Thermal heat store

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It might sound like a power-up from a grainy PS One shoot-em-up. But a thermal heat store is one of the fastest growing renewable heating technologies around as a means for holding excess heat.

Thermal heat stores can be used with a single renewable heating technology or to mix different renewable heating technologies together. They can also be utilized alongside your typical boiler or immersion heater.

There"s no doubting that for the time being, thermal heat stores are a lot more popular within commercial ventures as opposed to residential properties. They are known to perform especially positively alongside heat pumps, biomass boilers, and both wind and solar heating systems.

You might be a lot more accustomed todesigner radiatorsandtowel railswith regards to your basic home central heating.

Ok, so you might not use 50 toilet rolls at once. But they"re always handy to have in at a time of need. You can apply a similar logic to the way a thermal heat store works. They essentially hold and manage renewable heat until it is required.

In residential spaces, heated water will typically be contained within a big, insulated cylinder tank. They"re commonly known as accumulator tanks or buffers.

Thermal stores will also likely feature a single or multiple heat exchangers - external flat plates or internal coiled pipes are the usual suspects. An electric heating element might also feature, like an immersion heater.

All sorts of technologies can contribute to a thermal heat store, as long as it has been designed to work with them. Heat pumps, solar water heating and wood-fuelled boilers are heating source examples a thermal heat store can take from.

There are a number of thermal energy storage technologies, beyond traditional water tanks, that can provide increased storage density and efficiency. We have listed some of these emerging technologies as follows…

PCMs store energy via the use of a reversible phase transition, such as melting and solidifying. This enables them to hold a large amount of heat with only a slight temperature variation, resulting in between five to 10 times higher storage density in comparison to sensible heat storage in water.However, PCMs often incorporate low levels of thermal conductivity, and thus require effective heat transfer solutions.

Thermochemical storage utilises reversible chemical reactions so that sizeable quantities of heat can be stored

in a compact volume. When the application of heat occurs, the material is broken down into separate components which are then able to be stored. Once the components are recombined, the stored heat is released. At the time of writing, this technology remains in the research and prototype stage.

Solid-state thermal energy storage technologies, for instance, those using concrete or alternate solid materials, are another form of emerging potential substitutes to water tanks. These can deliver a higher storage density and provide reduced heat loss measured against liquid-based systems.

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