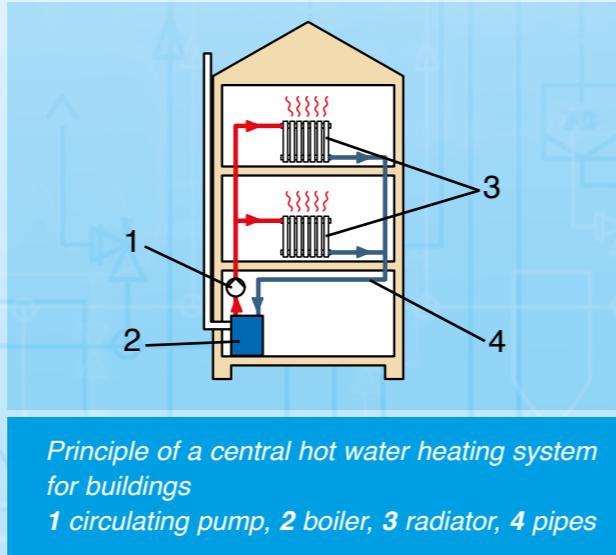


HEATING SYSTEMS IN BUILDINGS

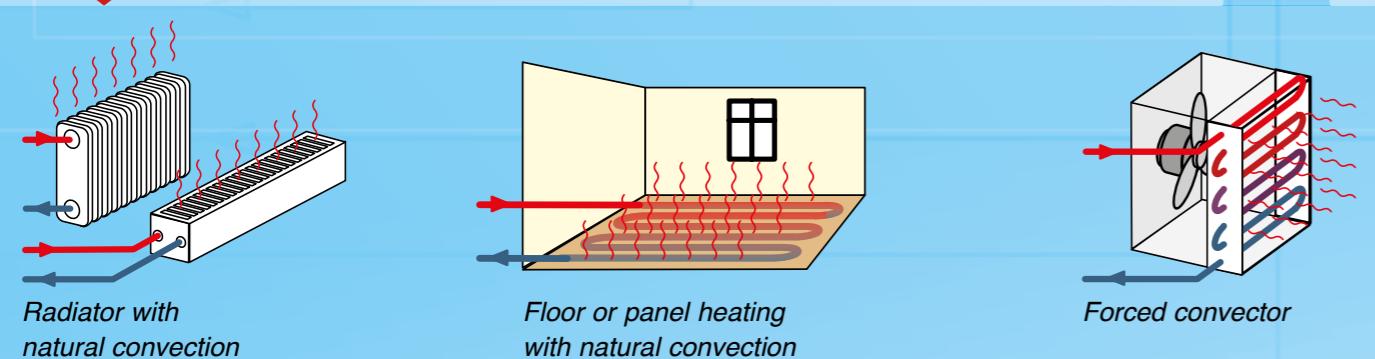
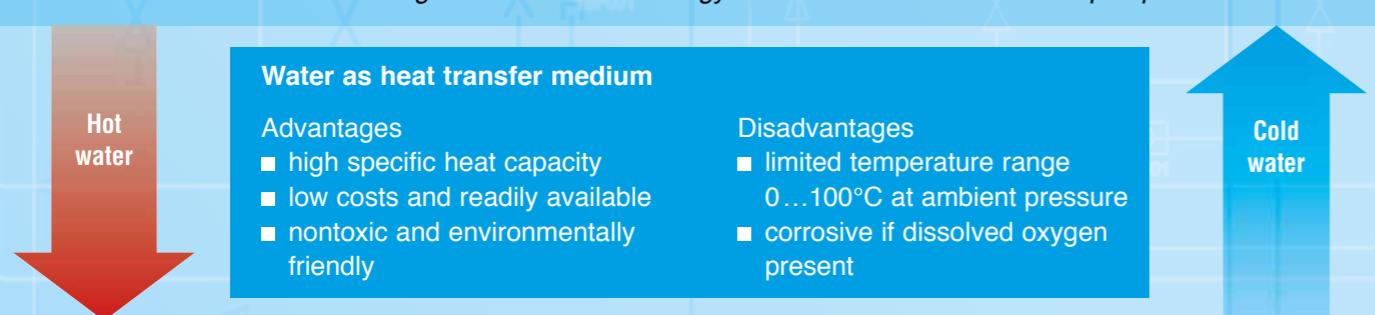
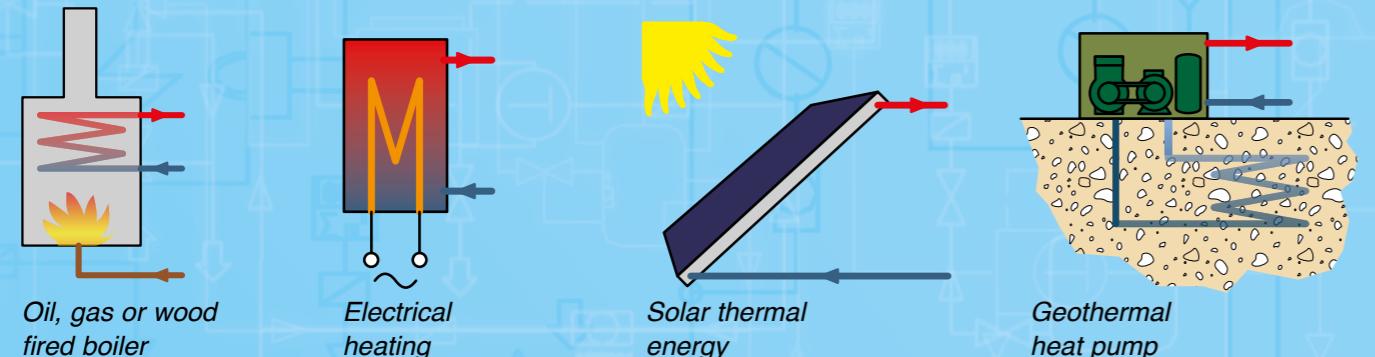
Central hot water heating systems

