

Indoor climate guide

A guide for those who spend time and work in premises provided by Akademiska Hus



The indoor climate – an important component of the work environment



Akademiska Hus strives to create the best possible work environment in our premises. A good indoor climate is an important aspect of the work environment and increases comfort and well-being, as well as performance and learning.

At the same time, both we and the organisations that engage in activities in our premises have adopted high energy and environmental objectives, where reduced energy consumption and CO₂ emissions are high on the agenda. For example, an increase in room temperature of one degree can increase energy consumption by approximately five per cent. It is therefore important to find a good balance between smart energy consumption and an acceptable indoor climate.

This indoor climate guide summarises:

- what we mean by the terms indoor climate and occupancy zone
- why we experience indoor climates so differently
- what you can personally do to influence the indoor climate
- what a correct indoor climate means and what to do when something doesn't work as it should.

The indoor climate guide is aimed at those who spend time and work in premises provided by Akademiska Hus. The guide was formulated by Akademiska Hus. Version 1.0 2022.

What is the right temperature?

The indoor climate consists of several factors such as temperature, ventilation, air quality, light environment and sound environment. In this guide, however, we have chosen to equate indoor climate with the concept of thermal indoor climate. The term includes factors that affect temperature conditions, air movements and humidity indoors.

In Akademiska Hus' premises, we usually aim to keep an indoor temperature of approximately 21°C.

In practice, however, maintaining the temperature exactly at a certain number of degrees is difficult and we must therefore allow for certain variations. When it is hot outdoors, the temperature also rises indoors. In hot weather, it is usually pleasant for the indoor temperature to be a few degrees cooler than the outdoor temperature. Some buildings have "comfort cooling", which makes it possible to actively keep the room temperature down. The temperature will be higher in buildings that lack this feature, especially during heat waves. A high indoor temperature does not always mean that something is wrong, but may be caused by factors such as the building's design or its location.

However, laboratories and other premises intended for activities other than office work and studies may have different requirements than 21°C. For example, a slightly lower temperature may be warranted in laboratory premises, since the staff frequently move around and wear clothing with a heat-insulating effect. Individual leases may also set other specific climate requirements.

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we usually aim to keep an
indoor temperature of
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Arkitekturhögskolan, KTH, Stockholm

Why do we experience the temperature differently?



How we experience the indoor climate can differ greatly. One person may think it is too hot, while another feels it is much too cold. The clothes we wear, how much we move around during the day and how we feel are all factors that affect how we perceive the temperature and climate in the workplace. The difficulty of finding the right indoor temperature is indeed related to the fact that we are individuals with different preferences.

In the summer, we often prefer a higher indoor temperature since we wear lighter clothes. If we switch from a long-sleeved shirt to one with short sleeves, many people will want to raise the temperature by approximately 0.5°C to compensate for the warmth provided by the long-sleeved shirt.

Our perception of temperature is also related to how much we exert ourselves physically in the workplace. Standing and working requires much more energy than sitting. That is why we prefer a somewhat cooler temperature when our work involves standing and moving around, compared with sedentary office work.

In addition to clothing and physical activity, our different expectations play a role in how we experience temperature and climate. The temperature we want at work may be influenced by how warm it is at home. Our mood may also play a role. If we are alert and well-rested, the temperature probably does not matter as much. However, if we're having a bad day, or if it is a grey and rainy day, there is a greater risk that we may feel chilled.



In winter, most people prefer
20–22°C
indoors.

In summer, most people prefer
24–25°C
indoors.



REQUIREMENTS FROM THE AUTHORITIES AND AKADEMISKA HUS

The authorities stipulate minimum requirements for the temperature indoors. Most of the time, the temperature should not drop below 20°C. On the very coldest winter days, the temperature may temporarily drop towards 18°C. In summer, the temperature may reach 26°C. It may briefly rise to as much as 28°C.

Akademiska Hus is responsible for ensuring that the indoor climate functions in accordance with the legal requirements and documents that guide construction, and that the ventilation and temperature settings are correct. We strive to maintain an indoor temperature that meets the minimum requirements set by the authorities by a good margin. In order to create a good indoor climate with smart energy impact, we avoid unnecessarily high temperatures indoors in cold winter weather and try to keep the temperature a few degrees below the outdoor temperature in hot summer weather.

Tips on how you can personally influence the indoor climate

Avoid sitting too close to big windows.

The risk is great that it is experienced as too hot in the summer and too cold in the winter.

It is both more pleasant and warmer to sit together when the premises are relatively empty.

The clothes you wear also influence how you perceive the indoor climate.

Some people move a lot during the day.

They often feel that the room is warmer than those who move less.

Are you cold?

Try **standing up** and working or studying! Standing up causes you to **use more energy**, so you experience the room as warmer.

If a room is unusually cold, it may be because curtains or furniture cover the heaters, which prevents the heat from properly spreading in the room.

