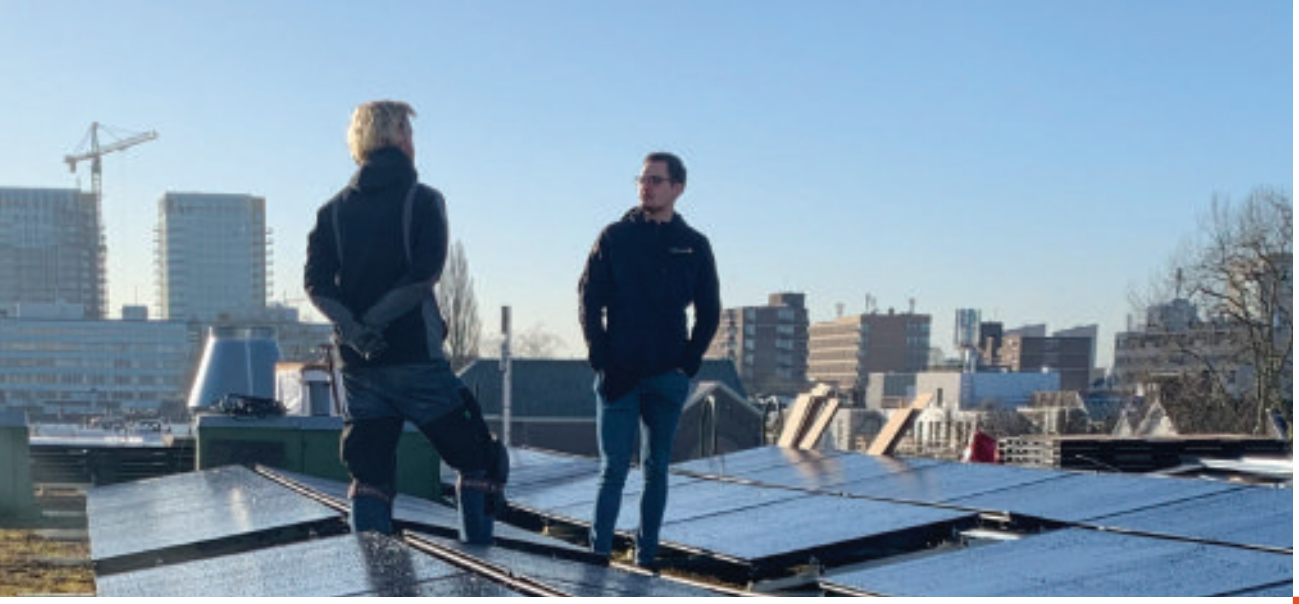


triple solar

Cobouw Awards
Innovatie

PVT heat pump 3.5
PVT heat pump panels M4

Introduction

Triple Solar develops smart, affordable and maintenance-free systems to generate sustainable energy. We invented the PVT heat pump panel and the PVT heat pump. These allow a home to be supplied with heat, cooling, hot tap water and electricity in a sustainable way. Completely without, or with considerably less fossil fuel. In all seasons, 24 hours a day. Thousands of homes have already been fitted with a Triple Solar system.

Triple Solar stands for

1. heating
2. cooling
3. generating your own electricity

An affordable and predictable energy bill

Team Triple Solar

5 advantages

Low energy consumption

The Triple Solar system uses the generated energy very sparingly. PVT panels usually generate as much power as the heat pump consumes.

Environment

Because there is no need to drill or install an outdoor unit, the Triple Solar system has no impact on the environment. The PVT heat pump is as quiet as a refrigerator.

Low maintenance costs

The Triple Solar system has a lifespan of more than 25 years. The lack of moving parts means minimal maintenance.

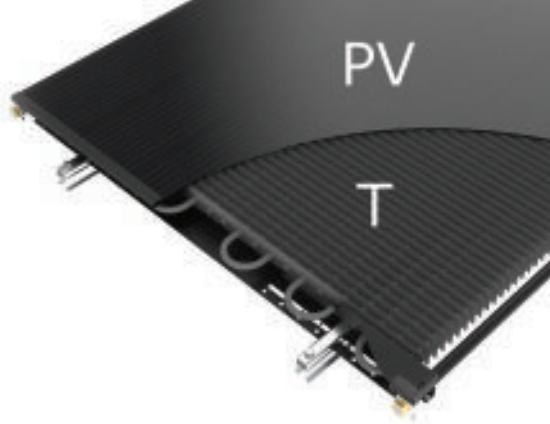
Sustainable

Triple Solar PVT panels score very high on sustainability: they are constructed from European components and are fully recyclable. This translates into the low Environmental Cost Indicator (ECI) that reflects the total environmental impact throughout the life cycle.

