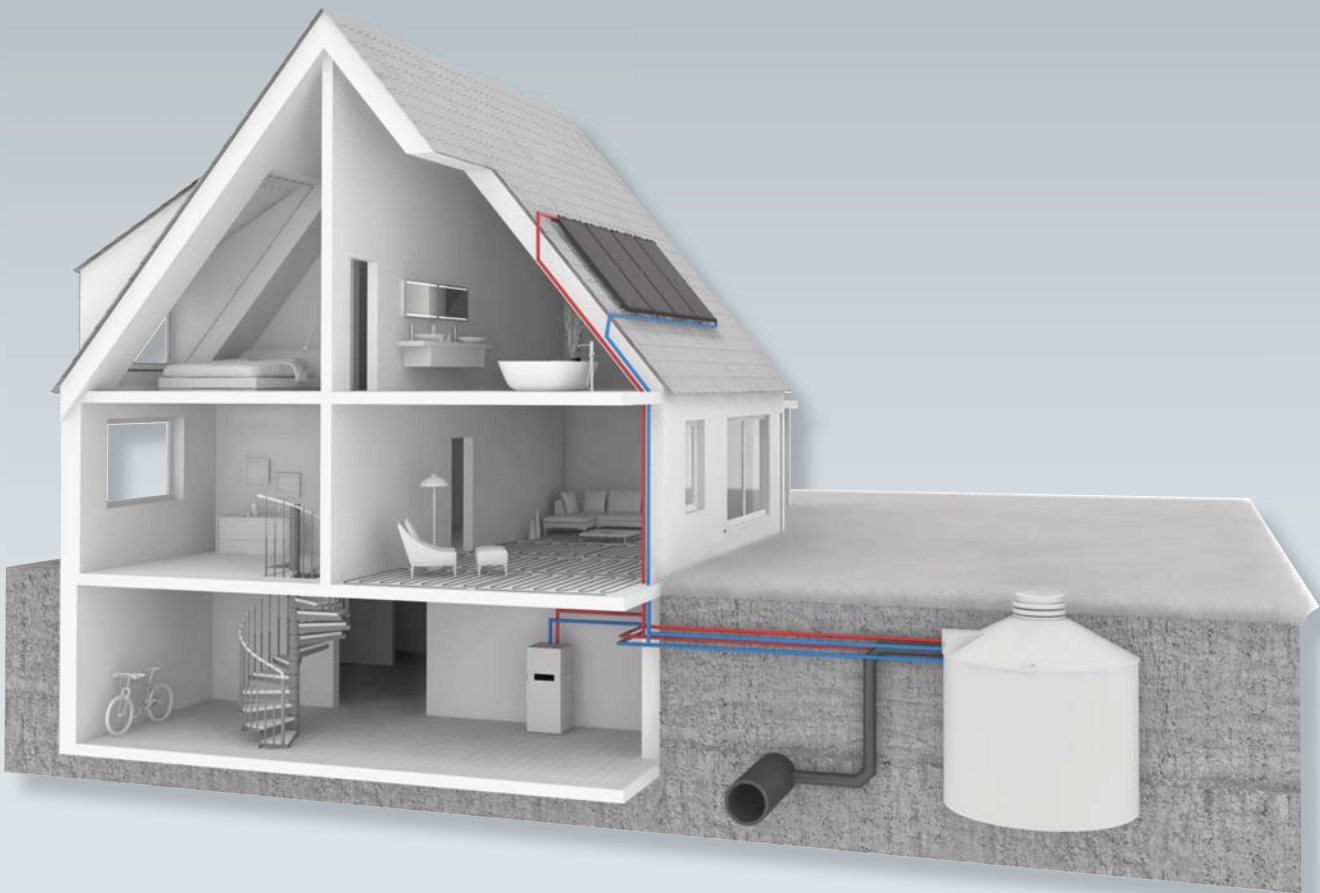


Ice store system  
**VITOFRIOCAL**

**VIESSMANN**



Heating systems ◀

Industrial systems

Refrigeration systems



Heating with ice

### Vitofriocal ice store system – innovative energy source for ground source heat pumps

The use of an ice store as an energy source is a particularly innovative solution. The ice store consists of a tank with built-in heat exchangers which is buried in the garden and filled with ordinary tap water. Special solar air absorbers are installed on the roof of the house, which draw heat from the ambient air and insolation and supply it to the tank. The ice store also draws heat directly from the ground.

