



Energy Efficiency Solutions Regulation of space heating and cooling

Space heating and cooling is generally the largest energy consuming activity within a hotel. To keep energy consumption reasonable, it is necessary to regulate temperatures according to the actual needs and occupancy of the different zones of the hotel. In particular, having close control for individual rooms is very important.

The table below gives recommended temperatures according to occupancy:

Heating/cooling regime	Temperature setting	Application
Normal heating	20-22°C	Occupied spaces
Low heating	16-18°C	Unoccupied for a short period
Stand-by heating	12-14°C	Unoccupied for a long period
Normal cooling	25-26°C	Occupied spaces
Low cooling	27-29°C	Unoccupied for a short period
Stand-by cooling	30-32°C	Unoccupied for a long period

Related criteria of the EU Eco-label:

- Installation of control systems in the bedrooms to regulate the temperature individually counts as an optional criterion of the EU Eco-label (criterion #38).
- Automatic switching off of air conditioning systems when windows are open counts as an optional criterion of the EU Eco-label (criterion #41).

Which technical solutions can help ensure appropriate regulation of temperatures in my hotel?

- Individual temperature control systems (e.g. thermostatic radiator valves) enable guests to regulate the temperature according to their individual needs in the rooms.



- Automatic control systems may also be used to switch heating and air-conditioning on and off in guest rooms:
 - Occupancy linked controls can be used to isolate guest rooms or heat them to a “set-back” temperature automatically, as guests enter or leave their rooms, or when they check in at the reception.
 - Automatic devices can be used to turn off heating and air conditioning when windows are open.



- Timers or programmers are quite suitable for areas such as function rooms and eating areas, where temperatures rarely need to be kept at full comfort level.
- Programmable set-back thermostats (a combination of thermostat and timer) make it possible to have two or more temperature settings for times of lower demand, for instance during the night or when rooms are unoccupied. They can be used in conjunction with occupancy sensors, so when an area is unoccupied, the thermostat setting is allowed to slip back a few degrees.



Digital room thermostat

- Good housekeeping practices are also key for an appropriate temperature regulation. They include:
 - Manual temperature setting according to the actual occupancy of the different zones (when there is no automatic temperature control),
 - Appropriate allocation of rooms (in winter, heated zones should be grouped).

How difficult is to install new temperature regulation systems?

Should the accommodation have a heating system with individual radiators, thermostatic radiator valves can easily be installed by a technician. Automatic control can be done either with an independent regulation system in each room or with a central (computer) system. It can thus be integrated into the hotel's Building Energy Management System (BEMS) if there is one. In this latter case, it is recommended to adopt heating zone control, where applicable, to optimize heating and cooling use.

How do thermostats work?

For an appropriate temperature regulation, it is important to ensure: accuracy of the thermostat, good positioning of the thermostat in the room, and correct temperature setting for the upper and lower limits of the thermostats.

What is the accuracy of a thermostat?

The temperature indicated on the thermostat dial should relate accurately to the temperature the thermostat is trying to achieve. The thermostat setting may drift with time and a temperature of 20°C might be as low as 18°C or as high as 22°C. That is why it's worth checking your thermostat by finding out the position at which it clicks and comparing this with a thermometer.

Switching accuracy (temperature difference of when the thermostat switches the heating system on and off) is also important. If this is too wide the temperature in the building will fluctuate and energy will be wasted.

Generally speaking, modern thermostats use an electronic sensor and are very accurate. Older thermostats rely on bimetallic strips and are less accurate.

Where should the thermostats be installed?

For good temperature control, it's better not to install thermostats right next to the door. Also, make sure their position is obvious to clients, and give them simple instructions on how to set them.

What are thermostatic radiator valves?

Thermostatic radiator valves are not very accurate and need to be adjusted quite regularly to give the best temperature. For more accurate control, groups of radiators on the same circuit can be controlled by one motorised valve which is linked to an electronic air thermostat.





Make sure valves are easily accessible for guests and are working properly. Give some guidance notes in the room's information pack. Also instruct cleaning staff to reset radiators to a pre-set level ready for new guests.

What are timers and programmers?

Remember to use timers and programmers and to set them correctly. Take great care to set systems regularly, particularly during weekends, bank holidays and spring and summer hour changes.

How much energy can my hotel save by installing new temperature regulation systems?

Autonomous control systems in guest rooms can save up to 20-30% of energy on space heating.

Note that a 10% saving in energy can be achieved for each degree you reduce your thermostat setting.

How can my hotel guest benefit from installing new temperature regulation systems?

Appropriate temperature regulation improves guest comfort.

Autonomous control systems enable guests to regulate temperature according to their needs.

Link with other solutions in the database

- Solution n°XVI (regulation of space heating and cooling) may involve automatic room control systems and therefore should be considered together with solution n°XI (key card systems) and solution n°XII (lighting control).
- Installation of efficient heating and cooling equipment (solutions n°XVII and XIX) should also be considered to reduce energy consumption for space heating and cooling.

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