





Public Private Partnership

School

Residential development

Community center

Green infrastructure



O M / A R



A combination of old and new

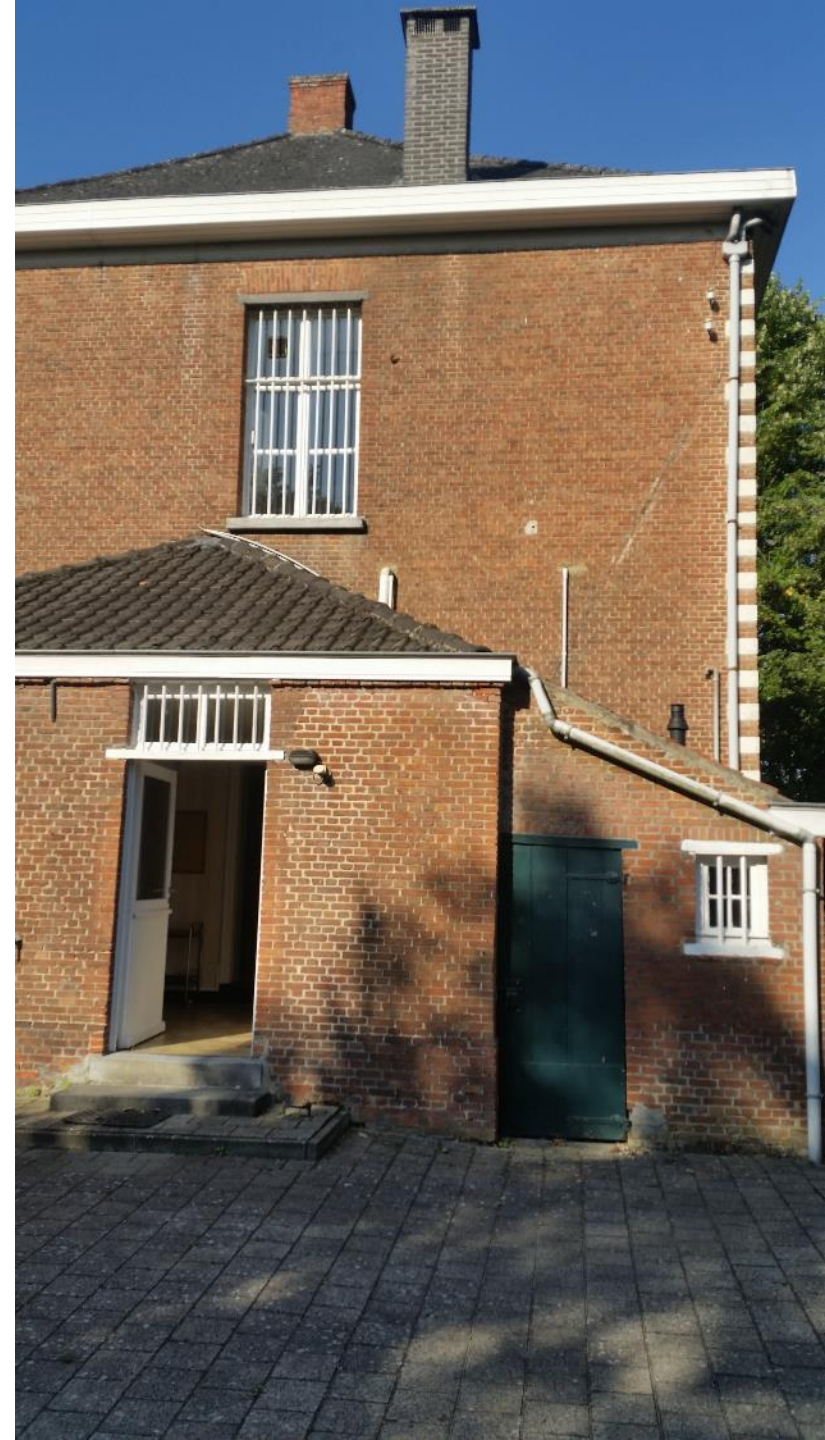
Rectory with high esthetic value
New hall for community services
Perfect match for SOLARISE

