



Compatibility of Solar Hot Water Systems and Existing Boiler Systems Some Questions and Answers

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INTRODUCTION

You are considering investing in a solar hot water system and naturally want to know whether the costs end there or if there needs to be any replacement of some of your existing hot water system. These are some questions we have been asked most often.

Will I still need my fossil fuel boiler?

A solar system will provide typically between 50-70% of your hot water annually. This ranges from 95% in summer to 10-20% in winter. Your existing boiler will provide the rest. Solar systems can be used effectively with gas or oil boilers, Agas, Rayburns, solid fuel boilers, and many combi-boilers.

Do I need to replace my existing hot water cylinder?

Replacing your existing cylinder with an efficient purpose-built, twin-coil solar cylinder will result in the most efficient system, so this is recommended. However a lower-cost option is to use a "retro-fit" solar coil, which can be fitted in place of the immersion heater in your existing cylinder. This will reduce the initial outlay, and if required the system can be upgraded by replacing the cylinder some time later. Another option is the use of an external heat exchanger (Willis Solasyphon). This can be used with pressurized and unpressurized tanks.

Do I need a larger cylinder?

In many cases, it is recommended to increase the size of the hot water cylinder by approximately 25% due to the higher position of the boiler coil in a solar cylinder. Since in winter, when the solar contribution is less, some water below the boiler coil will not always be heated.

How can I connect solar panels to my existing combi-boiler?

Any solar hot water system requires a tank somewhere in the system to store the large quantities of heat generated. When connecting to a combi boiler, a tank (referred to as a "Thermal Store") is situated upstream of the combi-boiler, so that the water going into the combi is pre-heated. For all but the most recent "solar-ready" combis, it is necessary to install a mixer valve to limit the temperature of the water on the inlet to the combi to about 40-45

degrees Celsius. This prevents the combi from cycling. For most of the summer the combi can be switched off completely and the mixer valve temperature can be increased to roughly 60 degrees Celsius.

I am getting a new boiler now and would like to add solar later. What do you recommend?

Get a conventional condensing boiler (not a combi) and a solar twin coil water cylinder. A twin coil cylinder has one heating coil that is connected to your boiler and the other (the lower one) connects to the solar panel. Unvented (mains pressure) cylinders give better water pressure for showers etc, but the cylinders are more expensive since they have to withstand high pressure. If you already have a vented cylinder (with a header tank) you may want to simply replace this with a vented twin coil cylinder. A solar twin coil cylinder is not much more expensive than a single coil cylinder and it gives you the option of adding the solar panel very easily at a later stage. So since you plan to add solar at a later stage you should definitely ensure that you get the right cylinder now.

Does the solar water heating system contribute to the central heating?

In most installations the system is designed for water heating. This reduces the load on the central heating boiler and the improved insulation of the new cylinder makes the conventional water heating system more efficient. Towel rails can be added to the system. However, winter space heating is not a recommended application because the energy demand is at its peak (e.g. cold long winter evenings) when the supply of solar energy is at a minimum.

CONCLUSION

When installing a solar thermal system, whether to upgrade all or part of an existing hot water system will inevitably come down to cost. Do you want, or need, a larger cylinder? Is there room? Are any components in need of replacing anyway. Hopefully, you will find some answers here that will guide you.