Right climate in the occupancy zone



When we measure the indoor temperature, it is important to remember that furnishings and windows can have a major impact. Large windows can cause the room to feel draughty and chilly on a cold winter day, or too warm on a summer day when the sun is shining. We often notice a tangible difference if we get closer than one metre to the windows. It is therefore difficult to require the room's climate to fully apply to all parts of the room. That is why the term occupancy zone is used. The idea is that the requirements should be met within the occupancy zone. This means that we cannot expect the requirements to be met at all times outside the occupancy zone.

The dimensions of the occupancy zone may vary somewhat, but usually the part of the room that is less than 0.6–1.0 metres away from exterior walls with windows is counted, see Figure 1. Depending on the circumstances of the building and the design of the room, it can be difficult to require a perfect indoor climate everywhere in the room. The properties of a building depend on factors such as the construction technology that was used and the rules that applied when it was built. Modern buildings are built both to provide a good indoor climate and high energy efficiency. An older building may therefore be perceived as more draughty than a new one. Akademiska Hus' property portfolio includes everything from buildings built recently to those built in the nineteenth century.

Figure 1. Example of definition of occupancy zone.

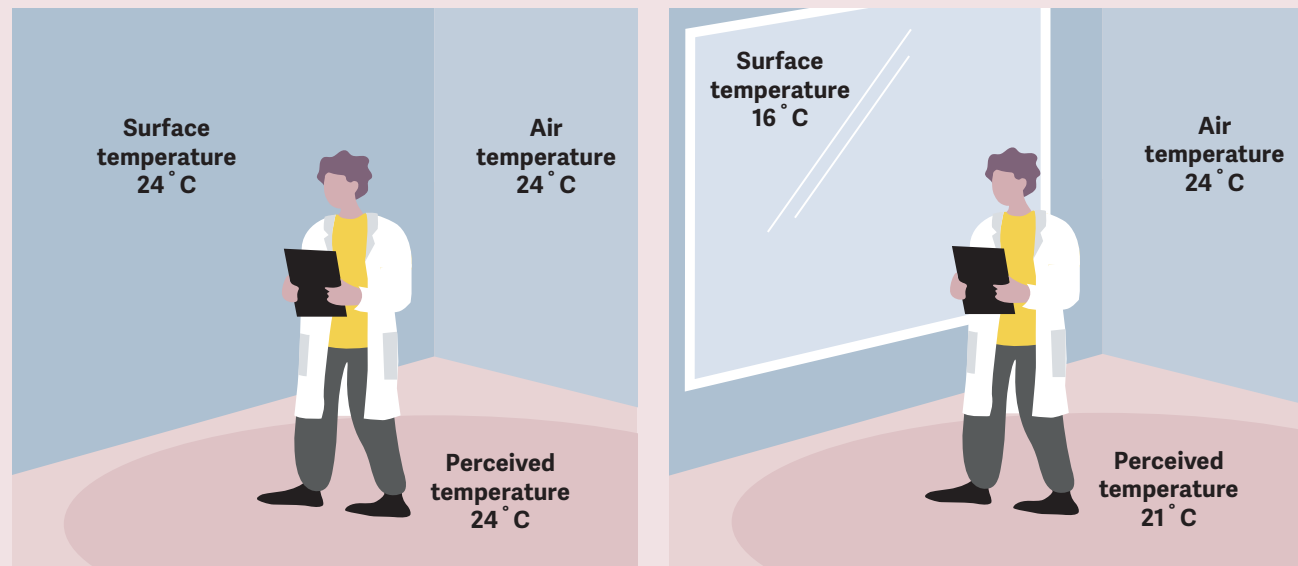
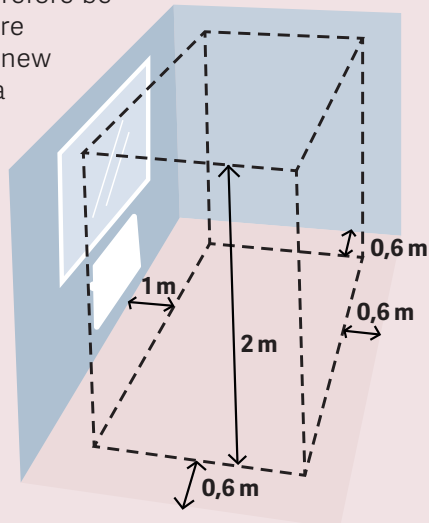


Figure 2 (left and right). The temperature of the spaces contributes to the perceived temperature. Source: Swedish Energy Agency and LTH.

So it is not only the air temperature that affects how we perceive the indoor temperature.

For example, if we stay near cold windows, it may feel colder than the air temperature reading on an ordinary thermometer (see figure 2 above). That is why we sometimes need to measure what is called the operating temperature, where the air and radiation temperature are also measured.

