

LONG-TERM ENERGY SAVING SOLUTIONS REQUIRING INVESTMENTS

Many tips can be implemented in daily operations at no or little costs to deliver significant energy savings on the short term. However, major additional energy savings can be further realised on the medium to long-term through an intelligent use of technologies. In order to achieve significant reductions on CO2 emission on the long-term, as induced by Paris Climate agreement signed by 195 countries around the world, hospitality businesses will also need to contemplate, and prioritise, further investments in energy savings solutions.

This chapter provides a non-exhaustive overview of the key aspects that can be considered in a medium to long-term strategy to raise energy efficiency, maximise energy and financial savings and reduce overall CO2 emissions.

1. Upgrade the building's thermal performances

The first element to consider to further raise energy efficiency and decrease overall energy consumption on the long term is to invest in solutions that will increase the building's overall thermal performances. This is all about raising insulation, decreasing thermal shocks and avoiding infiltrations.

Windows insulation

Windows insulation is a key aspect that can easily generate savings which will rapidly offset initial investments. A hospitality business that has simple glazing windows can save 20% on heating bills by replacing the windows with doubled glazed units with high insulation properties.

Wall insulations

Wall insulations is an important element of the building's thermal performances, especially in older buildings. A hospitality business with cavity walls can improve the wall's insulation by filling the cavity with insulation, generating up to 35% energy savings on space heating. Several technical solutions exist in this case.

External walls insulation is another alternative to raise the building's thermal performances. In this case, an additional layer of insulation is placed on the exterior of the wall. It helps reducing temperature variations and eliminate cold bridges at the junction of walls, floors and openings. This solution is often more costly, but deliver excellent results in terms of energy savings.

Additional insulation can also be placed on the interior of the walls, but such a solution reduces the space available inside the building and is not always achievable, because of thermal bridging issues.





Roof insulation

In any building, an important part of the heat is lost through the roof. Improving roof insulation is therefore an efficient way to make important and long-term energy savings. Although a costly investment, improving roof thermal insulation will generate returns on investments on the medium-term. When combined with external walls insulation, this measure can result in up to 50% savings on space heating.

Reducing thermal shocks

In summertime, external temperature and sun exposure may raise temperature inside the building, therefore raising cooling needs. If this is the case, such needs can be reduced through the installation of shading devices for exposed windows. Moreover, solar shading can also be achieved by planting trees or local plants.

Reducing air infiltration through automated doors

The positive effect of a good building insulation can be partly offset by the impact of unwanted air infiltration. Besides usual prevention tips (e.g. replace leaky joints and ensure that weather stripping on windows and doors are in order), the installation of automated door will have a beneficial impact.

2. Optimise HVAC systems

A well-functioning and optimised HVAC (heating, ventilating and air-conditioning) system is a critical aspect to maximise energy efficiency and reduce energy consumption in any hospitality business. All aspects of the HVAC can be enhanced to reach high efficiency levels. Installing products with top energy labels will allow to achieve the best results in decreasing energy consumption.



Heating system investment

Install a high efficiency equipment for space heating, water production and/or space cooling. Older boilers tend to over-consume, while electric heating is costly and not energy-efficient. Up to 30/35% energy savings on space heating can be reached through the renovation of an old (more than 10/15 years) heating system. Low temperature heating systems (e.g. working with low temperature flows systems) deliver excellent results in energy savings. Good insulation of boilers and pipes should be ensured to maximise return on investments and energy savings.

Cooling system investment

Install a high efficiency (centralised or semi-centralised) cooling equipment (some equipment can deliver both space heating and cooling). Older cooling systems over-consume. Installing recent energy efficient systems can help delivering major energy savings. Thermal insulation of pipes is necessary and can be done when installing/renovating the cooling system.

Regulation of heating/cooling needs

The installation of thermostatic controls (i.e. in hotel rooms) helps deliver savings through individual controls of the needs. Ideally, this should be installed together with an automatic control of the heating (and air-conditioning) system. Return on investments for such solutions is rather quick. Occupancy-linked controls and automatic devices to switch on/off heating/air-conditioning helps regulating better the energy consumption.

