

# THE BENEFITS OF REAL-TIME BUILDING MONITORING

Silentsoft and Vectec Ltd. Partnership



Theoretical modelling has been the traditional tool to optimise building energy performance and reduce CO<sub>2</sub> emissions. The drawback is that calculations are only done periodically. Thanks to the evolution of telemetry, it is now possible to have real-time visibility on building energy performance and CO<sub>2</sub> emissions. Fully understanding the energy dynamics of each building in real-time and comparing all buildings through a single view is a highly effective way to save energy costs and reduce CO<sub>2</sub> emissions.

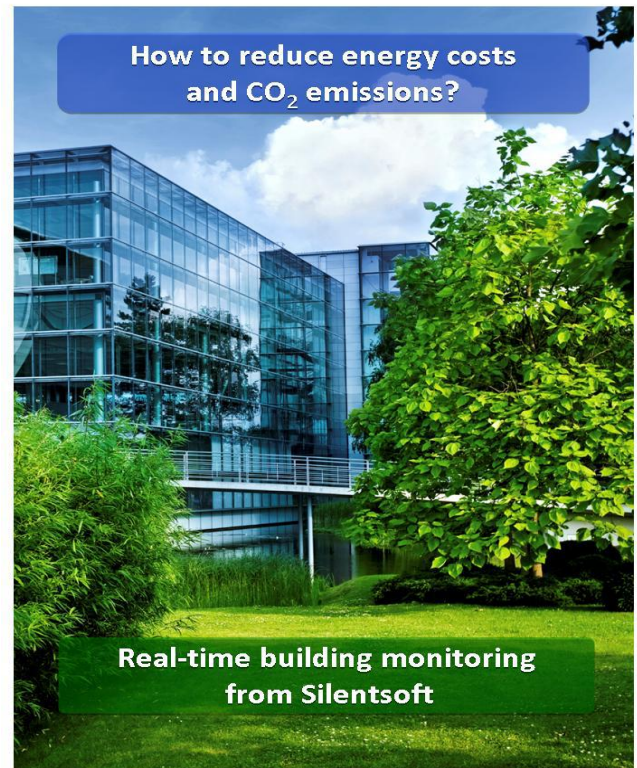
At Silentsoft, we are committed to this objective. We use telemetry to provide the business information needed to help companies save energy costs and reduce CO<sub>2</sub> emissions.

This starts by capturing all energy parameters of each building using low cost sensors with radio frequency transmission to avoid expensive cabling. These parameters include:

- continual energy inflows from electricity, gas, water and district heating;
- consumption from the bulk storage of heating oil and LPG;
- energy production of solar photovoltaic arrays for both the building and the electricity grid;
- temperature both outside and inside the building;
- dissipated thermal power from radiators; and
- alarms and measurements of technical installations such as burner efficiency, heating, hot water and CO<sub>2</sub> concentration.

These real-time measurements are transmitted by GPRS and undergo M2M processing including the application of a variety of algorithms and calculations. Some typical examples of this processing are:

- automatic filling detection in bulk fuel storage tanks;
- calculation of energy and water consumption and CO<sub>2</sub> emissions over any period of time specified by the user;
- computation of monthly consumption values in the native value (litres, m<sup>3</sup>, gallons, kg, etc.) or in Energy (kWh/m<sup>3</sup>), Primary Energy (including PE factors) and in CO<sub>2</sub> (tons);
- detection of thresholds on any signal and generation of alarm messages by email or SMS;
- alarm follow-up with escalation rules;



- aggregation of CO<sub>2</sub> offset calculated by different types of Machines (buildings, vehicles); and
- thresholds and alarms on CO<sub>2</sub> quotas for a group of Machines.

The result is integrated visibility on energy performance and CO<sub>2</sub> emissions. This visibility is used to establish and monitor in real-time the baseline energy signature, energy index, energy category (A, B, C, D, E, F and G) and CO<sub>2</sub> emissions of each building. This visibility is used to determine and take immediate corrective steps and can also drastically change the behaviour causing climate change. This visibility can be enhanced through the use of telemetry-driven digital signage in the public areas of buildings that are continually updated with the energy performance of the building.

High energy consumption behaviour change can be further improved by bringing these real-time measurements down to each room in a building. Visibility by everyone on the comparison of temperature and energy consumption is a powerful tool.