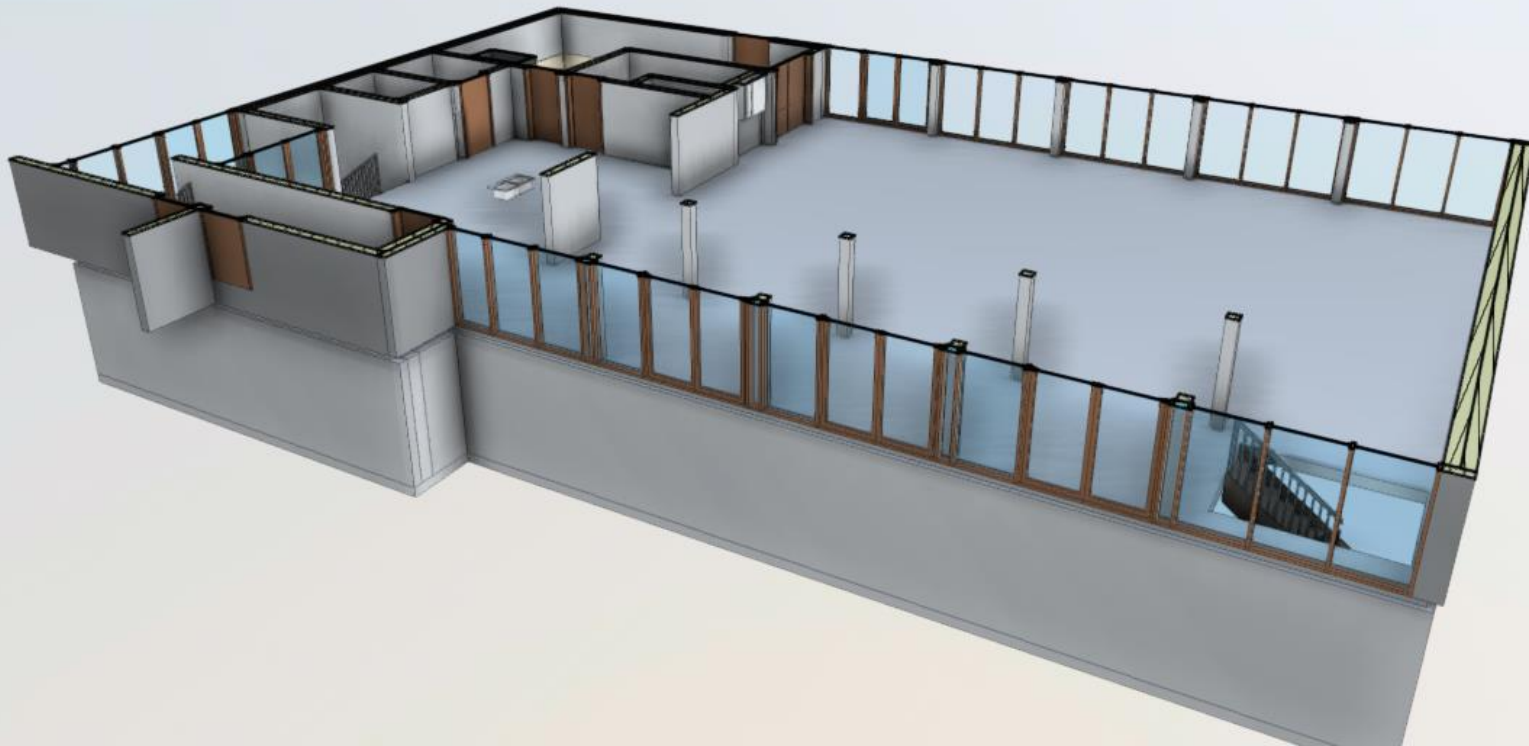
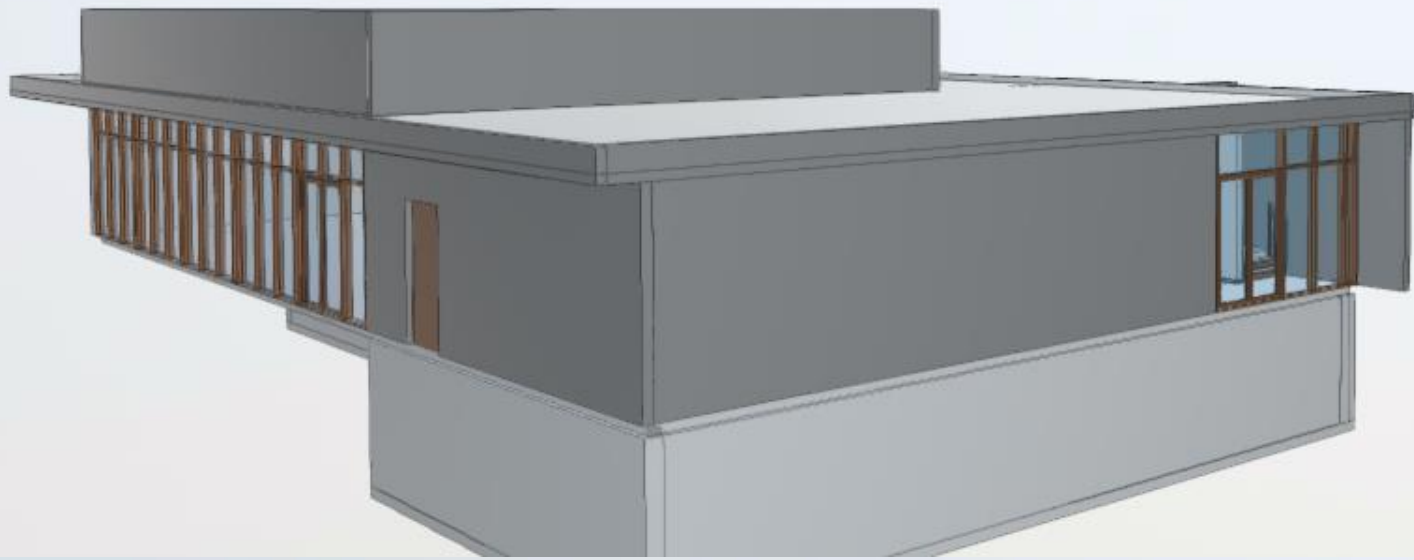


