

Adapt the operating times for the ventilation to effective usage

If rooms are ventilated (intensively) outside of usage hours or if the air seems “stale”, these are signs that the operating times set for the ventilation are not optimal.

Action

Adapt the operating times of the ventilation system to the effective demand and room usage. Outside of usage times, switch the ventilation system off entirely, or reduce it.

Requirement

The ventilation system control must have a timer programme.

If the ventilation can be switched off every day from 8 pm to 6 am, its energy consumption will decrease by 40 percent

What to do

1. Record the initial situation

Note the current settings for the timer programme in the logbook (plant journal).

2. Determine the usage times

Ascertain when the individual rooms are used. This is the basis for the ventilation system’s operating times.

3. Set the operating times

- When usage begins, switch the ventilation system on. If the air quality is already giving rise to complaints, switch the system on for 15 minutes to a maximum of 30 minutes before usage begins (this is known as “pre-flushing”).
- When usage ends, switch the ventilation system off immediately. Post-occupancy ventilation makes no sense in most cases.
- Depending on the required airflow, the ventilation system can be switched on and then off at intervals of 15 minutes (intermittent operation).
- If a room is only used by a few people for a certain period, the system’s power can be reduced (e.g. from level 2 to level 1), or intermittent mode can be switched on.



4. Note, observe and correct

- Note the new values in the logbook.
- Observe the users, pay attention to complaints and correct the set values as necessary.

Costs – effort

- Your own labour (recording usage times, setting the timer, updating the logbook): approx. 2 hours per ventilation system (monobloc)
- Air quality measurement (CO₂, air humidity): CHF 200 per measuring point

Please note!

- In buildings that are ventilated via the windows, the operating times of the ventilation system can be reduced additionally outside of the heating period.
- Important: the usage time is often not the same as the actual period of presence. Users are frequently present in the rooms before the official attendance time.
- Record every adjustment of the set values in writing.
- Use a timer programme to switch the ventilation system off entirely in summer (do not blow any warm air into the rooms) and during public holidays and (works) holidays.
- Night-time cooling in summer is significantly more effective via window ventilation than with the ventilation system.

Additional explanations

Considerations regarding usage

The following questions will help you to specify usage:

- Which rooms does the ventilation system supply?
- How is the room used?
 - Office, meeting room, laboratory, etc.
- How intensively is the room used?
 - Occupancy throughout the day
- Are the rooms' usage times known?
 - Weekdays, weekends
 - Public holidays, works/company holidays

Which tasks does the ventilation system perform?

- Hygiene ventilation
- Room cooling or heating
- Humidification or dehumidification of the supply air

Pay attention to the air quality

It is difficult to make generally valid statements about optimal indoor air quality because people react differently to air pollution. Nevertheless, CO₂ content and air humidity are good indicators for assessing air quality. For this reason, they should be verified by measurements. As regards CO₂ content, the IDA values (IDA = Indoor Air) provide good guidance:

- Less than 800 ppm: high air quality (outside air)
- 800 to 1000 ppm: medium air quality
- 1000 to 1400 ppm: moderate air quality
- More than 1400 ppm: low air quality

For the purposes of air quality and energy consumption, ventilation in offices should be switched on when the CO₂ content is 1000 ppm

If it is impossible to guarantee the required air quality, the operating times of the ventilation or the airflow must be gradually increased again. The air quality should also be checked once or twice during the heating period, at intervals of 10 to 12 weeks.

Operating times for the ventilation system

A rule of thumb states that the ventilation system operates only when the room is in use:

- A post-occupancy operating period is not required;
- A short pre-occupancy operating period (pre-flushing) may be appropriate.

Example: usage times, office A

Work starts 6:30 am, work ends 6:00 pm

- Ventilation ON: Monday to Friday: 6 am to 6 pm
- Ventilation OFF: Monday to Friday: 6 pm to 6 am
- Ventilation OFF: weekends, public holidays, works holidays

Example: usage times, office B

(level 1 = gentle, level 2 = intensive)

Work starts 6:30 am, work ends 6:00 pm

- Ventilation level 2: Monday to Friday: 6 am to 8 am
- Ventilation level 1: Monday to Friday: 8 am to 1 pm
- Ventilation level 2: Monday to Friday: 1 pm to 3 pm
- Ventilation level 1: Monday to Friday: 3 pm to 6 pm
- Ventilation OFF: Monday to Friday: 6 pm to 6 am
- Ventilation OFF: weekends, public holidays, works holidays

Example: usage times, school classroom

School begins 7:30 am, school ends 5:00 pm

- Ventilation ON: Monday to Friday: 7 am to 5 pm
- Ventilation OFF: Monday to Friday: 5 pm to 7 am
- Ventilation OFF: weekends, public holidays, school holidays

Additional information

- "Ventilation and air conditioning systems – general principles and requirements", SIA standard 382/1 (charge payable), www.sia.ch
- Indoor air quality, www.lungenliga.ch
- The indoor air quality (IDA value) is described in [EN 13779](https://www.bfe.admin.ch/energieschweiz/EN/13779).