

# Eliminate concealed heat losses on decommissioned technical installations

When built-in technical elements such as ventilation ducts, pipes or chimneys are taken out of service, valuable heat is lost between the warm and cold zones unless these elements are dismantled and the openings in the walls are insulated.

## Action

You can avoid hidden heat losses by consistently removing old ventilation ducts, pipes or chimneys, and then insulating the openings in the walls.

## Requirement

Your building and its technical installations already have quite a few years “under their belt” and have undergone a number of conversions or refurbishments.

## What to do

- Check whether your building has technical installations leading from a warm zone into a cold zone that are no longer in use. Be sure to check technical rooms and production areas in particular:
  - Old ventilation grilles and ducts
  - Inactive supply lines/pipes (heating, hot water, pneumatic delivery systems, compressed air, etc.)
  - Unused sanitary venting ducts and wastewater pipes
  - Venting ducts and filler pipes on old oil tanks, air intake openings on disused oil or gas heating equipment
  - Disused chimneys
- Dismantle the technical installations.
- Seal or insulate the openings.



## Costs – effort

- You need about half a day’s labour to dismantle, insulate and seal one opening. You also need suitable insulating material for tamping as well as materials for sealing (mortar or a plate).
- Large openings and those between two fire sections are best sealed by a specialist.

## Please note!

- If a wall separates two fire sections, a professional, regulation-compliant fire-resistant seal must be installed after demolition.
- An unwanted flow of cold air into a room through an opening can give rise to comfort problems. These can be improved by insulating and sealing the opening.

# Additional explanations

## Fresh air openings in the heating basement

After an oil or gas heating system has been replaced by a heat pump, the fresh air opening that leads into the heating room can be closed. When the oil heating system is dismantled, the filler pipe and the oil tank vent are also superfluous. They can be dismantled and sealed.

If your oil or gas heating is still in operation, check the fresh air intake opening at intervals and adjust it correctly.

Guidance value for the fresh air opening:

- Forced-air burners, oil and gas  
Opening area [cm<sup>2</sup>] = power [kW] x 6
- Atmospheric burners, oil and gas  
Opening area [cm<sup>2</sup>] = power [kW] x 8,6

## Disused chimneys

After an oil or gas heating system has been replaced by a heat pump, the chimney is no longer used in most cases. The exception are chimneys used simultaneously by a wood-burning appliance (storage stoves, fireplace stoves, pellet stoves, etc.). Unused chimneys form a “cold air column” in the warm building. Resultant heat losses can be reduced by applying good insulation to the chimney outlet using a diffusion-open material. Any moisture must be able to escape. At the same time, all openings to the chimney (pipes, dampers) in the building must be tightly sealed. If a roof renovation is scheduled, the chimney should be removed as far as the underside of the roof. The entire roof can then be insulated.

In all cases, it is worth discussing insulation and dismantling with the chimney builder in advance to clarify aspects relating to building physics and structural engineering (moisture, dismantling, etc.).

## Ventilation ducts

Pay particular attention to disused ventilation ducts. They are often installed close to the ceiling and usually have large cross-sections. Inactive duct networks can have extensive branches and quite often pass through heated rooms. They can cause substantial heat losses.

## Pay attention to air humidity

Fresh air can flow through openings into the basement or technical rooms: this will dehumidify the indoor air in winter. If the opening is sealed, the relative air humidity in the room can increase. Monitor the situation and if the room air humidity increases too much (e.g. above 60% r.h.), reduce the humidity by ventilating the rooms regularly.

## The position of the opening is critical

The extent of heat losses depends on the temperature difference between the rooms and the size and position of the opening. The greatest heat losses are caused by large openings located close to the ceiling (or, even worse, in it) that lead from a heated room into the open air. Small openings near the floor that lead from a heated room into an unheated one are rather less problematic in terms of energy efficiency. However, they can cause loss of comfort in the heated room (cold floor). Example: an opening measuring 20 cm x 20 cm that leads directly from the indoor to the outdoor climate at floor level causes heat losses of about 300 kWh over one year. The same opening at a height of 2,2 m results in five to ten times more heat losses.

## Additional information

- [Heat losses through functional openings in building envelopes](#)  
SFOE (Federal Office of Energy)/HSLU (Lucerne University of Applied Sciences and Arts) 2013