Renovation roof of the rectory

Safeguard esthetic value

Caption of solar energy

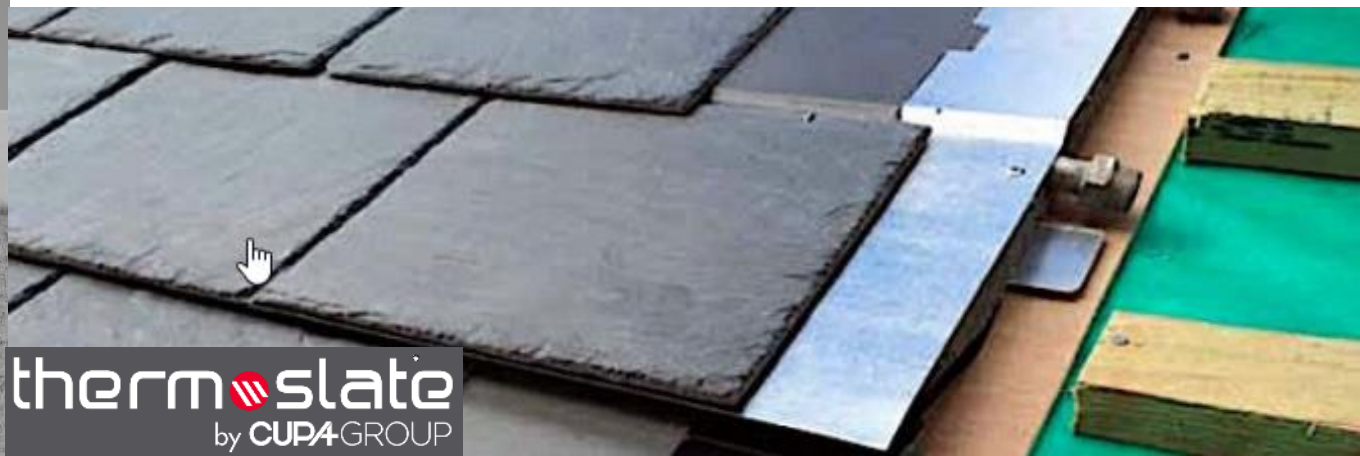




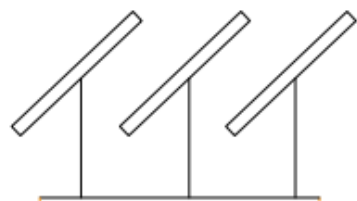
Innovative combination

Sun collector Thermoslate

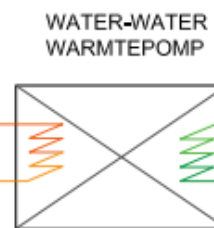
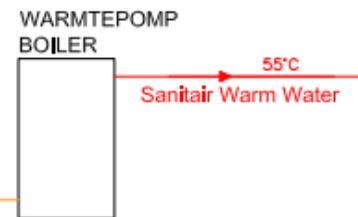
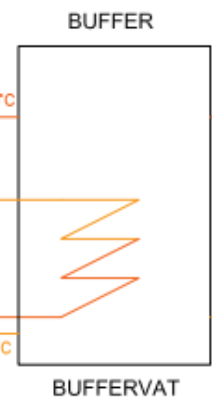
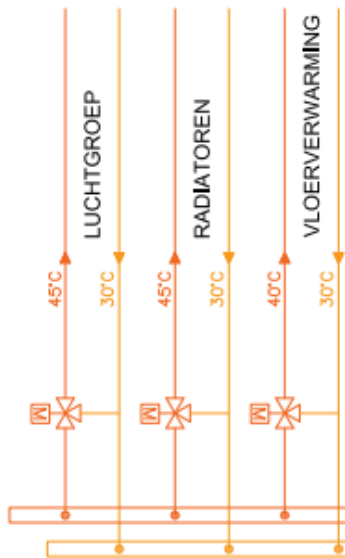
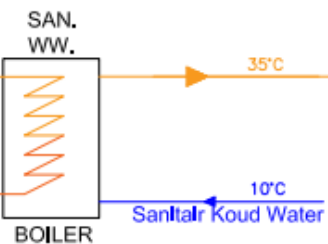
Ice buffer system Viessman



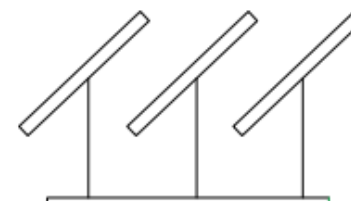
SAN.WW. EN ONDERSTEUNING BUFFER
ZONNEPANELEN OP DAK PASTORIJ



keuze ifv de
gewenste
temperatuur



ZONNEPANELEN IJSBUFFERSYSTEEM



keuze ifv de
gewenste
temperatuur



SOLARISE

Viessmann

Ice buffer system

ERIK DEEN
Sales- and Project Engineer

Viessmann Belgium BV

Ice Buffer System

WHY?

What if:

There is a demand for heating:

Optimal use of renewable energy

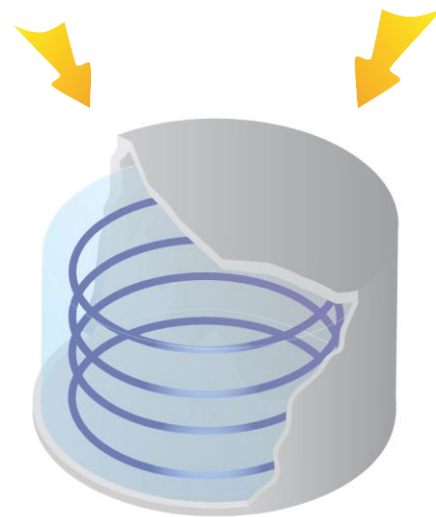
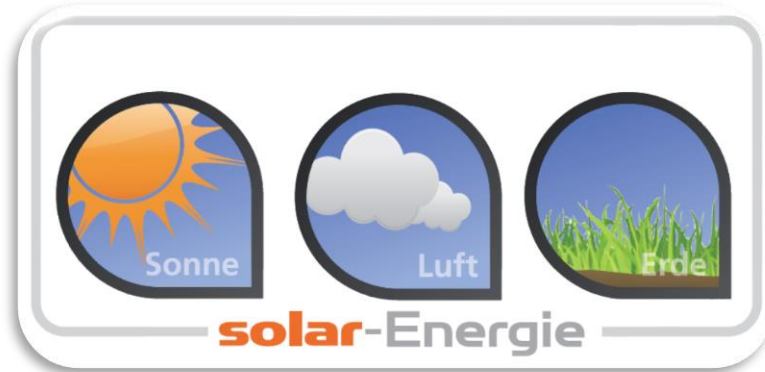
Important cooling load

Drilling impossible, not allowed or very difficult (expensive)



Ice buffer system

*A combination of **5 regenerative** energy sources
Guarantees a stable source the whole year long*



Energy supply to the system

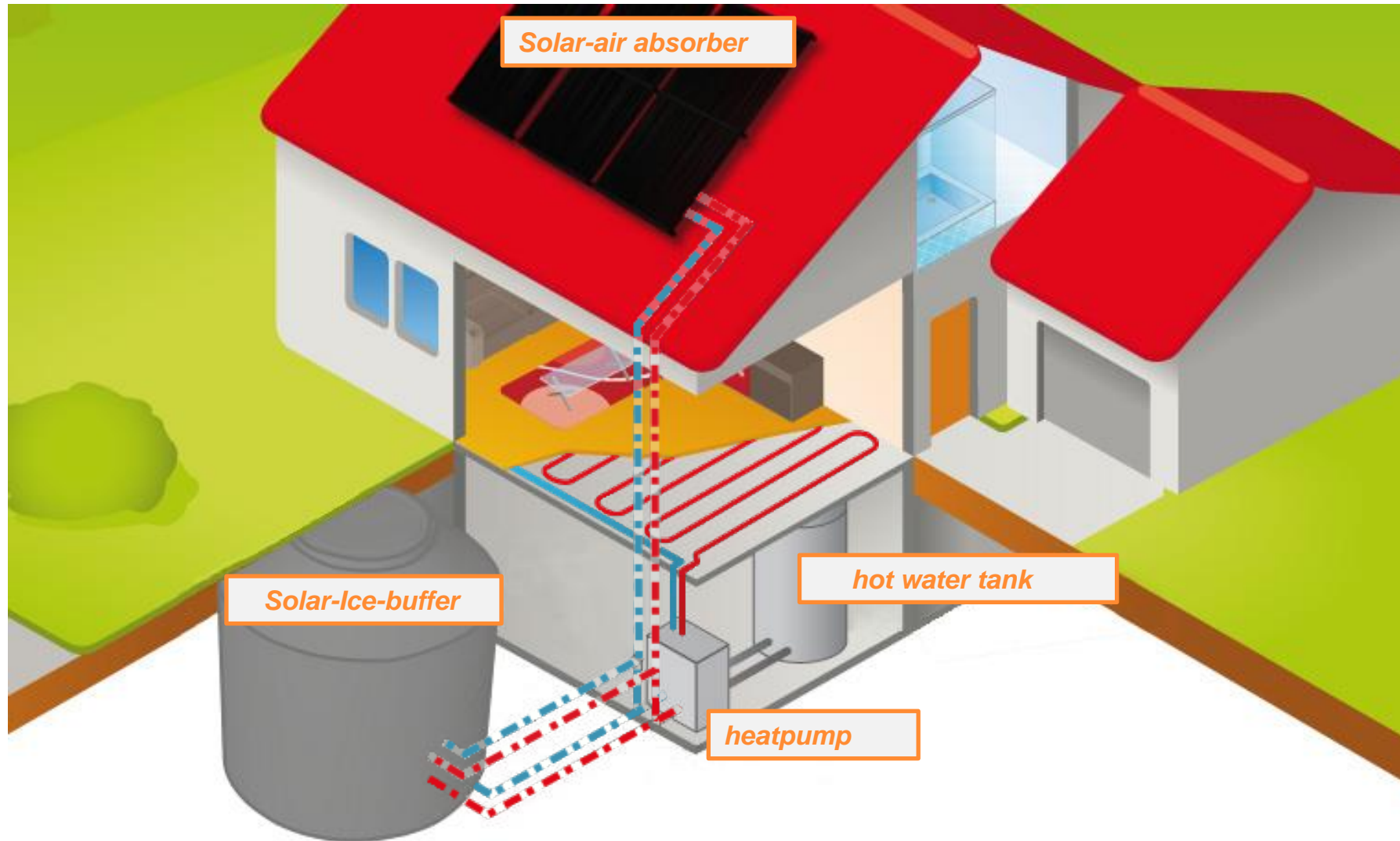
- Solar radiation Solar-air absorber
- Ambient air Solar-air absorber
- Earth External surface ice buffer

