

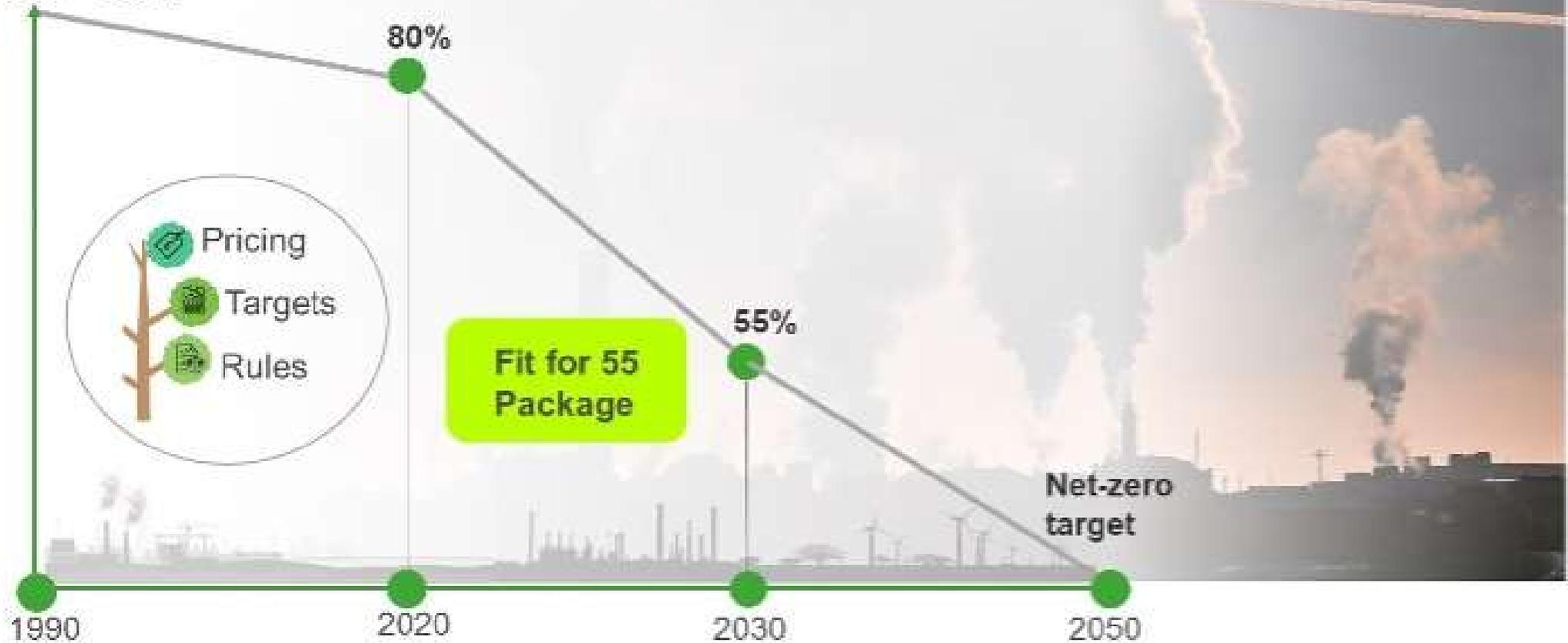
Solar thermal and its application

Roger Hackstock

Verband Austria Solar

EU Target „Fit for 55“

Carbon Emissions
Reduction Targets
1990 = 100%



Target for Renewable Heat: +1 % per year 2021-2030

(+0,8 % per year 2021-2025, +1,1 % per year 2026-2030)

