

## iSERVcmb Best Practice

### Electricity savings of 5% per year through optimisation of cooling system's operating schedule

# Building number 17 HU

#### Introduction

This report summarizes the results of building number 17'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: 0.73 kWh/m<sup>2</sup>

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

##### Cost Savings

Electricity: 0.07 €/m<sup>2</sup>

Gas: 0 €/m<sup>2</sup>

##### Emissions Reductions

Electricity: 0.000258 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>

**5%**

Total electrical consumption reduction of cooling system since participation



	Key Figures
Location	Hungary
Sector	Retail
Construction Date	2008
Project Size	653 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 Improved HVAC Control
No. HVAC Systems	1
HVAC Components	<input type="checkbox"/> Heat Generators <input checked="" type="checkbox"/> Cold Generators <input type="checkbox"/> All-in-One Systems <input type="checkbox"/> Heat Pumps <input type="checkbox"/> Air Handling Units <input type="checkbox"/> Humidifiers <input type="checkbox"/> Dehumidifiers <input type="checkbox"/> Pumps <input type="checkbox"/> Storage Systems <input checked="" type="checkbox"/> Terminal Units <input type="checkbox"/> Heat Recovery <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 5% total electrical consumption reduction of cooling system since participation.*

*Owner of the building number 17*



### Building Profile

Supermarket-3 is a retail shopping mall, i.e. a supermarket of 653 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.

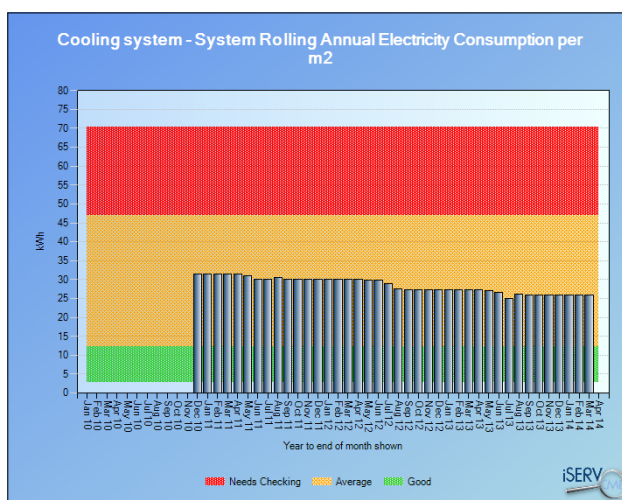
### Savings of 5% electrical consumption due to optimized HVAC control

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 5% total electrical consumption reduction of cooling system since participation.

The annual electrical savings achieved is currently 0.73 kWh/m<sup>2</sup>, which results 0.07 €/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. The target of the electricity saving is 10%.



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how energy efficient are you really?

### Contact

Dr Magyar Zoltán  
 Comfort Consulting Kft  
 Hungary  
[magyar.zoltan@comfortconsulting.hu](mailto:magyar.zoltan@comfortconsulting.hu)



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