Energy use without external energy supply

- Water Palpable heat
- Ice Latent heat / cristallisation heat

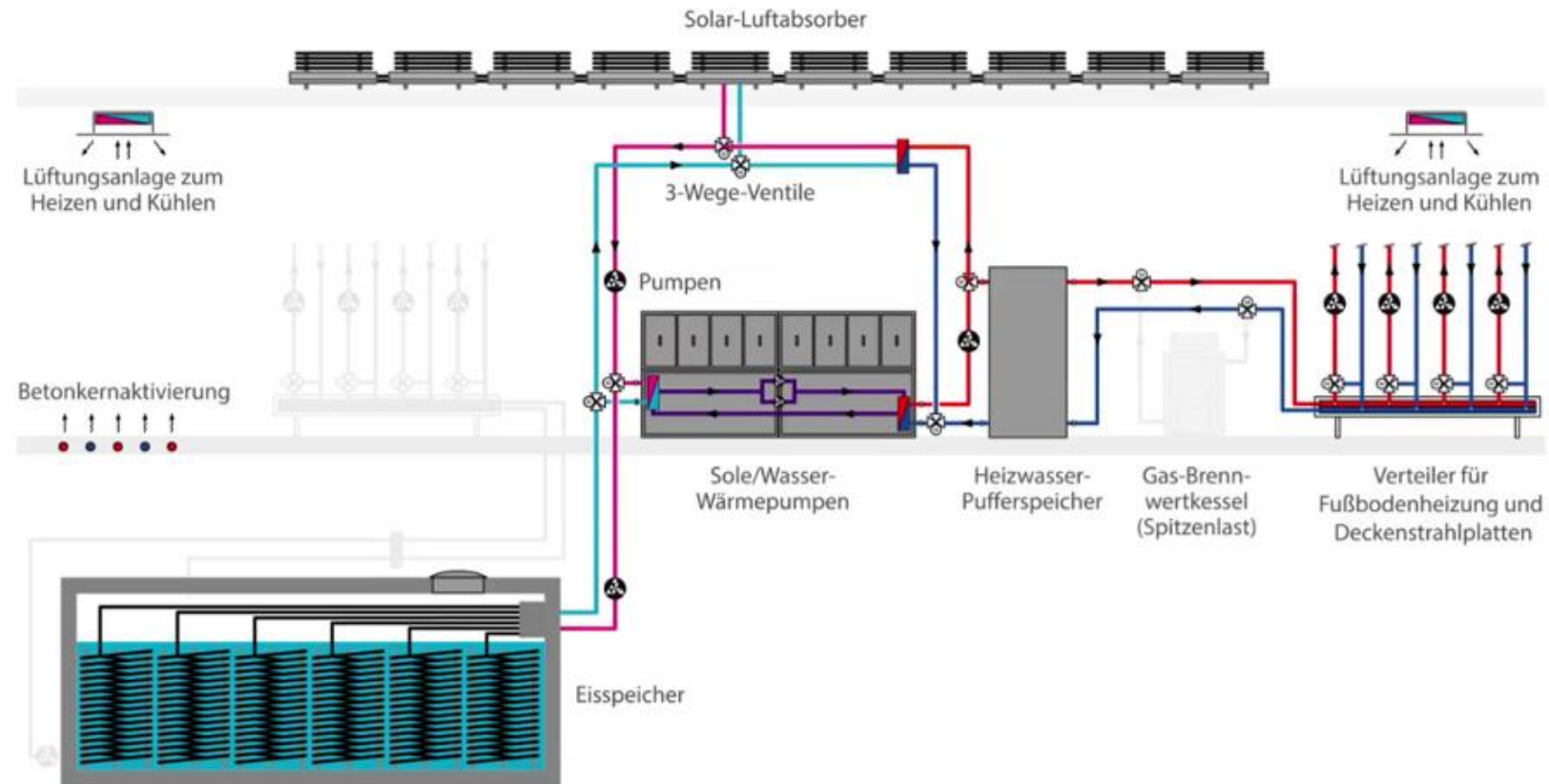
Ice buffer system

Components of the Ice Buffer System / 3 different functional modes



Ice buffer system