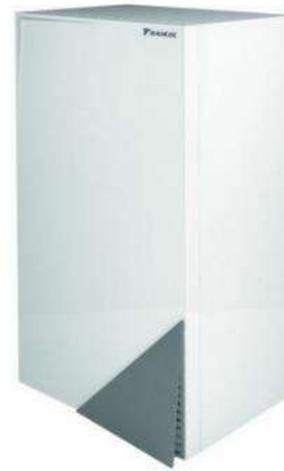
Solar Thermal



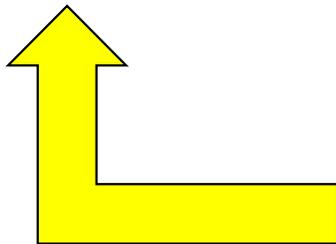
Biomass



Heat Pump



District Heating



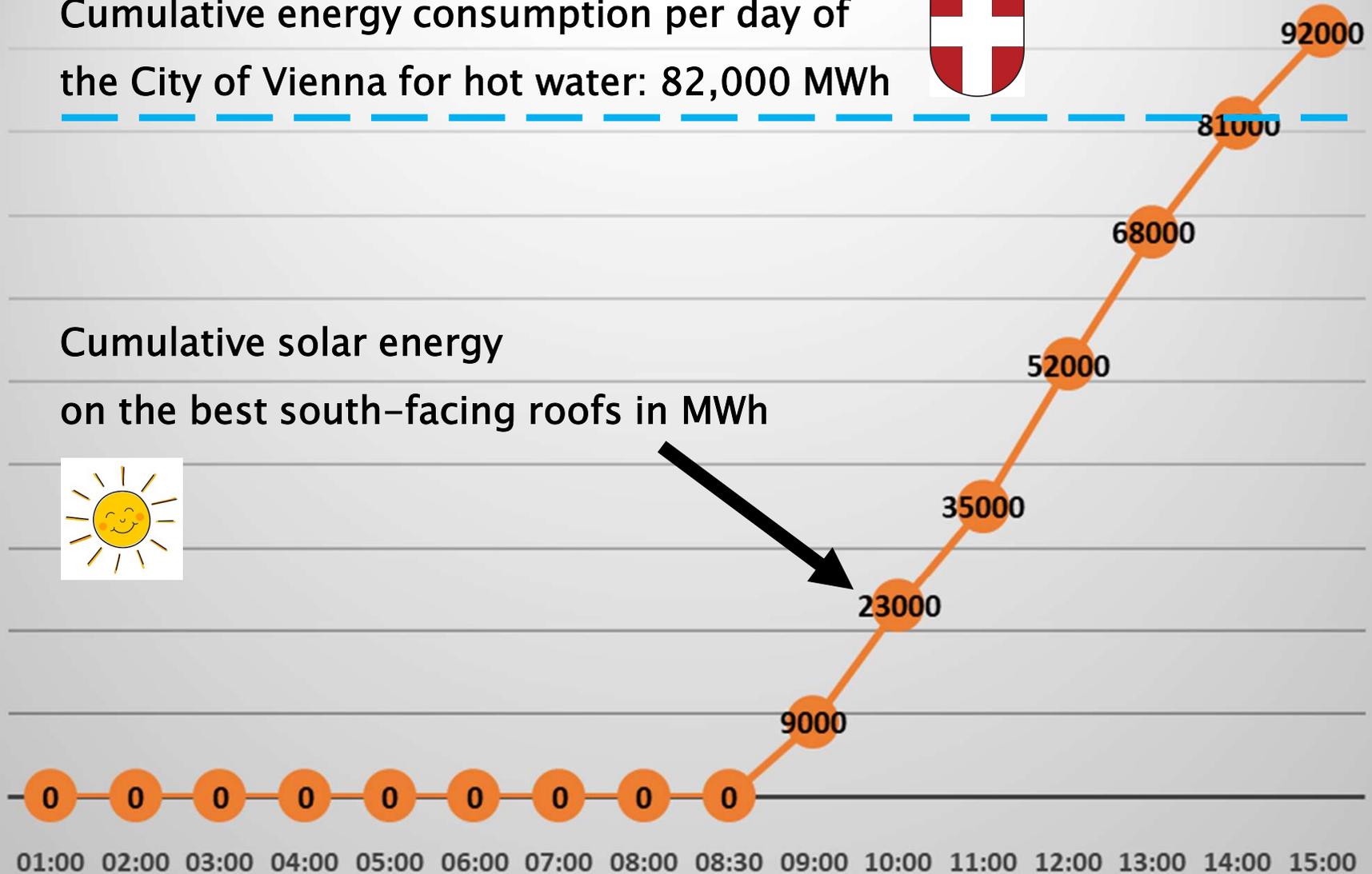
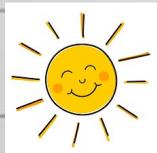
Underestimated option in all cities

Duel with the sun, May 9th 2003

Cumulative energy consumption per day of
the City of Vienna for hot water: 82,000 MWh



