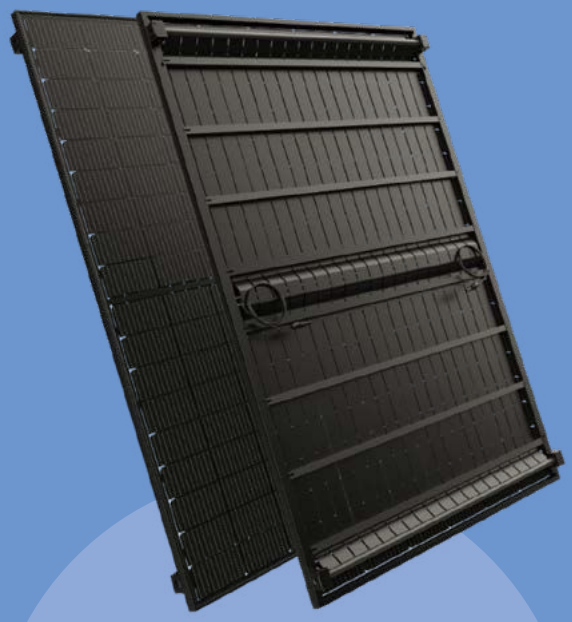
Our solar panels, all your energy

Dualsun SPRING4 hybrid panel



Max temperature at stagnation (no circulation) = 65°C, same as a PV panel.

What is a hybrid panel? PVT?

A hybrid panel (PVT) is a 2-in-1 innovation that converts the solar energy into both electricity (PV) and heat (T) in the same panel.

The front of the Dualsun hybrid panel SPRING4 is a high-quality and efficient TOPCon, bifacial, glass-glass PV panel.

The back of the hybrid panel consists of a robust heat exchanger in aluminum (6 bar working pressure) which recycles the heat losses from the solar cells, but as well extracts a lot of energy from the surrounding air, like an air-to-water heat pump or dry cooler, however noiseless and maintenance free.

DualBoost: With hybrid panels you get up to 15% more electricity than with PV panels due to the cooling.

FLASH: Complete with matching FLASH TOPCon PV panels.

Unique warranty: Covering both product and labor cost support.

Hot water	PV x 2	Solar electricity and preheating of hot water directly from the hybrid panels. Provides **2 times more solar energy** than PV.
Pool heating	PV x 3	With hybrid panels, you can cover the entire electricity and heating needs for your pool. Increases solar energy yield **3 times** versus PV.
PVT heat pump	PV x 6	PVT heat pump means that a liquid-to-water heat pump (ground source heat pump) extracts the energy from the hybrid panels on the roof instead of boreholes. The energy yield from roof surfaces become **6 times higher** than with PV.
Solar-optimized ground source heat pump	PV x 6	The combination of hybrid panels and ground source heat pump is often called for "match made in heaven". Provides **6 times more solar energy from the roof surfaces compared to PV.**

On the back, you can read in more detail about different areas of use for hybrid panels in the Nordic climate, as well as receive information on how to move forward with your project.

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Main applications for PVT in the Nordics

A. High energy & climate goals
Annual yield: 700–1200 kWh/m²

- Improve efficiency and power & energy coverage for ground source heat pumps
- Reduce need of peak power & energy
- Optimized utilization of roof surface

B. Optimized geoenergy storage
Annual yield: 1000–1500 kWh/m²

- Reduce borehole storage cost (number or depth)
- Limited space for borehole storage
- Passively or actively charge seasonal thermal energy storage

C. Cold boreholes
Annual yield: 1100–1800 kWh/m²

- Avoid additional drilling
- Recharge for improved efficiency but also power & energy coverage for ground source heat pumps
- Reduce need of peak power & energy

D. PV-T heat pump
Annual yield: 800–1600 kWh/m²

- Liquid-to-water heat pump with PV-T panels as thermal source instead of boreholes
- Quiet alternative to air-to-water heat pumps or dry cooler
- When large summer thermal demands
- Minimize consumption of district heating, gas, electricity or biomass
- Possibility to upgrade with geothermal storage at a later stage

E. District heating and Thermal energy networks
Annual yield: 1000–1600 kWh/m²

- District heating (3rd & 4th gen) - Optimize fuel cost and CO2 with locally produced low-cost renewable energy
- 5th generation thermal networks (i.e. Termonet)
- With or without boreholes

F. Direct heat from PVT panels
Annual yield: 350–450 kWh/m²

- Pre-heating of tap water

Reference project

On LinkedIn- Dualsun Nordic, you can read about major Nordic projects that have been completed in recent years. Also on the website https://dualsun.com/se/ there are interesting reference projects from all over the world. Dualsun's panels have been installed in more than 40,000 projects since establishment in France in 2010.

More information?

- If you are an end-customer contact your heat pump installer, solar panel installer or energy consultant for more information and quote on hybrid panels.
- If you are an installer or energy consultant and need more information:

Dualsun Contact support.nordic@dualsun.com or visit FAQ at academy.dualsun.com