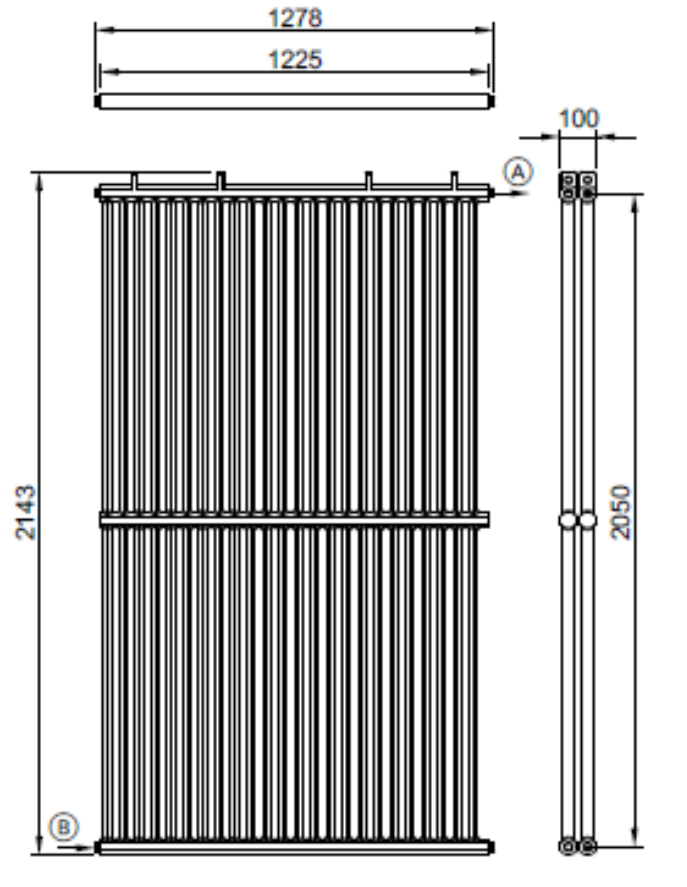
Larger installations: hydraulic diagram



Ice buffer system

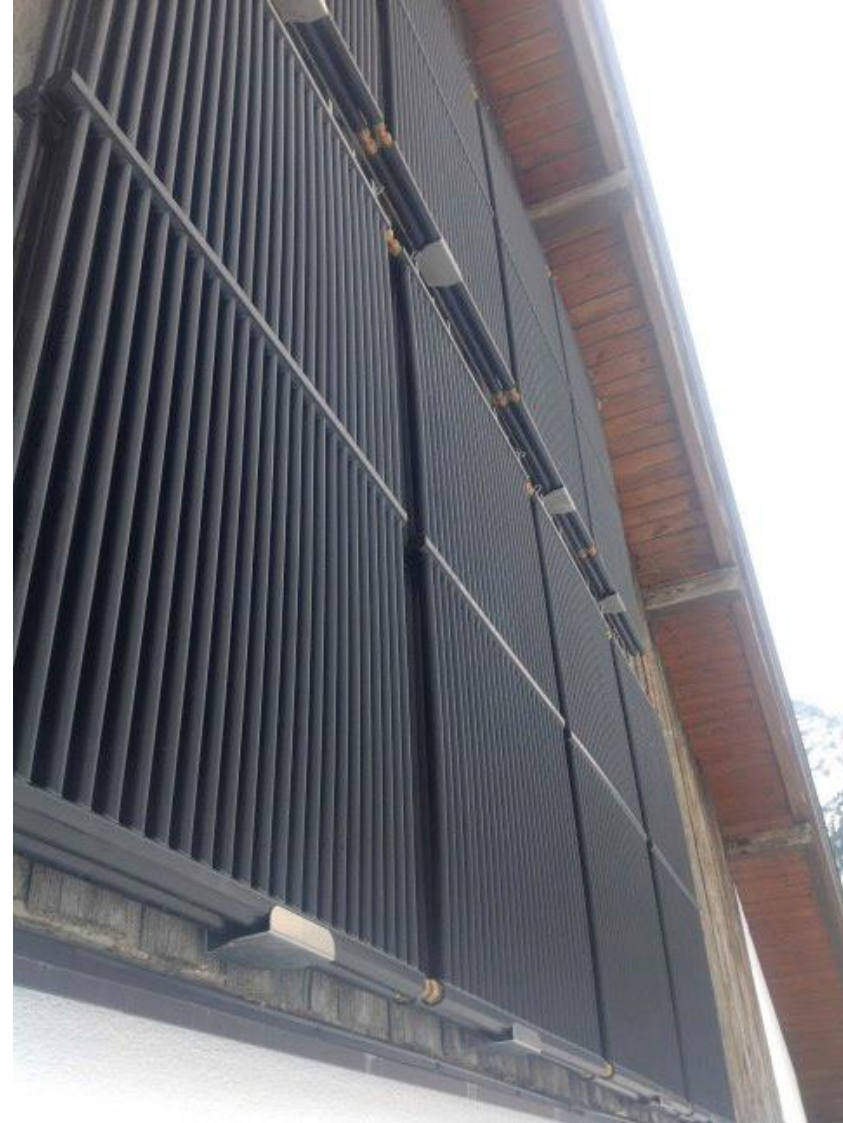
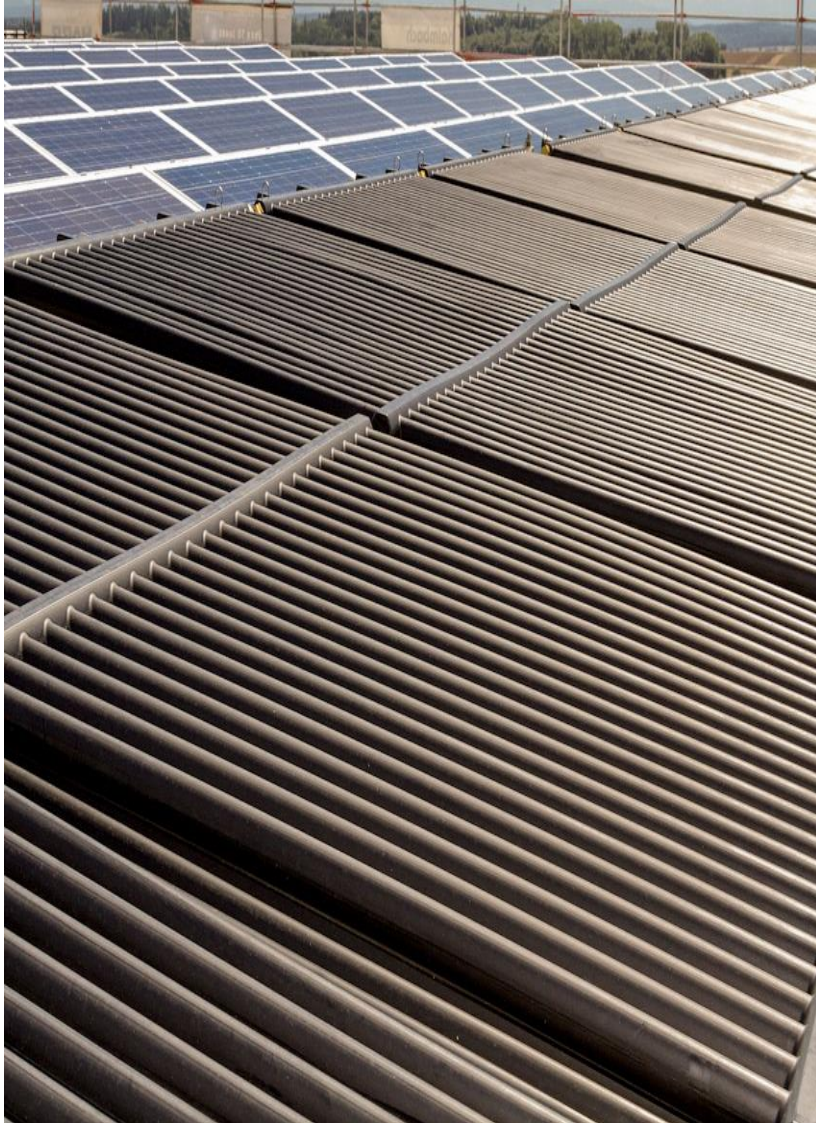
Components of the Ice Buffer System / Solar – air absorber

