

# Adapt the burner output to the actual requirements

Optimal burner output reduces the emissions from your heating and cuts fuel consumption by up to 3 percent.

## Action

Determine the burner output that you actually need and adjust the output to the effective demand.

## Requirement

You have an old oil or gas burner with output of over 20 kilowatts, but it cannot yet adapt (modulate) its actual output to the demand. Also: this action is only possible for non-condensing boilers and systems without an economiser (for utilisation of waste heat from the flue gas).

## What to do

- Read the annual operating hours on the meter. If the burner runtimes are less than the guidance values (see overleaf), this indicates that the burner output is too high.
  - The burner's output will also be too high after the building envelope has been insulated.
- To reduce the output from oil burners, you can use a smaller nozzle or reduce the throughput. On gas burners, you have to reduce the throughput.
- Have the burner output checked and reset by a specialist.
  - After the burner output has been adjusted, the combustion has to be re-regulated and inspected in compliance with the Ordinance on Air Pollution Control (OAPC).



## Costs – effort

- If you have the burner output adjusted as part of the annual service, the additional service cost should be between CHF 500 and CHF 1000.

## Please note!

- The burner output (thermal output) can only be changed within a certain range. When doing this, follow the instructions from the burner and boiler manufacturer.
- The heating system must always be able to meet the maximum demand for heating power in winter.
- After adjusting the burner output, the burner runtime should also be checked and optimised.

# Additional explanations

## Minimum operating hours for the burner

For heating systems with a heat generator whose output is more than 20 kilowatts, there are guidance values for the burner's minimum annual operating hours. Failure to reach these values indicates that the burner output is too high.

Heating	With hot water	Without hot water
Single-stage burner	2200 h/a	2000 h/a
Two-stage burner	First stage = 3200 h/a Second stage = 300 h/a	First stage = 1700 h/a Second stage = 300 h/a

## Check the exhaust gas temperature

Reducing the burner output will also lower the temperature of the exhaust gas. If this temperature is below 160 °C for brick-lined chimneys (see the burner service report), the exhaust gas temperature must be measured at the chimney outlet after optimisation. It must not fall below 70 °C or there is a risk of soot forming. You can also reduce this risk by slightly opening the fresh air vent at the base of the chimney. For example: you can fix the fresh air vent with a spacer or a screwed joint so that it is always slightly open. The inflow of fresh air will then dry the chimney out and, at the same time, will prevent an unwanted inflow of fresh air through the boiler that would cool it down.

## Keep the boiler room clean

All combustion requires air. If this air is contaminated with dust, combustion will be impaired. This will increase pollutant emissions and energy consumption. The burner will also be more liable to malfunctions. Therefore: clean the boiler room at the start of the heating season and also during the heating period whenever necessary (e.g. after construction work).

## Check the flame pattern

Look through the inspection window into the combustion chamber at regular intervals. If the flame tips are red, sooty and in contact with the boiler wall, or if the flame pattern is uneven and not symmetrical (perhaps with spark showers), it may mean that combustion is not optimal. In this case, the combustion must be checked and correctly adjusted by a specialist. Periodic cleaning of the boiler and regular adjustment of the combustion can reduce fuel consumption by up to 3%.

## Additional information

- [Operational optimisation for energy efficiency: operating buildings more efficiently](#), technical book, 2021
- [Replacement of heating systems in larger apartment buildings and condominiums](#), brochure, 2021
- [“Renewable heating” incentive consulting](#), range of advisory services
- [Gas and oil heating systems](#), dimensioning aid, information sheet, 2017