

Factsheet Innovative Techniques

Energy management systems

Description

Energy management systems (EMS) are computer-based systems which primary goal is to reduce the energy consumption of a business by optimising the energy use and achieve energy savings. Wireless EMS and sensors can be used to monitor and control remote devices.

To decrease the upfront cost, two or more businesses can share one EMS.

Applications

Energy management systems can be, used to centrally monitor device-level equipment like HVAC units, renewable generation units, lighting systems and others, across multiple locations, such as retail, grocery and restaurant sites.



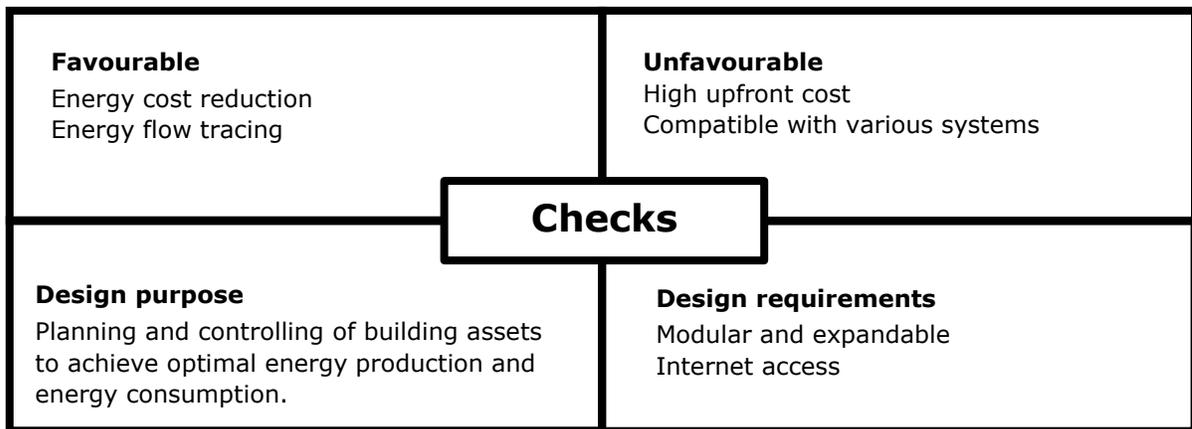
Benefits

- achieve energy savings,
- reduce energy consumption and thus CO₂ emissions,
- optimise existing manufacturing processes,
- decrease resource dependency

Wireless EMS can be used to decrease the energy consumption of two or more neighbour businesses. Besides the measurements and data logging, it can also be used to coordinate the consumption and energy use of flexible loads for all businesses.

Cost

- + Electricity monitor (hub) between 600 and 2000 € (or more) depending on the features and system complexity
- Some energy management software require a monthly fee.



Yield

Depends on the application, number of appliances and systems that have to be controlled.

Use of Space

None

Combination with other techniques

The energy management system can be used in combination with energy storage, HVAC, demand-side management of different flexible loads as well as air quality control (ventilation), energy monitoring and control etc.

Photovoltaic and thermal panels are able to deliver electrical energy and hot water at the same time. The produced energy of the PVT could satisfy the needs of one business such as barbershop or a bakery. The production of hot water could also be more than the needs of one business so the excess of it can be shared with a neighbour business. The EMS will ensure that the hot water demand of both businesses is satisfied and also will help with decreasing the electricity consumption of the businesses.

One or more businesses can be monitored and share the same EMS. For instance the lighting can be monitored by lux sensors located in the different premises of the business so that the light intensity in combination of the natural light is kept at constant level. This is achieved by controlling the light intensity of energy efficient LED lamps. By reducing lighting time, intensity or zoning, lighting controls reduce both demand and energy consumption. In practice, lighting-control strategies produce 24-38 percent energy savings, which reduces building operation costs.

Examples of complementary businesses for heat recovery:

Another possible control combination between businesses is the heat recovery from bakeries and grocery shops. The excessive heat can be shared with neighbour businesses to and used for space heating.

Grocery shop and kiosk and so on: the wasted heat of the refrigerators can be harnessed and shared between the businesses for space heating.