Cumulative solar energy
on the best south-facing roofs in MWh



Solar thermal applications



Domestic houses



Apartment buildings



Solar process heat

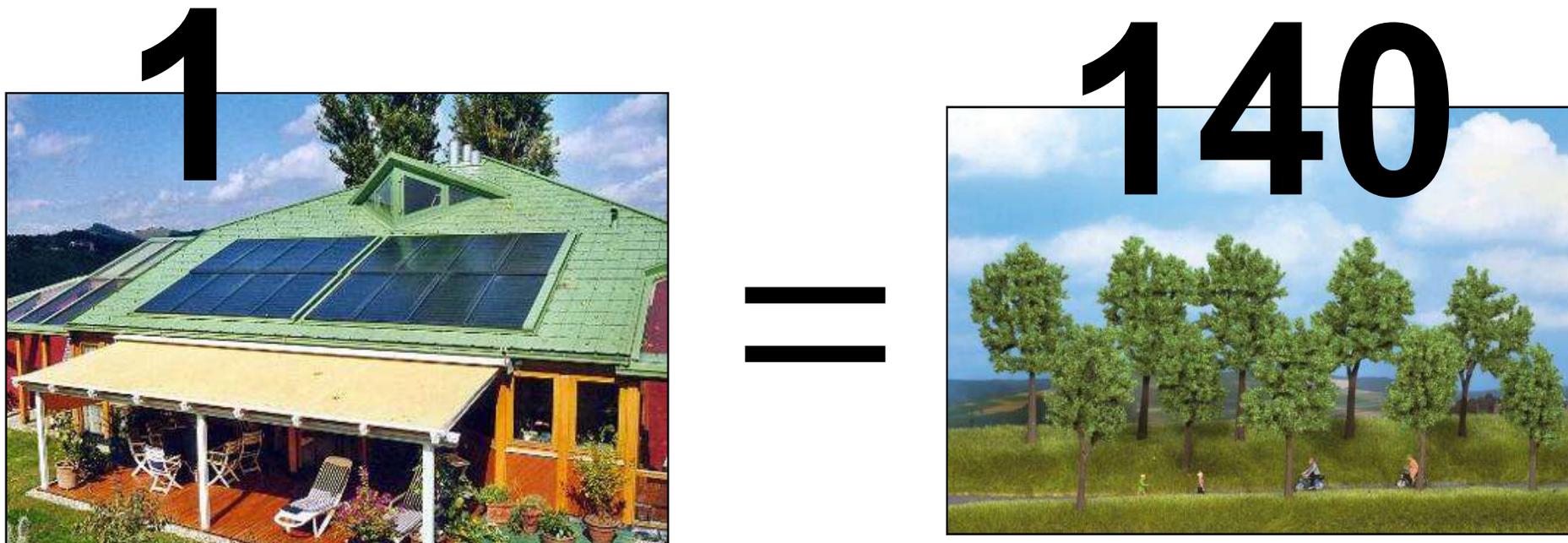


Solar district heating

Solar thermal in green buildings - private



Less than 1 € per day
heating costs



**Every domestic solar system for heating protects
the climate like 140 newly planted trees!**
→ a tree absorbs around 14 kg of CO₂ per year ←

