Getting the most out of your boiler and central heating system

Whatever type of heating system you have, it's important that you get the best performance from it. This guide suggests various ways you can do this.

❖ Boilers

- Make sure your boiler is serviced regularly. If your boiler is more than 12 to 15 years old, it won't be as efficient as modern condensing boilers. Older boilers are less efficient anyway, and get worse as they age. While you need to think carefully about whether it is economic to replace a boiler that still works, the savings may make this a viable option.
- You can check the efficiency rating of your existing boiler on the SEDBUK boiler database – see:
  http://www.ncm-pcdb.org.uk/sap/pcdbsearch.jsp?pid=26
- A new boiler may be expensive but you may be eligible for financial help in some circumstances, including a completely free boiler if yours is more than 8 years old – see Factsheet 6, Government *Schemes to Help You Keep Warm*.
- Many houses in Barningham have combi boilers which supply instant hot water. Other homes have a hot water storage tank. If you have one of the latter, it's really important to make sure it's properly insulated. There should be a minimum of 50mm (2 inches) of insulation, with no gaps at all. If you haven't got this, adding a new insulation jacket is very cheap and saves lots of money.

❖ Changing the way your central heating works

- It's a good idea to check that your central heating pump is set at the correct speed. Central heating pumps can account for 15% of a home's electricity bill, and the pump shown in Figure 1 uses two and a half times more power on the fast setting than on the slow setting (105W compared to 40W).

Figure 1 – Grundfos 3-speed central heating pump
Reproduced from Hobbs_Luton from Flickr

The Rural Community Energy Fund

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- Unfortunately, installers sometimes set the speed to 'medium' regardless of the needs of the system.
- If the pump is too fast it:
  - wastes electricity
  - can be noisy
  - wears out more quickly
  - means your radiators need bleeding more often
  - can disrupt the efficient firing of condensing boilers, if the return flow has not had enough time to fall below 55°C.
- If the pump is too slow:
  - the last radiators on the circuit may not get warm enough
  - the boiler may overheat and cut out.
- There is a simple way to test the speed setting for yourself:
  - First of all, set the pump speed to maximum, open all the radiator valves to fully on, adjust the system thermostat to maximum and run the heating for 10 – 15 minutes. All the radiators should be hot.
  - Next, turn the pump speed to the lowest setting, and wait for around 20 – 30 minutes. If all the radiators are still hot, leave the pump speed at that setting.
  - If any of the radiators are too cool, increase the pump speed to medium and wait for another 20 – 30 minutes. Again, if the radiators are all hot, leave the pump speed.
  - If they're not all hot, finally increase the pump speed to maximum setting as the most appropriate for your property.
- It is possible to run radiators at lower temperatures, but usually this means you will need to increase the size or number of radiators, so won't be suitable for all properties. It might not be feasible for older properties that don't have good insulation either.
- You can run a low temperature system from a combi boiler (including a mixed system with some parts at higher temperatures) but you will need a heating engineer to advise on the necessary modifications.

❖ Heating Controls

- Heating systems have timers and thermostats to help you manage the system. It's important that you understand how to use these and adjust them now and then to suit changing seasons.
- A seven-day timer is ideal, as this means you can set the heating for midweek, weekends and holiday periods. Ideally you should have the timer switch the heating on just before you get up or come home, and turn it off half an hour before you go out or go to bed.

- Once the heating is on, the thermostat controls the heating level. Increasing the temperature setting doesn't speed up heating – it still takes the same amount of time, but just gets warmer. If you need heat at a particular time, adjust the timer.

Figures 1 & 2
Typical central heating timer and room thermostat

- Thermostats can be located just about anywhere in a house. There is usually only one, and there is no ideal location. If it is in a cool area, such as a hall, setting it to 20°C will make the rest of the house very warm, as the heating will keep running until the hall gets to 20°C. If it is somewhere that gets warm, like a kitchen, at 20°C you might find some of the house remains too cold, as the heating will switch off when the kitchen is hot.
- The best approach is to work out for yourself how the system works, and what the best setting is for your thermostat.

❖ Radiators

- Using thermostatic radiator valves (TRVs) is a very helpful way of controlling heating (see Figure 3).
- You can use these to set 'heating zones' of different temperatures. By turning valves up or down, and then closing doors, you can keep halls and landings a little cooler, but occupied rooms nice and warm.

Figure 3 Thermostatic radiator valve

- For larger houses, it is now possible to buy radio controlled TRVs, which can convert a single loop heating system into a multi zone system with automatic timers and thermostat controls for different zones.
- It is also now possible to buy remote heating controllers, such as Hive, that can operate via voice command or via smartphone. For an example technology see:
  www.hivehome.com/products/hive-active-heating
- These have some advantages, in that you can adjust your heating even if you are not at home, although they are expensive, currently around £180 (January 2021). To make this worthwhile purely in financial terms, you would need to save the equivalent of around 400 litres worth

of oil, although there may be other benefits of remotely controlling the heating.

- Older radiators are not as efficient as new ones. They have more water in them, so take longer to fill up, and don't have convector fins, so they don't work as well. If you have old radiators, replacing these with new convection radiators will help.
- Try not to block radiators behind furniture or curtains. They need air to circulate to work at their best.
- If you have radiators against external walls, a lot of the heat can go out through the wall. Fitting reflective radiator panels behind them can help improve efficiency by up to 15% - see Figure 4.
- You can fit insulated panels behind radiators either by sliding the panel behind the radiator, or if you are decorating and removing the radiator. There are various makes available, such as:
  http://www.heatkeeper.co.uk/

Figures 4 & 5 Fitting an insulated radiator panel

- If your heating system pipes run under the floor, or in the loft, these should be completely insulated. Any hot water pipes should be insulated all the way to the taps.

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