Cold Generators ☐ All-in-One Systems ☒ Heat Pumps ☒ Air Handling Units ☒ Pumps ☒ Terminal Units ☒ Heat Recovery ☒ Heat Rejection

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Building Profile

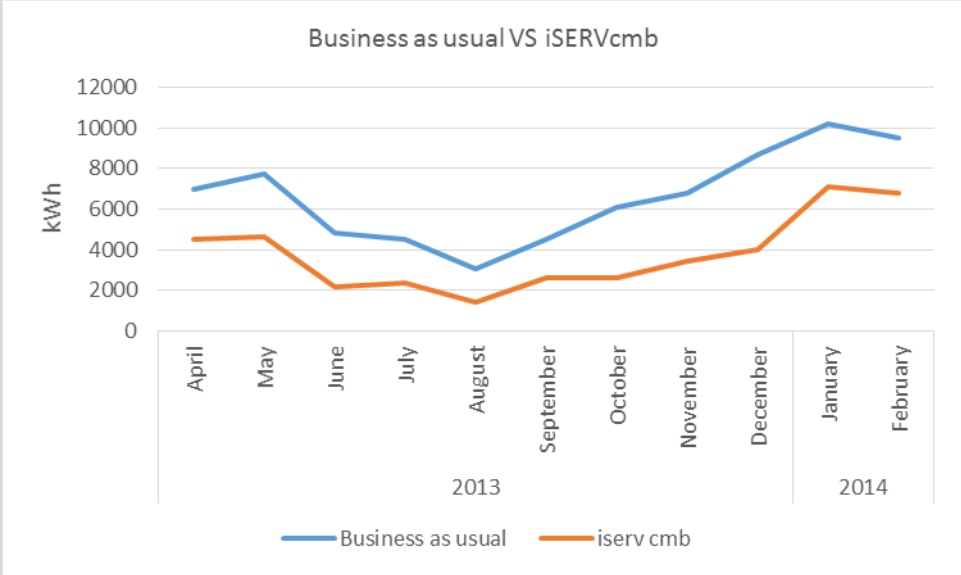
UP-Porto33 is a building, which main activity is school. The total conditioned gross internal area is 8,105 m^2, with 7 separated buildings, located in Estarreja, PT. The air distribution in the spaces is achieved by 3 AHU's with heating, and filtration and local splits in technical areas. Heating is provided by 5 boilers. The Gymnasium is served by a packaged unit with Nominal Cooling and Heating Capacity is of 53 kW and 62.9 kW, respectively. In this report we only analyze building A to D, due to monitoring data problems on the reaming buildings. Therefore only 4707 m^2 were considered.

Building Management System installed

The building systems are controlled by a BMS. The consumptions monitoring is achieved by an independent system. The building is occupied 11 hours/day from 8:00 to 19:00, 5 days/week.

Savings of 31,3 MWh/year due optimized HVAC control

The data provided starts at April 2013 and includes electricity energy consumption. Energy saving opportunities have been identified in several HVAC systems with a total estimated savings of 31.3 MWh on the analysed period.



This Energy conservation opportunities are mostly related to system control. The difference in the annual consumption is represented in the figure on the right and include HVAC control improvement, and energy consumption control during the night. The estimated result of this measures could represent a reduction of 43%, without major investments. The reduction of the annual building energy use can be reduced to 23.4 kWh/m^2.year. It is not possible to know the total building savings, because there is no meter in the main electricity board. The annual electrical savings achieved in the building are estimated in 31,300 kWh/year on the building. This translates to annual electricity savings of approximately EUR 4,700/year.

www.iSERVcmb.info

how energy efficient are you really?

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