#### Using crystallisation energy for heating

If not enough energy is provided by the solar air absorbers, the heat pump extracts the energy required for central heating and DHW heating from the water stored in the tank. If the temperature in the tank falls to freezing point, more energy is obtained from the freezing of the water – hence the term "ice store". During the transition from water to ice, the amount of crystallisation energy released is equivalent to that required for the inverse process of thawing. With an ice store measuring ten cubic metres – the standard size for a detached house – this corresponds to the energy content of approx. 120 litres of fuel oil.

The key difference is that the fuel oil is entirely consumed to generate heat, whilst the water content of the ice store can be used time and time again to generate heat using energy from the sun and air.

#### Package solutions for easy installation

Viessmann is the only heat pump manufacturer to offer the innovative Vitofriocal ice store system. For heat pumps with a rated heating output from 6.0 to 17.2 kW, various standard system packages are currently available which greatly facilitate the engineering and ordering of components. These packages comprise an ice store with built-in heat exchangers, solar air absorbers with a roof mounting system and the heat transfer medium for the primary circuit. Larger properties with a greater heat demand require a customised ice store and solar air absorbers. Viessmann offers the relevant support for this.

#### Precisely tailored system components

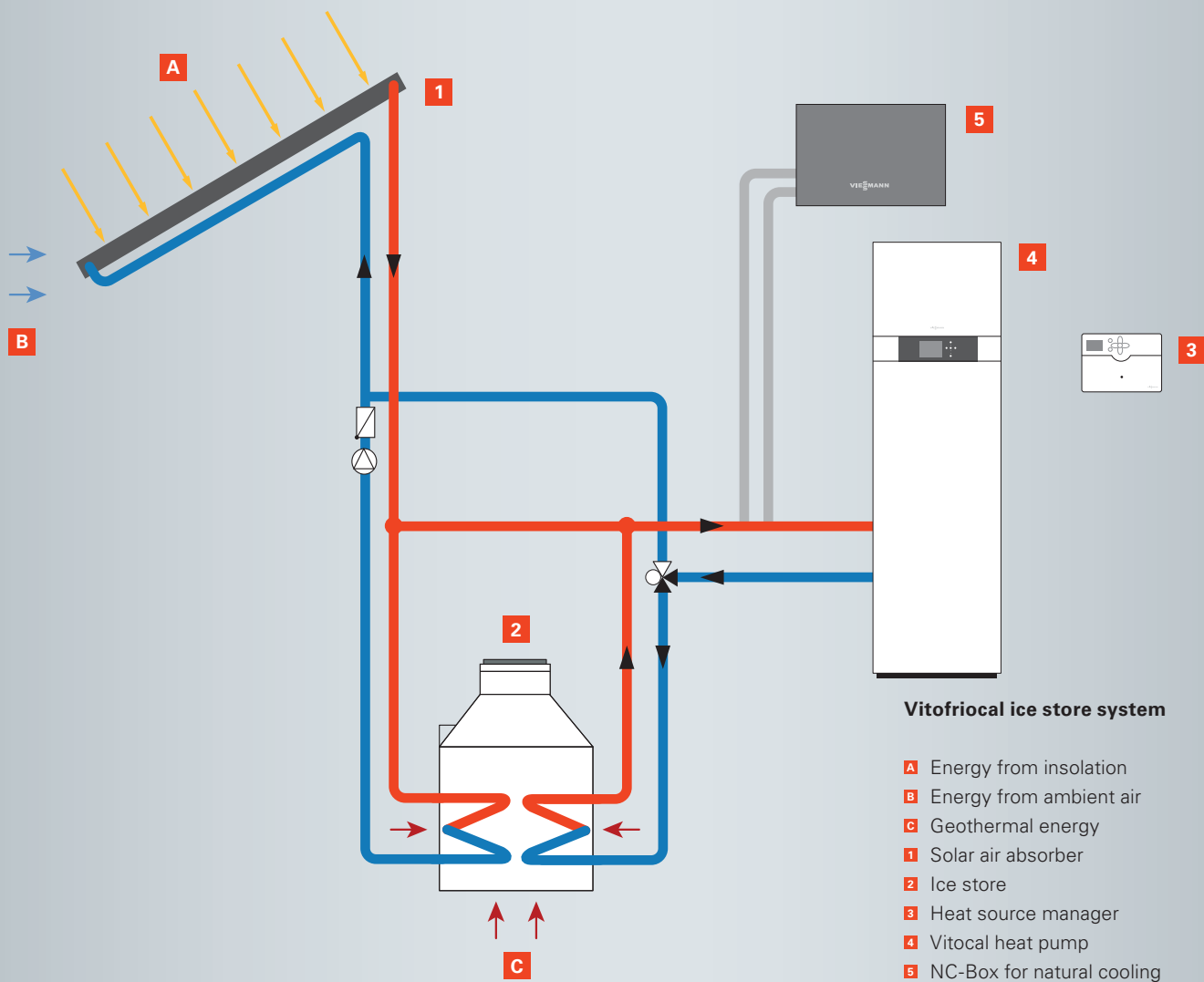
The system packages are designed so that the available heat sources – outdoor air, solar energy and geothermal heat – are used as efficiently as possible. All components are precisely tailored to each other for this purpose. This ensures that the heat pump always works efficiently, no matter which heat source, solar air absorber or ice store is available.

