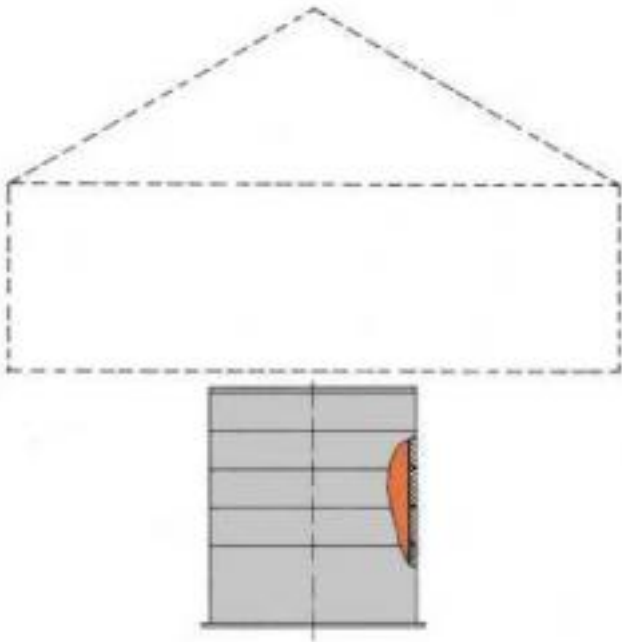


Heat & Cold Storage beneath Residential and Commercial Buildings

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Press release from: [TEC MANAGEMENT](#)



Heat storage is an essential part of a very broad range of renewable energy systems: from solar collectors to biomass boilers, from micro-cogeneration to heat pumps. And Heat storage is an enabling technology: without it, renewable heating and cooling would not be possible. It is the road map to higher solar fraction up to 100 %.

The new Idea:

A Heat & Cold storage construction system made of water absorbent mortar –load-bearing and strong enough to be over-built, environmentally friendly, maintenance-free, storage efficient and cost effective, long lasting, and corrosion resistant – for small and large scale easy & low cost thermal storage construction right beneath city buildings for modern district and unitary low energy heating & cooling systems.

Low-Cost Construction:

The construction is quite simple (see picture). Before the building will be erected, a pit is excavated, and an appropriately sized shaft with a bottom plate made of concrete is modular assembled in the pit using pre-cast concrete ring elements. Each ring element and the bottom has an interior watertight membrane ex works. The capacity of storage can be individually extended by arranging many of those shafts as a field. Depending on the designed specific use of the storage system the shaft can be additionally wrapped with any appropriate insulation and/or sealing material (foil, foam glass granulate, cellular concrete, geo-textile etc.). If the storage system is designed to correspond with the surrounding ground heat and possibly additional installed ground heat exchangers it needs no additional insulation from the side and the bottom. From the top it is perfectly insulated by the house construction.

After a pre-manufactured heat pipe collector system is hanged into the shaft, the ready-mixed mortar can be filled in up to the top. Right after this the house or building can be erected over it.

After the mortar is cured, this need time up to approx. 28 days, the storage system can be completely saturated with water and be started to operation.

The new Material:

For that special purpose Orange Depot Systems has developed a new storage building material, which is a modified kind of mortar cured in one solid block with a very special porous and capillary structure. This structure takes up water completely up to 50 to 75 % of its volume depending on the individual requested compression strength, and hold it by capillary effect. And this material can be over-built while it needs no additional heavy-duty and expensive basin, tank or reservoir construction. And the material consists of conventional building material components as cement, lime and additives, so it can be simply manufactured and installed by low cost. This material can be operated in a temperature range from around the freezing point up to +90 °C, so it is planned to use it not only for heat storage, but also for latent ice storage too

The material is in the prototype stage, and just be tested for the best recipe for the German market together with a German concrete manufacturer.

Market Planning:

Beside Germany Orange Depot Systems also plan to sale this technology internationally, and for that suitable partner companies and sponsors are requested, who are interested to obtain the exclusive right and to develop and sale a tailored product for their preferred local market.

TEC MANAGEMENT is an engineering and consulting firm in the field of environmental friendly technologies with focus on underground infrastructures, and beside others specialised on alternative energy storage & supply.

Orange Depot Systems is the label, under which particular systems, products, and techniques are promoted.

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