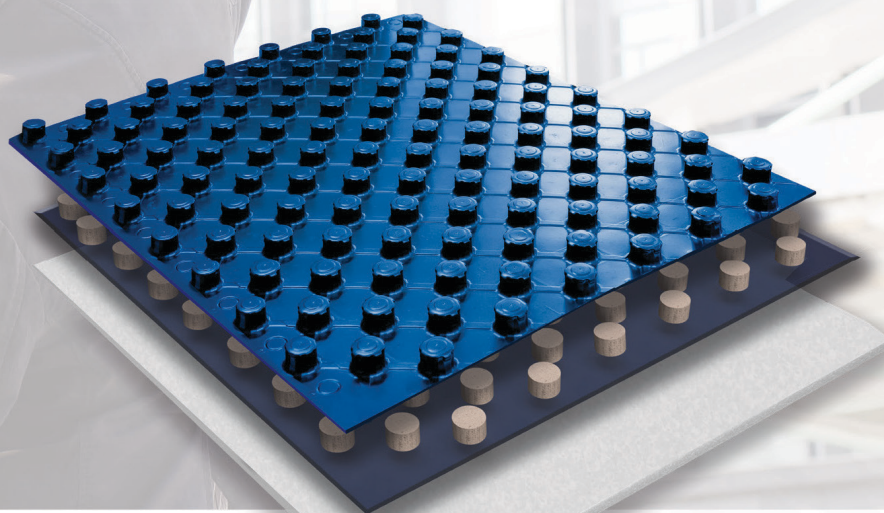


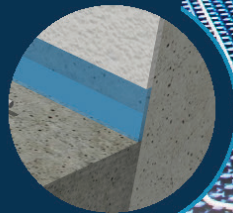
ENERGY FLOOR



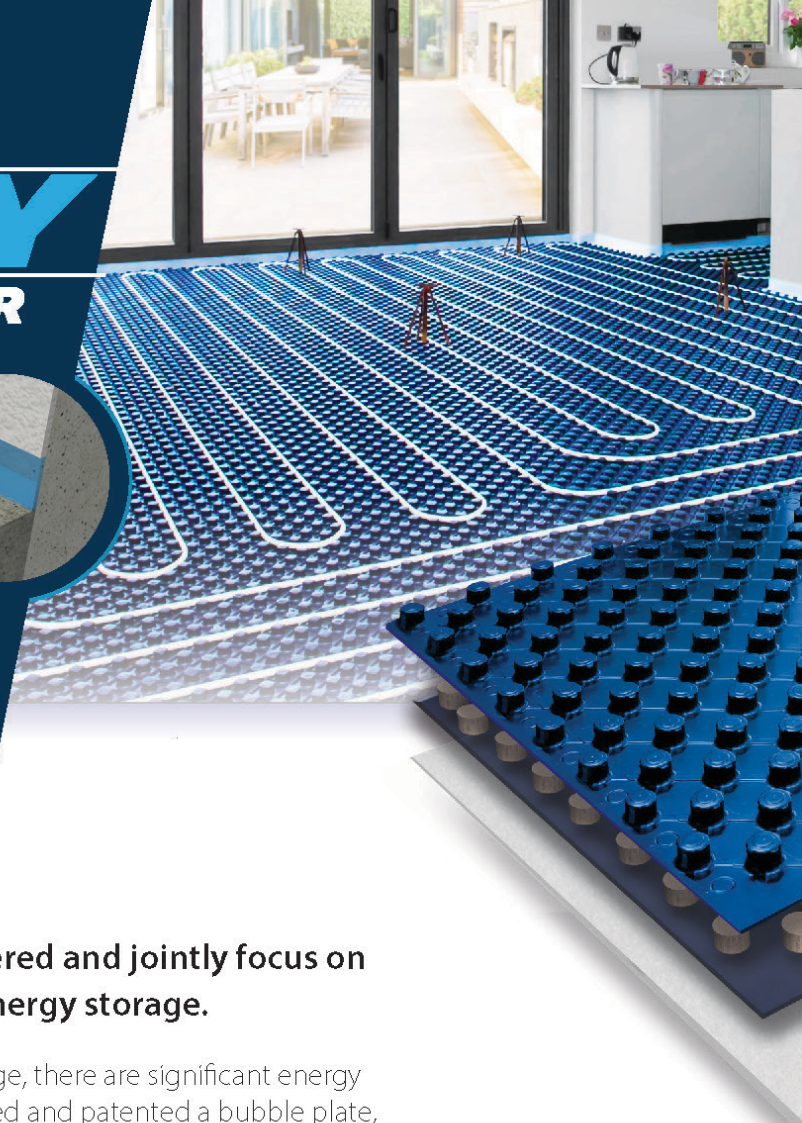
ENERGY+ PCM FLOORHEATING

**“UNDERFLOOR HEATING WITH A SMART
INTRIGUED ENERGY STORAGE”**

ENERGY FLOOR



UNDERFLOOR HEATING WITH INTEGRATED ENERGY STORAGE (PCM)