#### No official permits required

A further benefit of the Vitofriocal ice store system: it does not require the costly drilling that is needed for tapping geothermal energy from deep in the ground, or the extensive groundwork involved when laying geothermal collectors over a large area. Nor does it require any official permits, as the ice store has no impact on groundwater.

Ice formation around the heat exchanger in the ice store





Solar air absorber as a direct heat source for the heat pump or for regenerating the ice store

#### Take advantage of these benefits

- Combined utilisation of ambient air, the ground and insolation as energy sources
- No drilling – no environmental risk, no permits required
- Low operating costs thanks to the high COP of the heat pumps – up to 5.0 (B0/W35) to EN 14511
- Particularly high efficiency thanks to intelligent heat source management and heat pump with RCD (Refrigerant Cycle Diagnostic) system with electronic expansion valve (EEV)
- Easy to use Vitotronic control unit integrated in the heat pump

## Specification Vitofriocal ice store system



Ice store	kW	6	8	10	13	17
<b>Dimensions</b>						
External diameter	mm	2700	2700	2700	2 x 2700	2 x 2700
Height with shaft cover, drive-over	mm	3375	3375	3375	2 x 3375	2 x 3375
Height with shaft cover, walk-on	mm	3330	3330	3330	2 x 3330	2 x 3330
<b>Volume of water/glycol mixture inside the heat exchanger</b>						
– Extraction heat exchanger	l	136	136	136	272	272
– Regeneration heat exchanger	l	77	77	77	154	154
<b>Weight</b>						
Ice store tank (incl. cone and HEs)	kg	8605	8605	8605	2 x 8605	2 x 8605
Cone	kg	1300	1300	1300	2 x 1300	2 x 1300



Solar air absorber	Type	SLK-S
<b>Surface area</b>		
Gross area	m <sup>2</sup>	2.61
Absorber area	m <sup>2</sup>	2.34
Heat transfer surface area	m <sup>2</sup>	9.1
<b>Dimensions</b>		
Width	mm	1225
Total width incl. connectors	mm	1278
Height	mm	2120
Depth	mm	50
<b>Weight</b>		
Dry weight	kg	38 (19 per level)
Weight (filled)	kg	81

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