Solar-air absorber



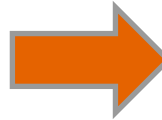
Ice buffer system

Components of the Ice Buffer System / Solar – air absorber



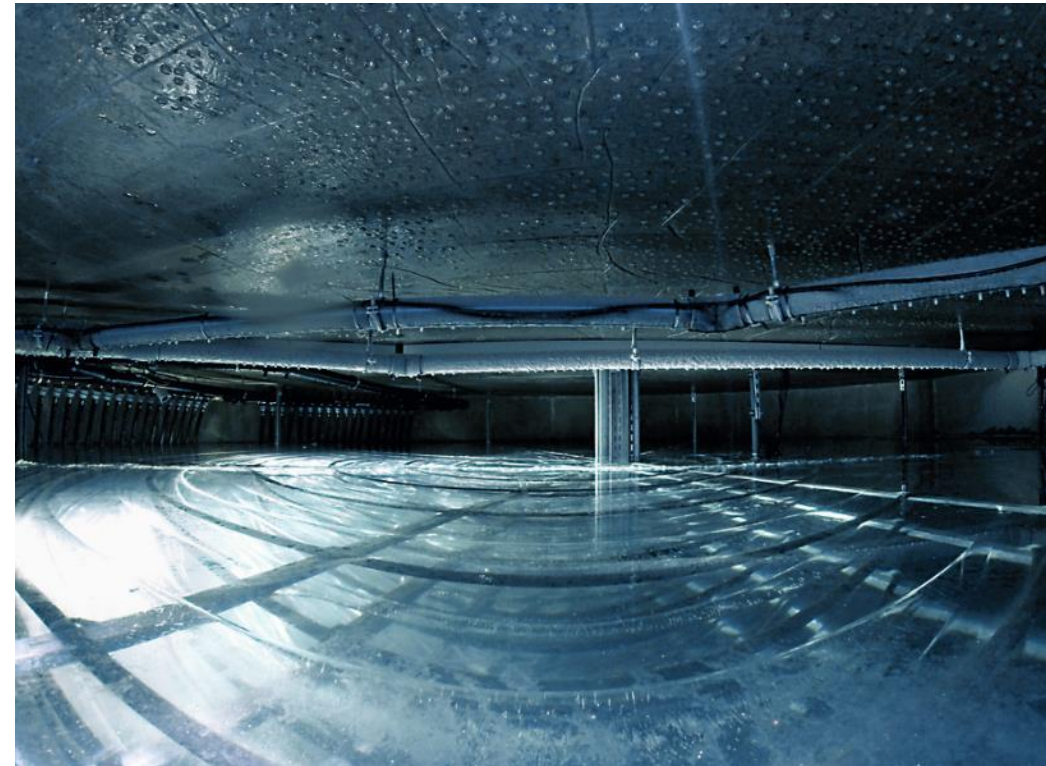
Ice buffer system

Components of the Ice Buffer System / Solar – air absorber



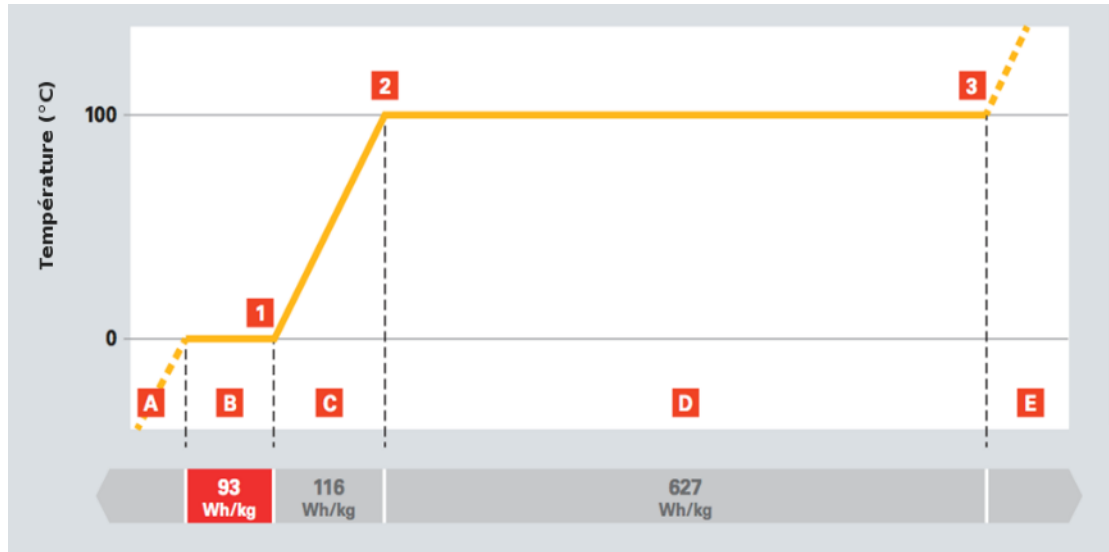
Ice buffer system

Components of the Ice Buffer System / Ice buffer



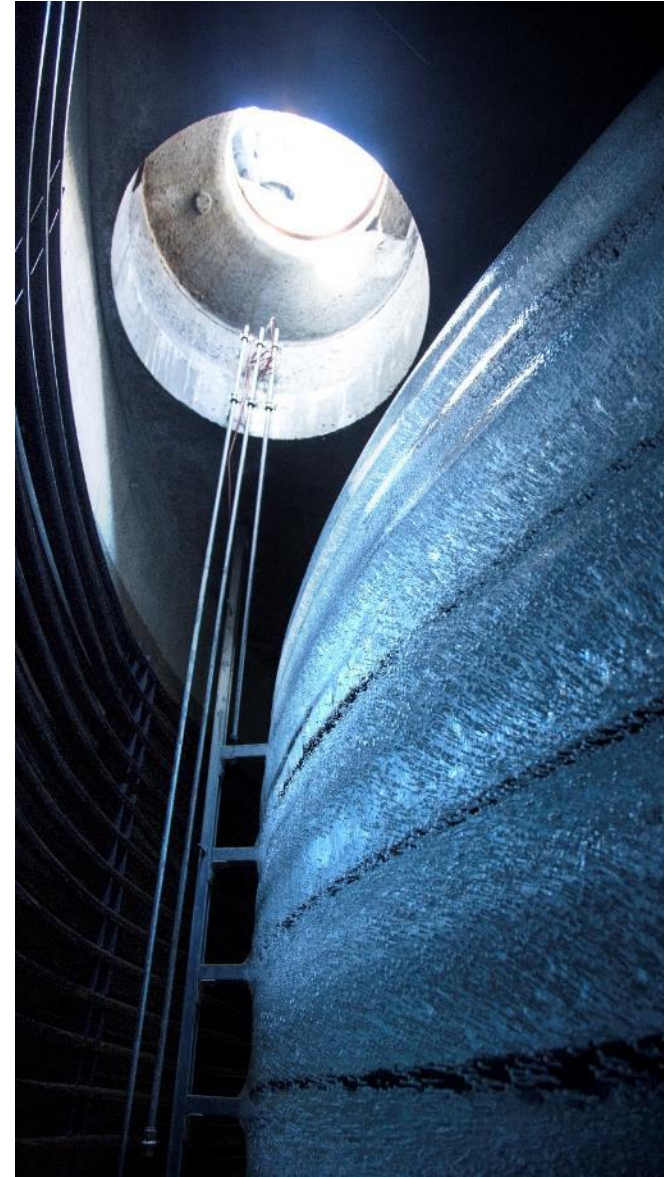
Ice buffer system

Components of the Ice Buffer System / Solar – air absorber



1 = freezing point
 2 = boiling point
 3 = vapour saturation point

A = ice
 B = ice + water
 C = water
 D = water + vapour