Other temperatures may apply in spaces where we do not spend time permanently, such as storage rooms and stairwells.

Measuring and assessing thermal indoor climate



Measuring the air temperature with a simple measuring instrument is usually sufficient.

However, to ensure that the measurement is not misleading, it is important to properly calibrate the instrument. Sometimes it can be perceived as cool if surfaces are cold, such as from large windows, or if there are strong air movements, and this may need to be measured using special instruments.

For measured temperatures to be meaningful, it is important to know how to interpret the measured value. An indoor temperature of 20°C on a cold winter day does not indicate that something is wrong. Similarly, it may be necessary to accept slightly higher temperatures in the summer, when it is really hot and sunny outside.

Furnishings, number of people and handling of fume hoods affect the indoor climate in a room



HANDLE FUME HOODS CORRECTLY

Leaving the door open unnecessarily can negatively impact the indoor climate, with significantly higher energy consumption than necessary. Fume hoods, fume benches and other protectively ventilated workplaces extract a large flow of air from the room that must be replaced with new heated air.

A single fume hood uses heat and electricity equivalent to that of a small house.

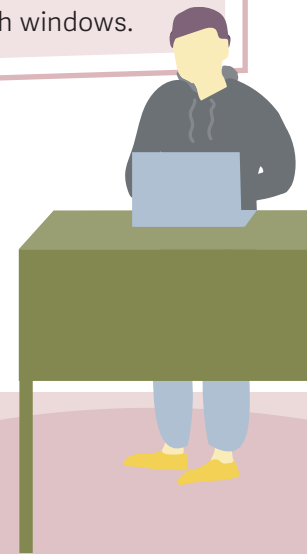


FURNISH AND POSITION THE WORKPLACE THE RIGHT WAY

Don't place furniture or other objects in front of the heaters. Leave at least five to ten centimetres of free space for the air to circulate around the heaters and the thermostats that govern the heat. Avoid sitting too close to large windows. It is better to sit at least one metre from exterior walls with windows.

THE RIGHT NUMBER OF PEOPLE IN THE ROOM

All rooms, both offices and lecture halls, are designed to cater to a certain number of people. If more people than that limit are present, there is great risk that it will be too warm and the air will feel stale and stuffy.



Demarcation list – who is responsible for what?



AKADEMISKA HUS:

responsible for basic ventilation, comfort cooling (where available), heating and climate protection for the buildings.

TENANT:

responsible for operation and maintenance of equipment and furnishings that the tenant added to the property.

A demarcation list describing the distribution of responsibility in detail is annexed to each lease. The demarcation list is an important part of the business agreement between landlord and tenant. The list refers to the premises and their design at the start date of the lease, i.e. upon occupancy, and indicates what is included in the rent and which parts are to be outside the lease and paid for by the tenant.

Contact and problem reporting



If you have any questions, would like to report a problem, or would like to know more about your building, please feel free to contact us. The easiest way to do this is via the Mitt Campus App or on our website [akademiskahus.se](https://www.akademiskahus.se).

Via Mitt Campus App:

Here you can create and monitor an issue, find contact details and information about your building. You download the app for free from the App Store or Google Play.



Via [akademiskahus.se](https://www.akademiskahus.se):

You can also report a problem via [our website](https://www.akademiskahus.se).



Requirements and guidelines for thermal indoor climate



The requirements that apply in properties owned and managed by Akademiska Hus always comply with the regulations of the authorities and are in line with industry guidelines. The list below provides links to Akademiska Hus' comprehensive technology platform, as well as to the authority regulations and industry guidelines that apply to the quality of the indoor climate.

TECHNOLOGY PLATFORM FOR CONSTRUCTION PROJECTS

Akademiska Hus' platform for ensuring good technical solutions.

[You can download the technology platform here.](#)

NATIONAL BOARD OF HOUSING, BUILDING AND PLANNING

The construction regulations of the National Board of Housing, Building and Planning apply to new construction and renovation of both residential and institutional premises.

[You can find the National Board of Housing, Building and Planning's construction regulations here.](#)

SWEDISH WORK ENVIRONMENT AUTHORITY

The Workplace Design regulations apply to all environmental aspects at all types of workplaces.

[You can read the Workplace Design regulations here.](#)

PUBLIC HEALTH AGENCY OF SWEDEN

The Public Health Agency issues regulations for the environment in housing and public premises.

[Read more about the indoor climate on the Public Health Agency's website.](#)

SOCIETY OF ENERGY AND ENVIRONMENTAL TECHNOLOGY

The e-zine Energi & Miljö (Energy & Environment) reports on current projects, changes in regulations, energy efficiency and construction law.

Energi & Miljö is published by EMTF Förlag AB on behalf of EMTF (Society of Energy and Environmental Technology).

energi-miljo.se





AKADEMISKA HUS

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