SST Europe and Orange Climate have partnered and jointly focus on innovative climate solutions with thermal energy storage.

By storing heat and/or cold and releasing it at a later stage, there are significant energy savings in cooling and heating. SST Europe has developed and patented a bubble plate, namely an Energy+ PCM floor heating system. SST introduces this bubble floor under the name Energyfloor and takes care of the production, sales and distribution of this unique product.

HOW DOES ENERGY+ PCM UNDERFLOOR HEATING WORK DURING THE YEAR?

In summer, the house increasingly becomes too hot. The outside temperature rises and there is more solar radiation. By using PCM, which acts as a thermal buffer, the house stays comfortable for longer. During the in-between seasons, we can actually use the sun's heat to recharge the PCM. The stored heat can then be returned to the house at night.

WHAT DOES ENERGY+ PCM UNDERFLOOR HEATING PROVIDE?

PCM meets BENG in a passive way with summer night ventilation. Moreover, it ensures fewer cooling load running hours. PCM also provides significantly fewer heating load running hours, less power to be set up is required by mitigating peaks. The COP of the heat pump improves by running during the day and using solar energy.

WHAT IS PCM?

PCM stands for Phase Change Materials. The most familiar form of PCM is water. Water freezes at 0°C and becomes ice, turning into vapour when it boils. Our PCM is a salt hydrate where the phase change is used to store and release heat. By creating a specific composition, the material is 'programmed' to a desired temperature. For housing we use a melting point of 26°C. By programming the PCM to this temperature programming it, it ensures a constant room temperature of about 21°C



APPLICATION OF PCM FOR CLIMATE CONTROL IN BUILDINGS

The principle of PCM is applied in the ceiling or in the floor.

During the day, excess heat from the room is stored in the PCM. In the evening, this heat is reused. This results in lower energy consumption and a smaller carbon footprint. PCM always works in combination with an energy source. If there is not enough passive heat in the room during the day, the energy source will add this heat. In the evening, if passive discharge (via ventilation) is not possible, it can also be done actively by cooling with water or air. With PCM, you add a large thermal buffer. You make the building heavier by simply adding PCM mass (1 kg PCM $\approx$ 39 kg concrete), this creates a more stable room temperature, increasing comfort. Because you maintain a stable room temperature, the peaks (summer) and troughs (winter) in the room are reduced. This leads to simpler and smaller installations. Moreover, it ensures that the energy source has fewer running hours, which has a positive effect on operations.



WHAT IS ENERGY+ PCM UNDERFLOOR HEATING?

The Energy+ PCM floor heating is an integrated system of PCM and a unique bubble plate with underfloor heating. The PCM material is stored in the bubble plate's studs. The Energy + PCM bubble plate allows heat/cold to accumulate even faster. The floor becomes one big thermal buffer in which energy can be stored and later released

