DIY Fanned Radiator

see YouTube Video

A radiator with a fan heats the room quicker and improves efficiency

Our kitchen/living area was often the coldest room. With our pattern of use, it's good to be able to warm it up quickly. The fanned radiator described here blows warm air out into the room, past where we sit, which feels good, heating up the whole room much quicker than before.
It does this even when our gas boiler flow temperature (of water it sends to the radiators) is set below 60°C. Condensing boilers are more efficient at lower water temperatures – a subject for another post?

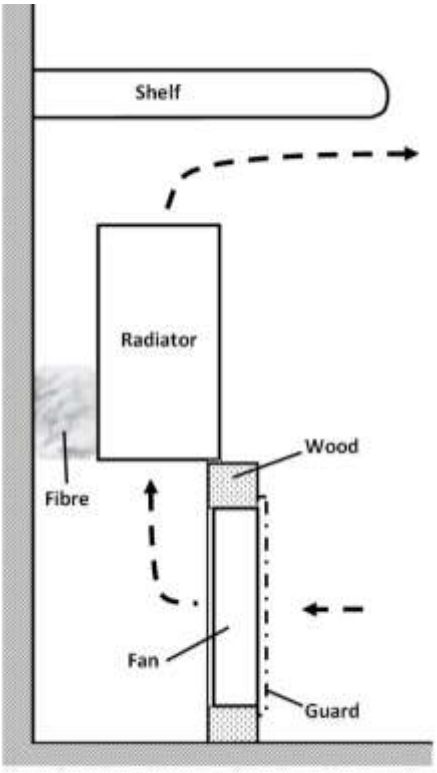
Do you want more, quick heating from a radiator?

First, some checks:

Does the radiator have a Thermostatic Radiator Valve (TRV) fitted? It should shut it down when the room has reached the set temperature. Try turning up the TRV to see if that was restricting the radiator's heat output. Or is the TRV stuck? See Transition Cambridge's useful resources on this and these other issues:
Is your radiator cool because it needs bleeding or is blocked by sludge?
Or is it badly obstructed by furniture or curtains?
If all the above are all ok, then adding a fan or more to your radiator may help. You can:

- Add a **commercial add-on radiator fan** to boost your radiator's heat output.
  Radfan is the leading brand and gets good reviews. By increasing the airflow past the radiator's panels and fins, more heat is extracted from the central heating water into warm air and is pushed out into the room.
- Or construct **a DIY fanned radiator**, as below. It should do a similar job to a Radfan at lower cost and with better results because it's customised to your radiator and needs.

Radfans and the DIY design below both use 12V fans, powered by a plug-in power-supply, so they are mains-safe and suitable for home installation or construction. The fans consume just a few Watts and only switch on when the radiator is hot, so their electricity consumption is minimal.
All the fans make a little background noise – we don't find it a problem, but everyone's different!



DIY Fanned Radiator cross-section

Making your DIY Fanned Radiator

Mechanical Construction

I added fans to a radiator with an unusual shape: it's 2m long and low to fit under a long window with a wide shelf/window seat. You can adapt these ideas to suit your situation. Because of the length, I chose to fit 3 fans, but 2 would probably have been enough. The fans were fitted into a piece of wood that closes the gap between the front of the radiator and the floor. Plywood cheeks at each end complete the seal, with foam draught-proofing strip closing any gaps, so that all the fanned air blows through the radiator.

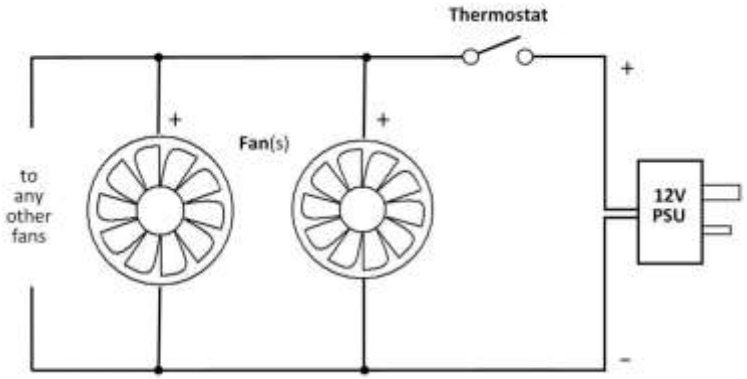
Air blown by the fans would rush between the back of the radiator and the wall, which I blocked with recycled-plastic insulation (easy to handle), but any way of blocking this space is good.

A shelf over the radiator is good anyway to direct warm air into the room, rather than up the wall.
In this design, it really helps create the airflow shown, which feels good when you're sitting nearby!

The fronts of the fans are protected with guards to keep children's fingers out!

Electrics

I looked for quiet, efficient 120mm 12V DC computer fans, choosing 3 x Aerocool Airforce, with guards, now discontinued ~ £7 each.
The other relevant specs of these fans were 25.4dB(A) noise, 52.6 cfm airflow for 1.44W..



The plug-top 12V power supply (PSU) needs to be capable of supplying the total fan current consumption. A modern one should have <0.3W quiescent consumption when the thermostat is off. Even this can be avoided by switching off at the mains outside your central heating season.

The normally-open bimetallic disc thermostat has a nominal 30°C switching temperature, so it comes on when the radiator's warm. It's glued to the radiator where it doesn't show. Depending on the lengths, the connecting wire needs to be fairly low resistance. I used speaker cable.

In Use

We been very pleased with the effect of the fans over 3 winters:

- This small radiator now provides much more heat that quickly warms the room
- When we don't have central heating on, we can turn it on briefly and quickly warm up this room for short periods like lunch-time
- Warm air is blown just where it's needed
- We don't mind the fan noise: we notice when it turns on or off, but then forget it
- It's been reliable. The only maintenance has been cleaning the fan blades and guards annually, as they tend to accumulate dust, which can cut airflow & increase noise.

Hoping you too can enjoy the benefits! This fanned radiator is on show at the Eltisley Avenue Open Eco Home.

Good luck with your version of this!

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