

# iSERVcmb Best Practice

## Electricity savings of 10% per year through optimisation of cooling system's operating schedule

### Building number 16 HU

#### Introduction

This report summarizes the results of building number 16's participation to the iSERVcmb project with regard to its HVAC system energy consumption. The report refers to the period from 2013 to 2014.

#### iSERV Achievements

##### Energy Savings

Electricity: 1.73 kWh/m<sup>2</sup>

Gas: 0 kWh/m<sup>2</sup>

##### Cost Savings

Electricity: 0.17 €/m<sup>2</sup>

Gas: 0 €/m<sup>2</sup>

##### Emissions Reductions

Electricity: 0.000612 tCO<sub>2</sub>/m<sup>2</sup>

Gas: 0 tCO<sub>2</sub>/m<sup>2</sup>

##### Investment to achieve savings

0 €/m<sup>2</sup>

**10%**

Total electrical consumption reduction of cooling system since participation



|                            | Key Figures   |
|----------------------------|---|
| Location                   | Hungary   |
| Sector                     | Retail  |
| Construction Date          | 2008  |
| Project Size               | 605 m <sup>2</sup>  |
| EPC                        | C   |
| Sub-metering Level         | Party Metered   |
| Data Frequency             | 15'   |
| Data Collection Protocol   | Stand Alone system  |
| Data Sending Protocol      | Manually extract & send data to an address  |
| Nature of Savings achieved | Improved Operating Schedule<br>Improved HVAC Control  |
| No. HVAC Systems           | 1   |
| HVAC Components            | <input type="checkbox"/> Heat Generators<br><input checked="" type="checkbox"/> Cold Generators<br><input type="checkbox"/> All-in-One Systems<br><input type="checkbox"/> Heat Pumps<br><input type="checkbox"/> Air Handling Units<br><input type="checkbox"/> Humidifiers<br><input type="checkbox"/> Dehumidifiers<br><input type="checkbox"/> Pumps<br><input type="checkbox"/> Storage Systems<br><input checked="" type="checkbox"/> Terminal Units<br><input type="checkbox"/> Heat Recovery<br><input type="checkbox"/> Heat Rejection |

*The monthly electricity consumption of cooling system was available from 2010. The electrical data has been available with 15 minute frequency since August 2013, when the building was joined to the iSERV project. The hourly and the daily energy consumptions can be better analyzed using this more frequent data collecting. The detailed information of the energy consumption pattern gave opportunity to optimise the system: modification of the running time of the chiller, and the indoor temperature set points. The measures result 10% total electrical consumption reduction of cooling system since participation.*

*Owner of the building number 16*

### Building Profile

Supermarket-2 is a retail shopping mall, i.e. a supermarket of 605 m<sup>2</sup> conditioned gross internal area in Hungary. The building is served by 4-pipe fan-coil system. Cooling is provided by a packaged chiller, with a total Nominal Cooling Capacity of 36 kW. Heating is provided by two gas fired condensing boilers with total heating capacity of 65 kW.

### HVAC Control System installed

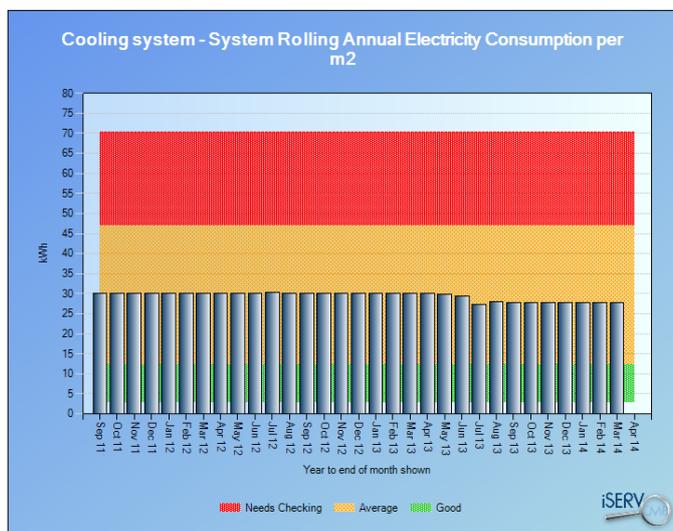
The building systems are controlled by an HVAC Control System, and the system operates on an optimized stop and start. The building is occupied from 07:00 to 20:00, from Monday to Sunday. Outside of these hours, setback points are used.

### Savings of 10% electrical consumption due to optimized HVAC control

Before the iSERV project, only monthly data was recorded by the energy management, but it did not ensure the possibility for a detailed analysis of the electrical consumption pattern. After the building is joined to the project they started to monitor the electrical consumption and the room temperature with 15' frequency. The continuous monitoring gave useful information about the cooling system's electricity power and consumption demand. Based on the monitored data they changed the operating time of the chiller, as well as the indoor temperature in the sales and warehouse area. Altogether the achievement through the optimization measures is 10% total electrical consumption reduction of cooling system since participation.

The annual electrical savings achieved is currently 1.73 kWh/m<sup>2</sup>, which results 0.17 €/m<sup>2</sup> energy cost saving. Now, it appears that the cooling system seems to be performing much better relative to the date before iSERV project. Further monitoring of the collected energy consumption data, and analyzation of the packaged chiller may results additional energy savings.

Taking into consideration the relevant benchmarks, it can be concluded that the energy efficiency of the cooling system is average, but it can be improved by further monitoring and implementing additional energy measures.



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how energy efficient are you really?

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