

Indoor temperature in midsummer – not too hot, but not too cool

In summer, work areas should not be cooled to less than 26 °C by the air conditioning system. Employees' behaviour is also a key factor in achieving a pleasant indoor temperature – which is a maximum of six degrees Celsius below the outside temperature.

Action

Set the air conditioning (cooling) system so that the indoor temperature is not reduced to less than 26 °C “mechanically” – i. e. by the air conditioning system.

Requirement

The building is cooled (mechanically) in summer.

Every time you reduce the indoor temperature by 1 °C, your energy costs for cooling increase by 3 percent.

What to do

1. Reduce indoor loads and activate the night cooling

Check whether the internal loads (lighting, electrical devices, etc.) can be reduced and whether the night cooling is working as intended.

2. Set the optimum activation value for the air conditioning

If the activation value for the air conditioning is set too low, the system will switch on even though the (maximum) indoor temperature of 26 °C has not yet been reached. You can use an iterative procedure to find the optimum activation value for your air conditioning (cooling) system:

- During the hottest period in high summer, increase the activation value by 1 °C.
- Wait a few days and measure the indoor temperature in two or three exposed rooms (south-facing server rooms or offices).
- Repeat this until you receive complaints from employees or the maximum indoor temperature of 26 °C can no longer be maintained in the exposed rooms.



- At this point, reduce the activation value by 1 °C again (one step down).

Costs – effort

Your own labour (checking the setpoints, adjustments): depending on the size of the building, ½ day to 2 days.

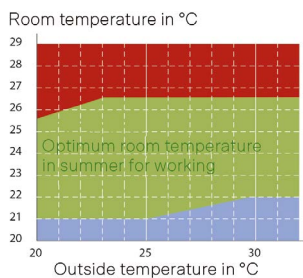
Please note!

- The indoor temperature is regulated by sensors for supply air, exhaust air or room air. The type of sensor and/or the measuring location will have a major influence on the measurement value that should be set. For systems in which the indoor temperature is controlled by a supply air sensor, the supply air setpoint is lower than the setpoint temperature for the room. In this case, the optimum setting value has to be approximated.
- There are various industries where the maximum indoor temperature is dictated by the products or the process. For instance: medicines in pharmacies and drugstores must be stored at a room temperature of less than 25 °C.

Additional explanations

Optimum indoor temperature in summer

A pleasant indoor temperature in offices is a maximum of 6 °C less than the outside temperature, and the same applies to workshops, clothes shops, restaurants, fitness centres, etc. The indoor temperature should not be reduced “mechanically” to below 26 °C.



Free cooling via the ventilation system

Every ventilation system enables “direct free cooling” at outside temperatures of less than 18 °C; this means that “cool supply air” can be blown into the rooms. This direct free cooling is an energy-saving method but, unlike an air conditioning (cooling) system, it cannot guarantee a fixed indoor temperature. As well as the cooling, the air humidity in the room must always be taken into account; this may require the operation of an air-conditioning (cooling) system.

The right way to use small air conditioning units

Recent years have seen noticeable improvements to the energy efficiency of small air conditioning units such as compact units that operate with circulating air or split systems that blow the exhaust air to the outside. But they are still power guzzlers and should only be used for very specific purposes in rooms that are in regular use.

- Only cool a room when it is being used.
- The pre-cooling time should not exceed 1 to 2 hours.
- Position the air conditioning unit in the room so that the air can circulate freely.
- Close all windows and doors.

If the room is cooled by a permanently installed air conditioning (cooling) system, be sure to set this

Correct behaviour for employees

Employees have a critical influence on the amount of energy consumed for cooling. Four points to note:

- Activate the shading early in the day: the sun should never shine directly into the room. Close roller shutters, blinds or awnings in good time. Indoor curtains, blinds or louvres merely provide protection against glare; the rooms still heat up.
- Close windows and doors: keep the warm air out when it’s warmer outside than indoors. Also close windows behind closed blinds.
- Reduce indoor sources of heat: unused devices, screens and lamps should be switched off whenever possible.
- Use night cooling: during the night, use the ventilation system to blow cold air into the building, or leave the windows open. If it is not possible to leave windows open at night (to protect against intrusion or due to weather conditions), open all the windows early in the morning to let the cool air into the rooms.

system correctly. After this is done, there is usually no further need for the small air conditioning unit and it can be removed.

Find the optimum switchover point for the free cooling

In terms of energy efficiency, indirect free cooling (via the cold water network) should be used for cooling for as long as possible. The mechanical cooling (cooling by air conditioning) should only be switched on when temperatures no longer allow full cooling by means of free cooling. To find the optimum switchover point from free to mechanical cooling mode, follow the procedure described on the front page: gradually increase the switchover point and monitor the effects until the maximum indoor temperature of 26 °C is exceeded or complaints are made.

Additional information

- [Pleasant indoor climate: five tips for summer](#)
- [Stay cool](#)
- [Technical book: “Cooling with air conditioning today”, Faktor Verlag, 2019](#)
- [Guideline with measures to optimise cooling systems](#)