Central hot water heating systems have to perform four different tasks:

- central generation of hot water
- hot water transport
- heat transfer to the rooms
- temperature control



HOT WATER GENERATION



HEAT TRANSFER TO THE ROOMS

Temperature control

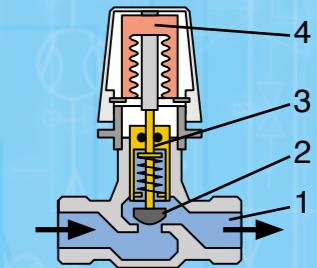
One important task of a central heating system is to accurately maintain the desired room temperature. Therefore the heating power has to be adequately adapted. Manual heating control is complex and imprecise, so modern control systems adjust the heating power automatically.

The use of special control strategies ensures comfort and energy efficiency. Control of heating systems is a very important aspect for this reason.

SIMPLE TEMPERATURE CONTROL USING A THERMOSTATIC VALVE

As the room temperature rises the thermostatic valve reduces the hot water flow rate to the radiator. The expanding material moves the valve cone closer to the valve seat as the temperature rises.

1 to radiator, 2 valve cone, 3 tappet, 4 expanding material as temperature sensor



TYPICAL CONTROL SYSTEM FOR DOMESTIC HEATING

The electronic controller measures outside and room temperatures and calculates the heating demand of the house. The temperature of the feed flow is adjusted via a mixing valve in order to meet the heating demand. The boiler also supplies heating of domestic water. Therefore the controller switches on the charging pump.

1 hot water storage tank (domestic water), 2 radiator, 3 room temperature, 4 feed flow temperature, 5 circulating pump, 6 controller, 7 mixing valve, 8 charging pump, 9 boiler, 10 boiler temperature, 11 outside temperature