 E = vapour



Ice buffer system

Components of the Ice Buffer System / Heatpump

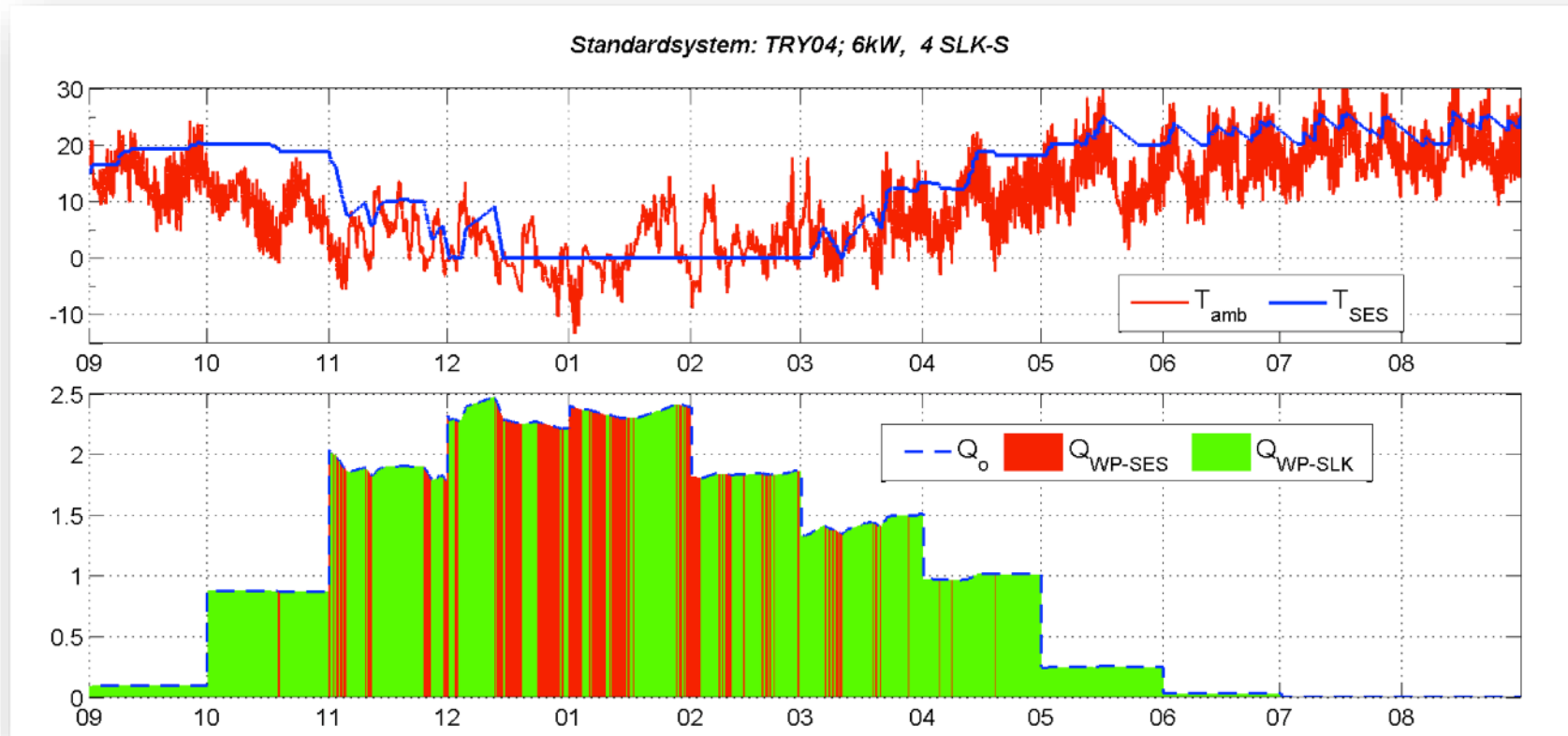


Standard ground /water heatpumps with
electronic expansion valve



Ice buffer system

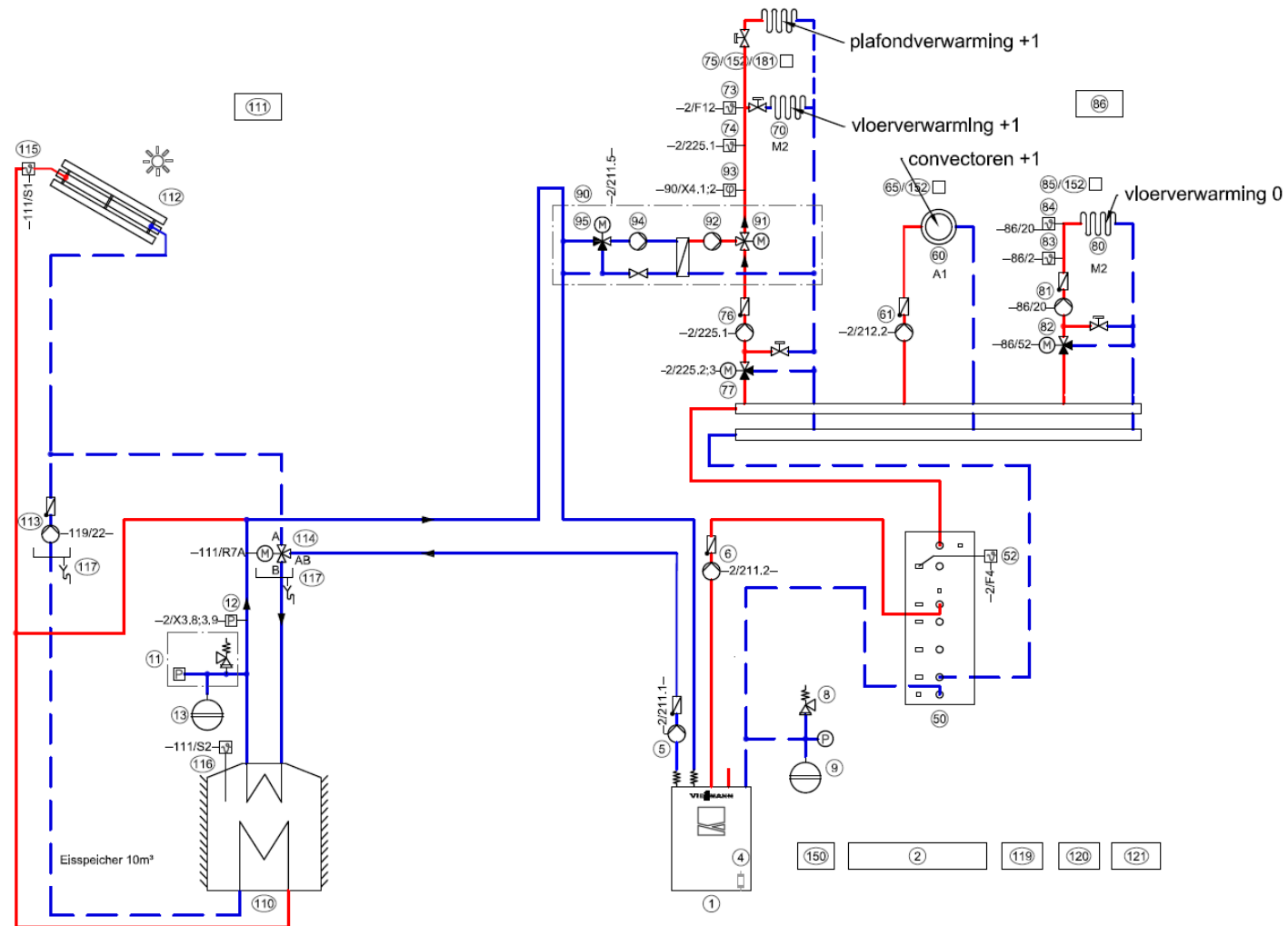
Monitoring results.



The temperature of the ice buffer stays at 0° constantly from December till March.
 And still, **about 65%** of the energy is delivered by the solar – air absorbers (green, > 0°C)
Only 35% of the energy stems from the ice buffer (red, = 0°C)

Ice buffer system

Design and dimensioning



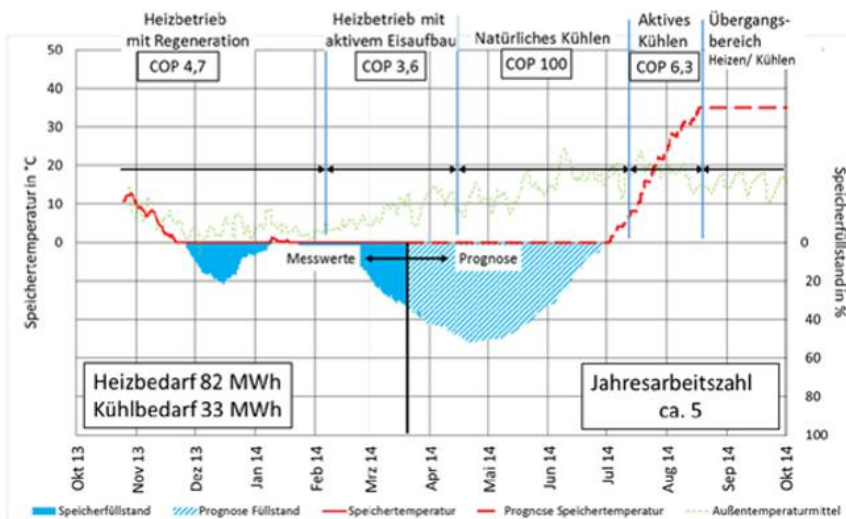