For businesses where different building areas have different building needs, the installation of a zone regulation for heating/cooling can be considered. This will allow to set different temperatures for different zone and further reduce energy consumption, while maximising comfort (e.g. 20-21° for occupied hotel room, but lower temperature for unoccupied conference rooms).

Ventilation control

When renovating the ventilation system, ventilation control can be optimised through the installation of outdoor air supply control or economiser cycle (which use outdoor cooler air to reduce cooling needs and save air-conditioning needs).

3. Investing in equipment to raise control of lighting and water systems

Controlling properly the lighting and water systems help raising cost-savings through a decrease of electrical and water consumption. Specific systems can be installed to achieve such control.

Investments in the lighting system

Lighting zone control helps optimising energy consumption. This can be made possible through the installation of equipment which automatically switch-on/off lights of some parts of the building at pre-set time, or when a room is occupied/un-occupied. Some devices also dim light when there is enough natural daylight in a room.

It is also possible to optimise (at the conception stage) building design and interior layout to maximise use of natural light and minimise impact of glazed areas on heating/cooling needs.

Investments to better manage water consumption

Hotel bathrooms can be equipped with low-flow showerheads. Moreover, hot water closed loops help making saving, as the hot water used returns to the water heater. It is also possible to install equipment to use heat waste from air-conditioning to pre-heat water.

When the hotel structure requires long pipe runs for the hot water supply, think about installing local instant water heaters (this should be considered when installing/renovating the hot water system).





4. Consider heat-pumps, geothermal heating/cooling and renewables

When renovating the heating/cooling system, consider installing air heat pumps or equipment that use renewable energy sources of energy such as ground water pumps, solar panels, biomass, on-site geothermal energy generation etc. Such sources can be used for all-kind of energy needs. For instance, solar panels can be connected to boilers for heating water and/or for producing basic electrical needs of a hospitality establishment. Eco-labelled equipment and products help achieving high savings goals.

Focus on the UNWTO Nearly Zero Energy Hotels (neZEH)

The Nearly Zero Energy Hotels (neZEH) project has created an online toolkit released in 2016 for the European hospitality segment to evaluate energy performance and identify options for energy efficiency.

Buildings consume 40% of the total energy and emit 36% of greenhouse gases in the European Union (EU), therefore represent a high potential for energy savings. Accommodation is responsible for 21% of the tourism sector's CO₂ emissions. While there is immense potential for savings, the hospitality sector's fragmented nature poses challenges to seizing it. In response to its commitments on energy efficiency and climate change (2020 and 2050 targets), the EU has committed to transform Europe's building stock into Nearly Zero Energy Buildings (nZEB). The hospitality sectors of all EU Member States have to comply with nZEB directives by 2020.

The neZEH initiative, supported by the Intelligent Energy Europe Programme of the European Commission, was created to assist Europe's hotels in this process by reducing their carbon footprint and energy use to Nearly Zero Energy levels. A ten-partner, pan-European research consortium developed neZEH by building on the World Tourism Organization (UNWTO)'s successful Hotel Energy Solutions (HES) project, concluded in 2011.

HES established the online e-toolkit that neZEH has adapted for the specific purpose of allowing European hotels to assess how close their property is to compliance with nZEB regulations, and what improvements are needed. The e-toolkit mainly targets SME hotels, which represent 90% of the European hospitality market, but can be used by all types of enterprise. Aside from the e-toolkit, the initiative has also provided hotels with tailored technical advice and practical training, shared good practices, and undertaken capacity building related to energy renovations.

Between 2013 and 2016 the initiative implemented renovation projects for 16 Nearly Zero Energy Hotels across seven EU member states. Championing an approach that can lead to a reduction in energy consumption of up to 70%, these innovators serve as an inspiration towards a more sustainable hospitality sector.