iSERVcmb Best Practice

Building number 19

LU

Introduction

This report summarizes the results of Building number 19's participation to the iSERVcmb project with regard its HVAC system energy consumption. The report refers to the period from 2013 to 2014.

iSERV Achievements

Energy Savings

No energy savings were found in the time delay agreed to the project. Building has been shown to perform very well compared to actual iSERVcmb benchmarks.

Some future energy savings have been identified and are précised in the report.

"Partner's involvement started at the end of iSERVcmb project. Savings achievements demonstrated are mainly due to continuous supervision of the HVAC system. In-house maintenance and control of the system are insured with daily attention. Consideration of the facility manager for energy efficiency has been demonstrated by HVAC system meters showing good performance.

iSERVcmb involvement helped in understanding the building HVAC, through the iSERVcmb spreadsheet, that allows a precise overview of installed systems."

Owner of Building number 19

	Key Figures
Location	Luxembourg
Sector	Office
Construction Date	2006
Project Size	27344 conditioned m²
EPC	N/A
Sub-metering Level	Party Metered
Data Frequency	Monthly
Data Collection Protocol	Manufacturer on board data collection system
Data Sending Protocol	Manually extract & send data to an address
No. HVAC Systems	4
HVAC Components	☐ Heat Generators ☒ Cold Generators ☐ All-in-One Systems ☐ Heat Pumps ☒ Air Handling Units ☒ Humidifiers ☐ Dehumidifiers ☒ Pumps ☒ Storage Systems ☒ Terminal Units ☒ Heat Recovery ☒ Heat Rejection

Building Profile

This building is an office block of 24344 m² conditioned gross internal area arranged over 7 stories, in Luxembourg. The building is divided in three main parts so-called A, B and C. Two towers are including in the building, with offices overlooking the city. Each part of the building is served by independent HVAC system. Only main heat exchanger for district heating and cold production are centralized. Cooling is provided by two chillers, with a total Nominal Cooling Capacity of 1077 kW: a liquid-screw chiller and an absorption chiller. The second one is switched on only for high cooling demands (approximately once per year).

Building Management System installed

The building system is controlled by a BMS, and the system operates on an optimized stop and start. Data collection for this study has been provided manually by the facility manager. The system is operating 05:00 to 20:00, Monday to Friday. Outside of these hours, setback points are used.

Good performance due to optimized HVAC control

The data provided starts at January 2013 and includes energy consumption of heat and electricity (right). Electricity is divided in various meters: e.g. distribution pumps for heating and cooling, fans, car-park lighting, cold production. Rolling annual electricity is small in the current case as data provided covers approximately one year. Nevertheless results show clearly that performance of HVAC system is very good related to benchmarks. This is the case for the three main parts of the building.

Energy Conservation Opportunities

Some Energy Conservation Opportunities have been identified and will be measured in the next future.

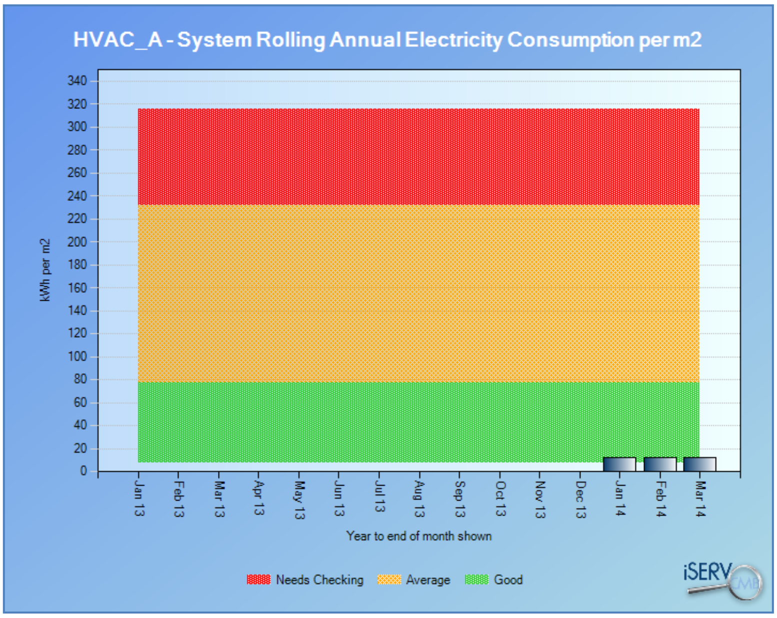

Figure 1: HVAC system for A-part of building 19 – rolling annual consumption per m^2

Car-park lighting needs to be checked. Especially -1 story shows very bad performance with 38 kWh/(m^2.a). This could be improved until 10 kWh/(m^2.a) to reach good performance and then save approx. 93000 kWh per year. -2 story could respectively save 33800 kWh per year.

Humidifiers for Air-Handling units were supposed to be switched off for beginning of year 2014. Monitoring data show an electrical consumption of 16800 kWh for March 2014. This issue needs to be clarified.

Free-chilling could be an application for the building so as to reduce the use of the main chiller. Evaluation should be performed to analyze whether this solution should be suitable to fulfill cooling needs in winter or between seasons. This could allow to provide chilled water by cooling towers without using the ammonia chiller. Installation for free-chilling is already partly realized in-house. That means that investment is limited.

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how energy efficient are you really?

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