Ice buffer system

Design and dimensioning

- Dimensioning of components in function of heating and cooling load.
- Set the control as intelligently as possible:
 - When do we get heat from ice buffer?
 - Work to ideal temperature at the end of winter to be able to cool sufficiently in summer
 - Where do I use / store the captured ambient heat: source WP / ice buffer / CV buffer?
 - Monitoring and adjustment

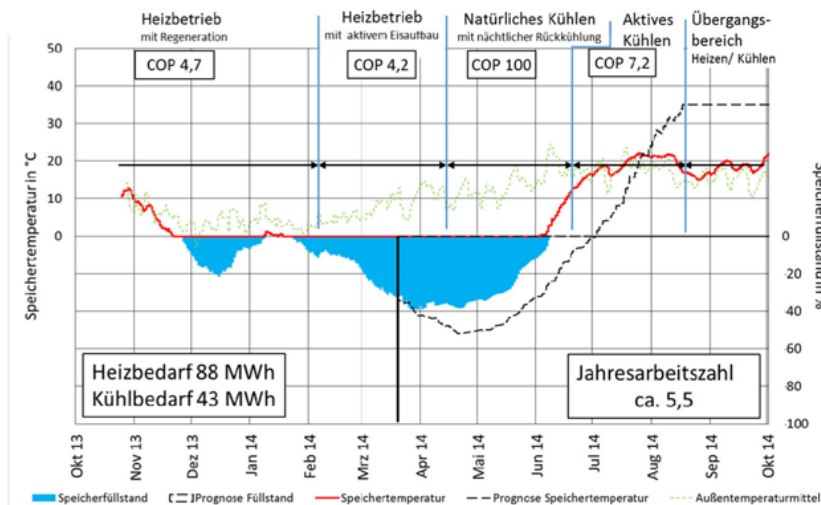
SCHNEPF – DAS KONZEPT

Jahreszyklus Eisspeicher – Prognose 2014



SCHNEPF – DAS KONZEPT

Jahreszyklus Eisspeicher – tatsächlicher Verlauf 2014



Thanks for your attention!