Solar thermal in green buildings - commercial



20 kW heat (30 m² collector)
Multifamily city building



100 kW heat (144 m² collector)
Business building



680 kW heat (970 m² collector)
Housing estate

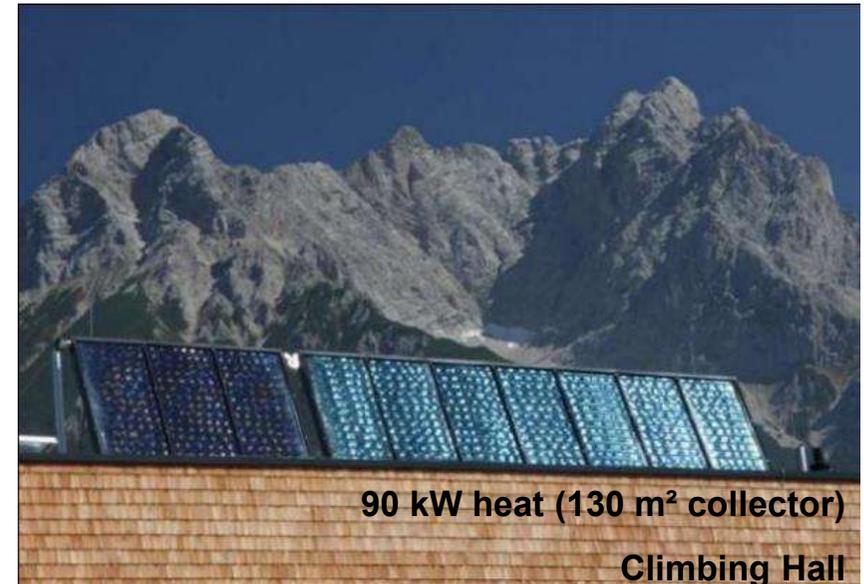


1.500 kW heat (2.150 m² collector)
Urban development area

Solar thermal in green buildings - commercial

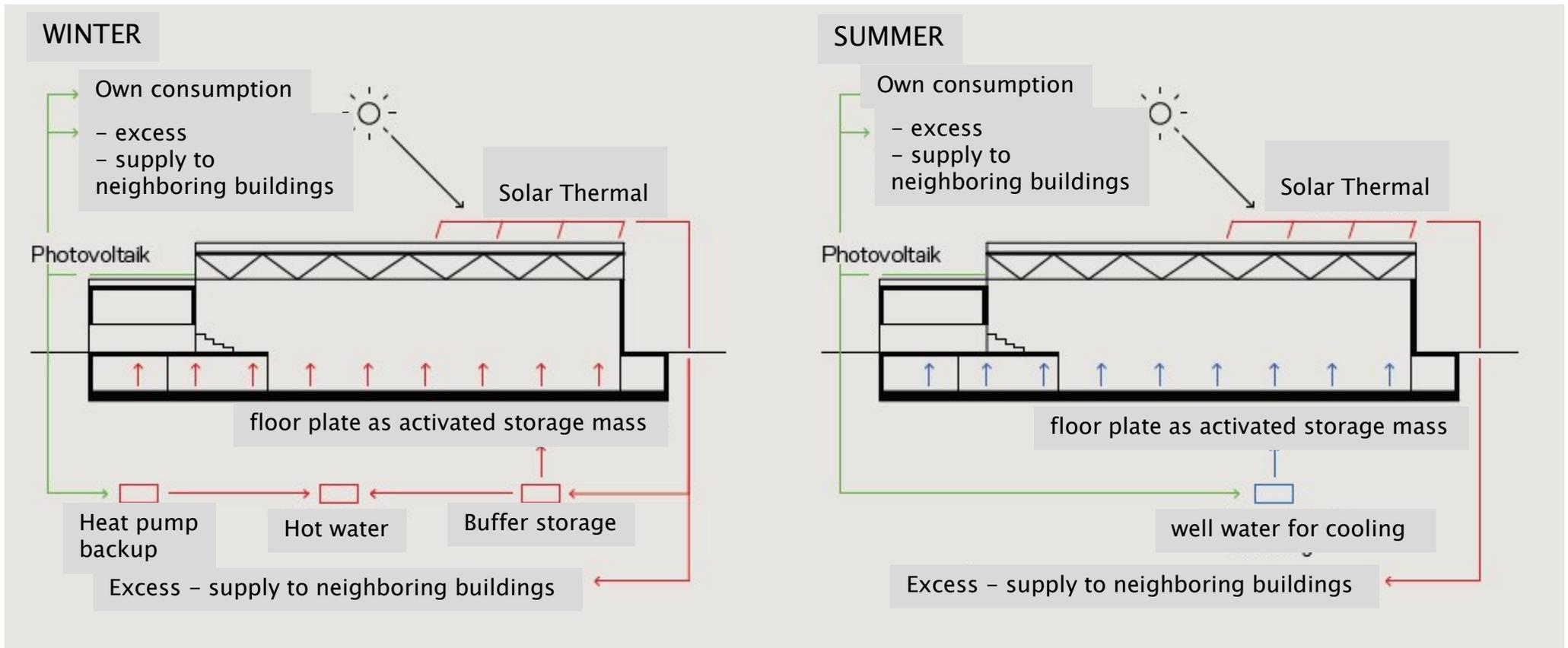


Solar to the max



100 % solar fraction
no additional heating

Solar to the max – how it works



Solar Thermal Renovation

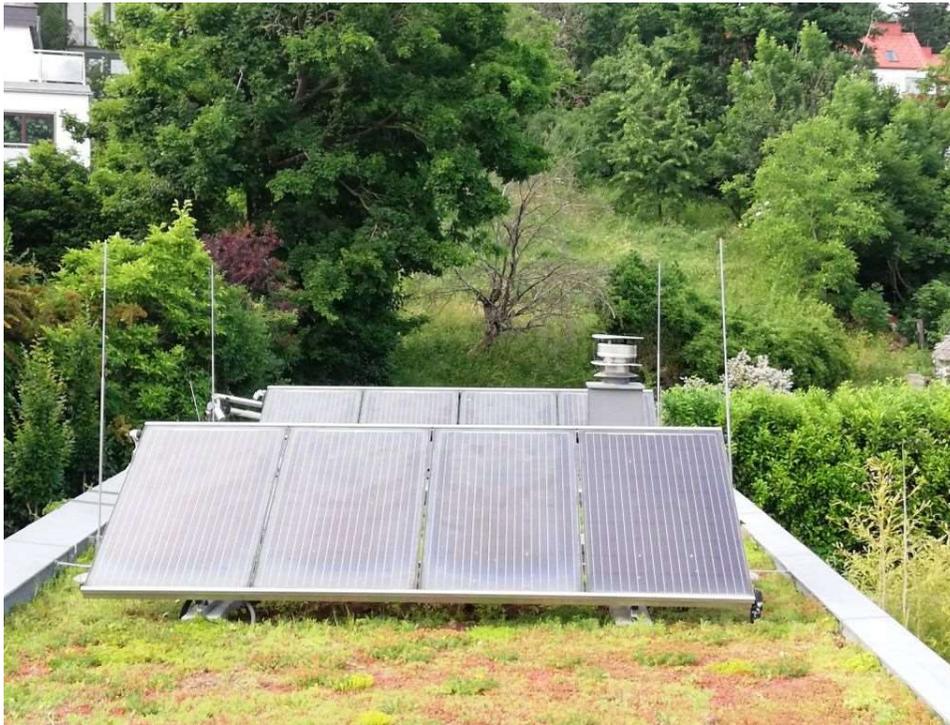