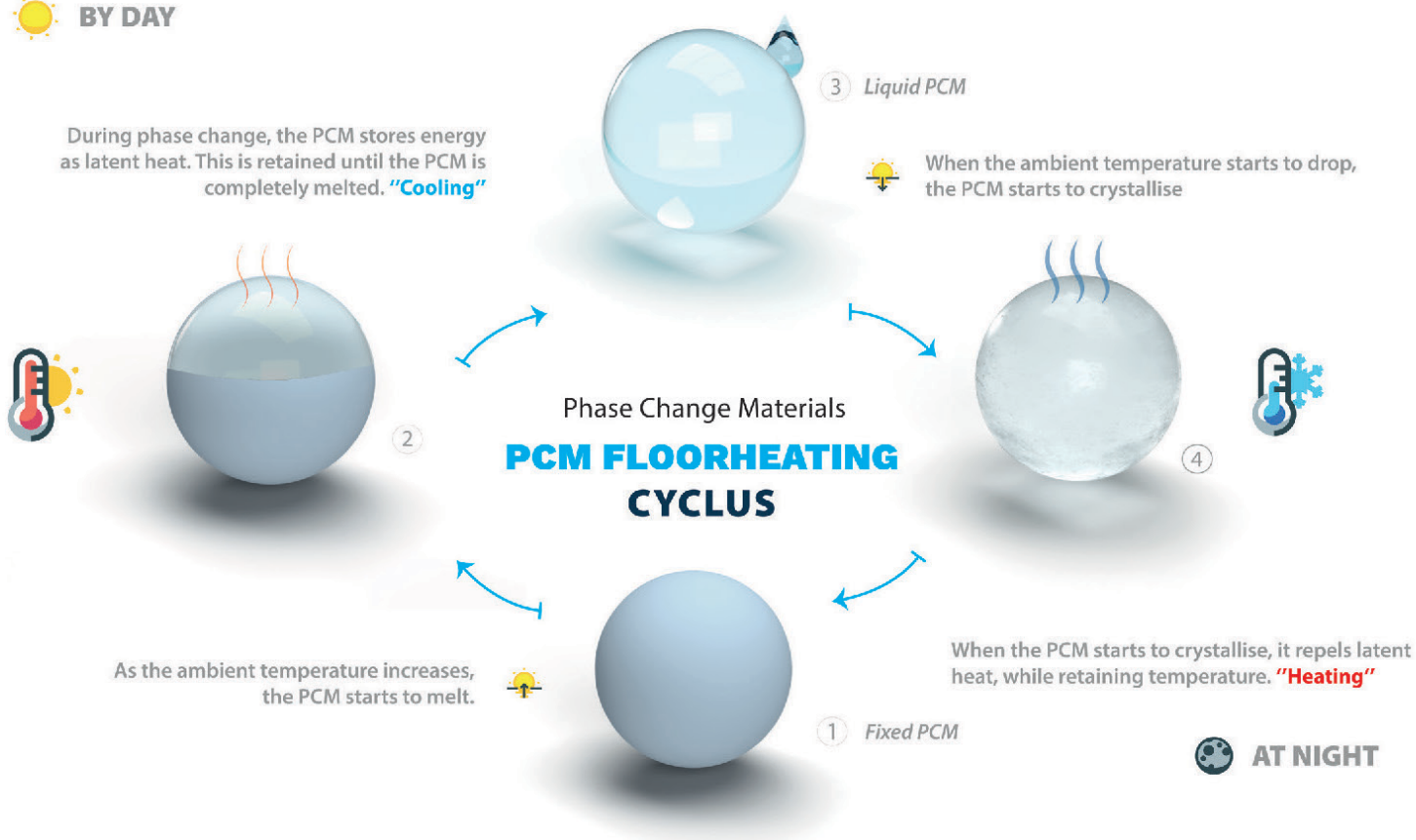
SPECIFICATIONS ENERGY+ STUD PLATE

- Handy size of 1000 x 600 mm
- Easily extendable with click button system
- Closed and impermeable floor through the connection method
- Suitable for 16 mm underfloor heating pipes
- Suitable for any laying pattern
- Pipe distances of 5, 10, 15, 20 and 25 cm
- Available with acoustic or thermal insulation 11, 15, 20, 25 and 30 mm
- Closed PCM stud allowing the stud plate to be cut to size.
- Also available is a stud plate without PCM for expansion in rooms without PCM



BY DAY

During phase change, the PCM stores energy as latent heat. This is retained until the PCM is completely melted. **"Cooling"**



THE BENEFITS

- The new generation of underfloor heating increases living comfort
- Reduces the required heating power requirement by 30-50
- Reduces the required cooling requirement by 30-70
- Realises energy savings of approx. 30% on average
- Through clever combinations, the largest possible CO2 reduction
- Fits within the 'Cradle 2 Cradle' vision
- Suitable for heating and cooling
- A constant comfortable indoor temperature in your home
- Phase transition materials are covered by the EIA, number 210405
- Free cooling in summer with ventilation
- Much less maintenance than a conventional installation.
- The service life of the installation is significantly extended
- Utilisation of electrical solar energy

EQUIVALENCE STATEMENT

Last period, much has been invested to make PCM materials visible in the calculation software for buildings. This has resulted in a declaration of equivalence which was accredited on 30-06-2021 by Bureau CRG under code 20210361GK. It can also be found in the BCRG database under 'PCM'.

