HAVE YOU EVER WONDERED HOW MUCH A BUILDING CONSUMES?

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A study by Ekinex Spa

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Do you know how easy it is to find out about the consumption of a car? If you can consult the trade press when purchasing a car, there is no car in use that does not have a small on-board computer that shows on a display the instantaneous fuel consumption or related to a certain period of time.

Knowing fuel consumption is an incentive to adapt one's behaviour in a righteous way, an action that has a beneficial effect not only on the family budget, but also on the environment, thanks to lower emissions of polluting and climate-altering gases.

Checking consumption: simple with a car, but with a building?

Contrary to what happens with a car, it is not easy to be informed about the consumption of a building. Yet in the countries of the European Union **more than 40% of total final energy consumption is due to buildings.**

After decades of rising energy costs, now European directives and standards and Italian laws are finally pushing for greater energy efficiency and require end-users to be informed. In addition, for some years now, the buildings themselves have been evolving towards the digitisation process and therefore offer an infrastructure particularly suitable for the transmission and display of consumption data.

The measurement of consumption is in fact not new.

For decades, utilities for electricity, drinking water, gas and tele-heating for service billing have been individually measuring consumption by means of metering. In times of increasingly scarce energy resources and rising prices, however, the measurement of consumption takes on a significance that goes beyond the billing of a service. For example, it makes users aware of their own energy behaviour, makes it possible **to optimise the operation of systems or makes it possible to identify loss of efficiency in the building at an early stage.**

Measuring and visualising consumption is a decisive factor in making less and better use of available energy.

In the beginning it was the thermal consumption

In recent years, **the multi-units apartments' buildings with centralised production** have been adapted with systems of thermo-regulation and **individual metering of consumption**, which today allow for complete managerial autonomy of the individual building units.

At the same time, by law (with Legislative Decree no. 102 of 2014) it was required to allocate the costs of winter and summer air conditioning and hot water production on the basis of new criteria that take into account the actual consumption.
To this end, **an existing standard, UNI 10200**, which introduces the concepts of voluntary and involuntary consumption, **has also been updated.**

Through the combined use of the two systems of thermoregulation and accounting, legislators and regulators have sought **to encourage virtuous behaviour and to induce users to use energy resources more consciously**, **while at the same time safeguarding an excellent level of comfort.** If before the criterion for the allocation of expenses was almost always based on thousandths of surface area, today the focus is on the actual consumption of each unit of real estate.

In addition, in the past, the cost of heating was only realized when the year was over and you received the prospectus of condominium expenses, **so too late to change their behavior**, while the introduction of meters and **meters now allows you to read the consumption data more frequently.**

The need to remotely manage consumption data becomes necessary

The introduction of individual thermoregulation and metering of thermal consumption in multiple apartment buildings has led to a reduction in waste of thermal energy, but it is possible to do even better, **improving the information to the end user**.

Heat meters and heat distributors are in fact born as measuring instruments; they are therefore very "technical" devices and not suitable for consultation by the end user. In addition, they are often installed in uncomfortable positions inside distribution manifolds or even in technical rooms.

To fill this gap, the recent **Directive 2018/2002/EU requires that from 2020** new heat meters and meters must be readable remotely. Subsequently, by January 10, 2027, already installed heat meters and meters that do not have remote reading capability must also be equipped or replaced with remotely readable devices.

This is **an interesting opportunity for home automation systems** that already offer the ideal infrastructure **for transmitting and displaying data inside the building**.

Knowing the thermal consumption to access the Ecobonus for the home automation system

The fundamental role that knowledge of consumption plays for the end users of buildings has not escaped the legislator, when it came to preparing **the first national measure to encourage home automation technologies.**

The particular provision, which was originally introduced by Law no. 208 of 2015, is also commonly known as "**Ecobonus domotica**" and was confirmed by the Budget Law promulgated at the end of last year; it is possible to deduct with a rate of 65% those solutions of domotics **that are intended to increase the efficiency of the heating system and to inform end users about their consumption.**

It is no coincidence that the Ecobonus domotica focuses on those parts of the system that are traditionally responsible for most of the energy consumption in residential buildings: heating and domestic water production are in fact worth an average of 80% of domestic energy consumption.

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What does the Law* say about the Ecobonus for the home automation system?

For expenses incurred between 1 January and 31 December 2019, there is a deduction for the purchase, installation and installation of multimedia devices for remote control of heating systems, hot water production or air conditioning of housing units, aimed at increasing awareness of energy consumption by users and to ensure more efficient operation of the systems. The deduction is made to the extent of 65% of the total amount spent.

These multimedia devices must have specific characteristics. In particular:

- They must allow remote switching on, off and weekly programming of the systems;
- indicate, through multimedia channels, energy consumption, through the periodic supply of data;
- show the current operating conditions and the control temperature of the systems.

* Law no. 145 of 30 December 2018: State budget for the financial year 2019 and multiannual budget for the three-year period 2019-2021 with reference to Law no. 208 of 2015.

The measure facilitates, in addition to the supply and installation of all equipment (electrical, electronic and mechanical), the electrical and masonry works necessary for the installation and commissioning of building automation systems for the control and monitoring of thermal systems inside buildings.

From the monitoring of consumption a contribution towards the sustainability of buildings

CAs time goes by, more and more buildings are subject to sustainability certification: another activity for which knowledge of the building's consumption is important.

The LEED (Leadership in Energy and Environmental Design) certification scheme, one of the most widespread at international level, offers credits, for example, if the building is equipped with a system for measuring consumption and providing feedback to users.

The main aim is to encourage users to reduce energy consumption, thanks to the information provided to them. Without timely and comprehensible information, consumption behaviour can rarely change.
But the same data that is provided to users can also be transmitted to the building automation and control system to rationalise the use of resources, increase energy efficiency and optimise plant maintenance

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