Renovating a city block with solar thermal and geothermal, solar helps for thermal regeneration of geothermal probes

Solar Thermal Renovation



Renovating a multifamily house with solar thermal and district heating after gas explosion



Solar Energy Handbook

Guidance on Combining Solar Technology with Green Roofs & Vertical Greening Systems

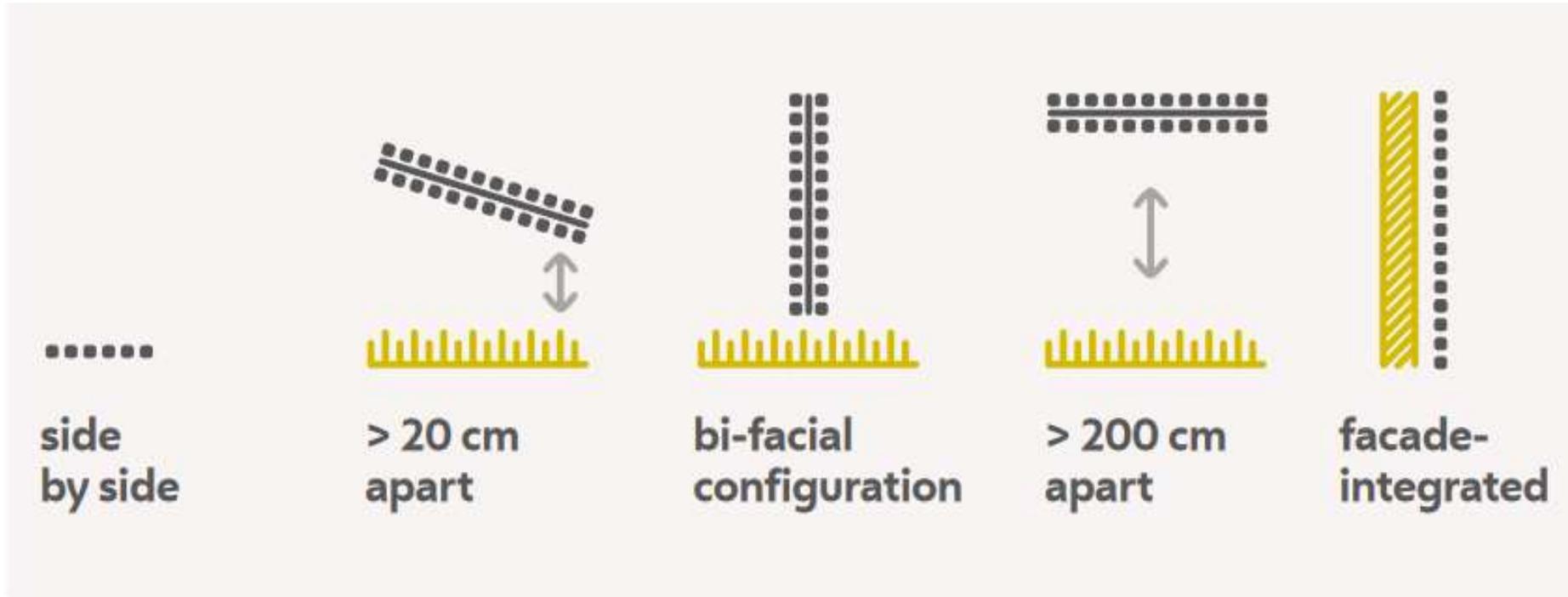


City of Vienna | Energy Planning



Solar Technology with Green Roofs

How it works...



Example Vienna: Only 0.1 km² of 21 km² of very suitable roof areas used for solar heat (0.5 % of potential)



Suitability of Viennese roof areas for solar energy use

Any questions...?