Following this approval from the BCRG, it is now also possible to account for PCM in UNIEC 3 software.

This can be done by manually adding the thermal mass of PCM to the building.

This ensures efficient heating and cooling of rooms and reduces energy consumption.



VIEW THE EQUIVALENCE STATEMENT



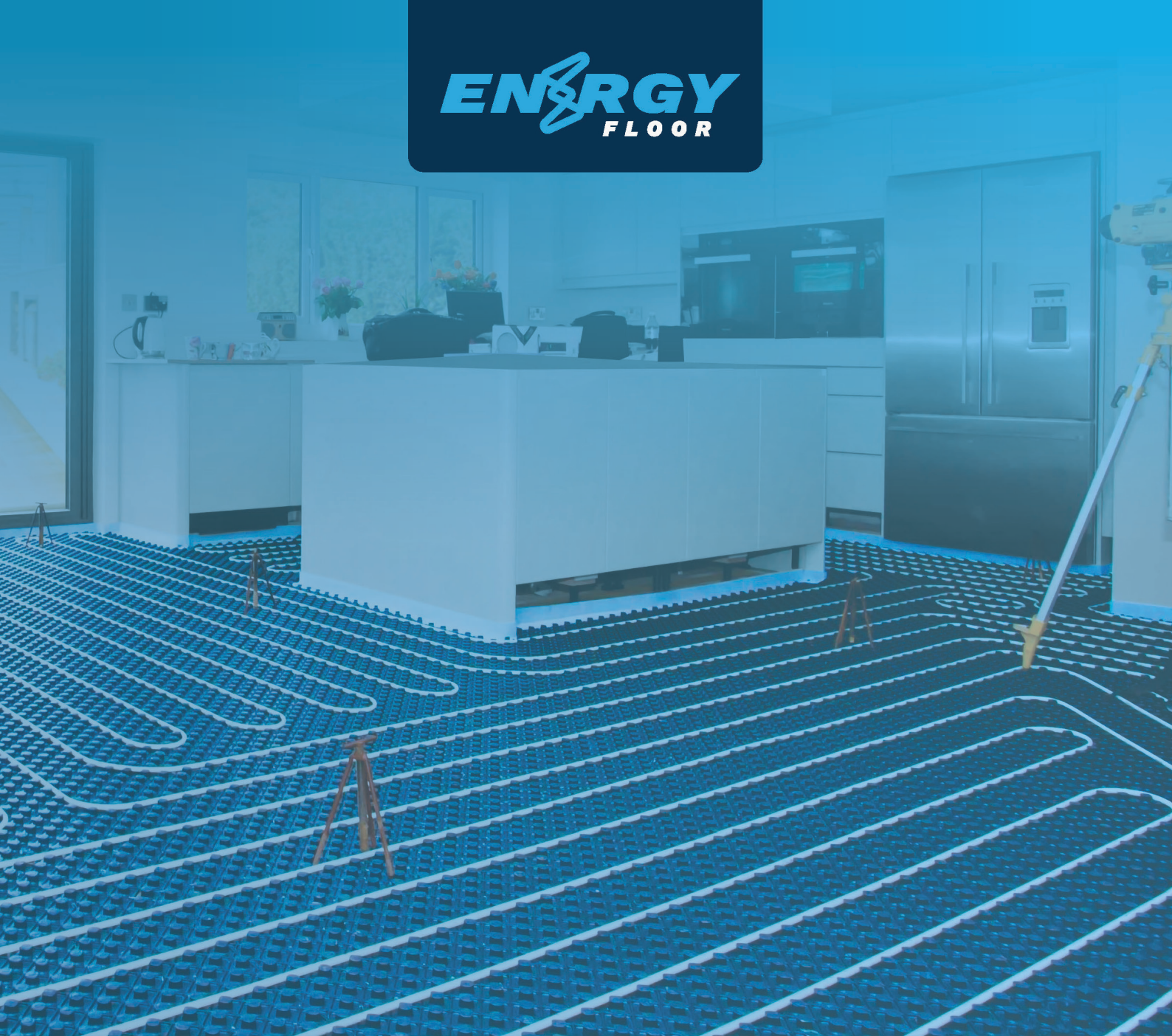
European Patent Pending **EP22020478A-2022-10-03**

Netherlands Patent pending **NL1044428**

German Patent **DE202022105601U1**



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The new generation of underfloor heating

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