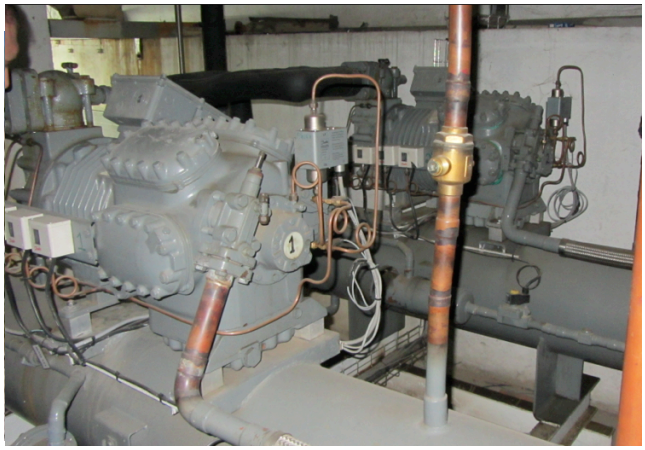
iSERVcmb Best Practice

Electricity savings of 26% per year by adjusting the operation of the A/C equipment.

UP- Porto 32

32–PT



Introduction

This report summarizes the results of UP-Porto32 office center participation to the iSERVcmb project with regard to its HVAC system energy consumption. The report refers to the year of 2013.

iSERV Achievements

Energy Savings
Electricity: 69 kWh/m^2.year

26%
HVAC electrical consumption reduction

Cost Savings
Electricity: 10,4 €/m^2.year

Emissions Reductions
Electricity: 9.9 kgCO2/m^2.year

Investment to achieve savings
4.5 €/m^2.year

	Key Figures
Location	Senhora da Hora, PT
Sector	Retail
Construction Date	1998
Project Size	5,068 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	19
HVAC Components	☐ Heat Generators ☒ Cold Generators ☐ All-in-One Systems ☐ Heat Pumps ☒ Air Handling Units ☒ Pumps ☒ Terminal Units ☐ Heat Recovery ☐ Heat Rejection

Building Profile

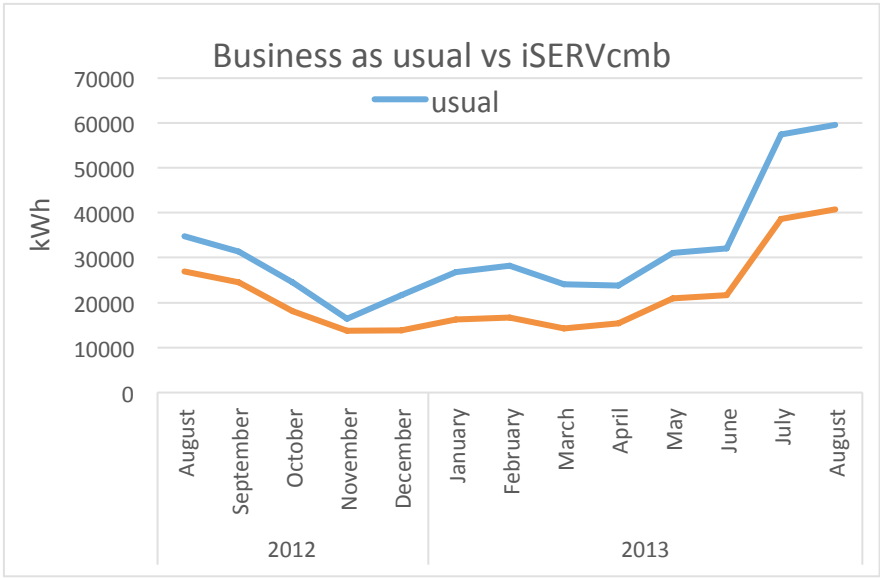
UP-Porto 32 is a building, which main activity is offices. The total conditioned gross internal area is 5068 m2, with seven stories, located in Senhora da Hora, PT. The air distribution in all floors with exception of floor 1 is achieved by 1 AHU with heating, cooling and filtration and local fan coils. The 1st floor is served by different AHU's with cooling and humidification, and close control units. Cooling to the first 4 floors is provided by 3 chillers and for floor 5 6 and 7 the cooling and heating is provided by district cooling and heating. There is also a support chiller for the 7th floor. The total Nominal Cooling Capacity is of 829 kW.

Building Management System installed

The building systems are controlled by a BMS, and the system operates on an optimized stop and start. The BMS was also used for data collection in this case study. The building is occupied 08:00 to 20:00, Monday to Friday. Outside this period the technical floor (1st floor) uses HVAC systems 24/7.

Savings of 350 MWh/a due to optimized HVAC control

The data provided starts at January 2013 and includes electricity energy consumption. Energy saving opportunities have been identified in several HVAC systems with a total estimated savings of 350 MWh on the analysed period.



This Energy conservation opportunities are mostly related to system control. The difference in the HVAC annual consumption is represented in the figure on the right and includes Chiller, AHU's and Water Pumps control improvement as well as turning off equipment when not needed. The estimated result of this measures could represent a reduction of 25% in the HVAC systems, without major investments. The reduction of the HVAC annual building energy use can be reduced to 165.5kWh/m^2.year. The savings estimated in this report represent 6.2% of the building total consumption.

The annual electrical savings achieved in the building are estimated in 350,000 kWh/year on the HVAC systems. This translates to annual electricity savings from the HVAC alone of approximately EUR 52,000/year, with an investment of proximally 25,000 €.

www.iSERVcmb.info

how energy efficient are you really?

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