Higher home value

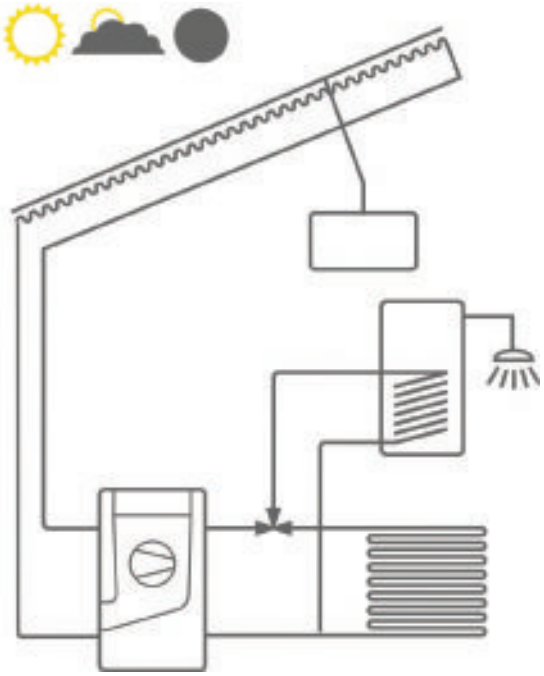
The Triple Solar PVT panels blend in beautifully and can be complemented with regular PV panels for an aesthetic overall look on the roof. According to research, with each sustainable measure that at the same time entails embellishment, home value increases up to 5%.

What is a PVT panel?



The front of the PVT heat pump panel exists of solar cells (PV) which transform sunlight into electricity. The back is a heat exchanger (T) which provides the source energy for the special PVT heat pump. The PVT panel obtains its energy from the outside air, from sunlight and from daylight. In all seasons, 24 hours a day, even in cloudy or frosty weather.

Why a PVT system?

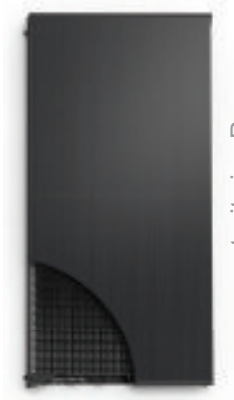


- No outdoor unit, as with the traditional heat pump, hence no noise pollution
- No expensive ground source; therefore no environmental impact
- High efficiency and therefore low electricity costs
- Sustainable, with a 10-year warranty
- Expected lifespan of at least 25 years
- Works 24 hours a day, even at night and when it is cloudy
- Suitable for new and existing buildings
- Suitable for any type of roof
- Low maintenance
- Fully recyclable
- Low Environmental Cost Indicator

Size

Dimensions (l x w x d)

PVT M4-500XL	landscape 500 Wp	2115 x 1128 x 50 mm (2,4 m2)
PVT M4-410L	landscape 410 Wp	1743 x 1128 x 50 mm (2,0 m2)
PVT M4-410P	portrait 410 Wp	1156 x 1715 x 50 mm (2,0 m2)



portrait size P

landscape size L or XL

22 homes near Delft train station whose residents collectively opted for PVT panels

PVT heat pump all-electric

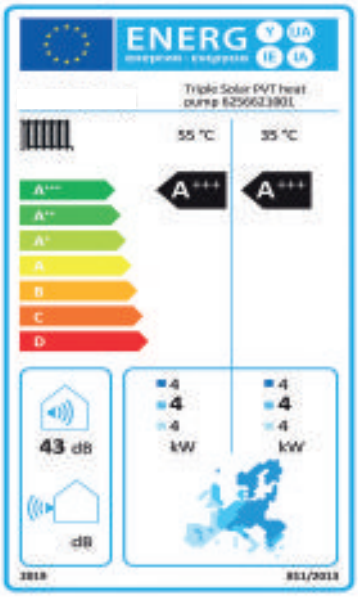
The all-electric Triple Solar system consists of the PVT heat pump 3.5, a hot water storage (thermal battery or stainless steel cylinder) and a set of 4 PVT heat pump panels on the roof.

The Triple Solar PVT heat pump uses state-of-the-art technology, including the natural refrigerant propane, and is very economical with the electricity generated.
Its energy label is A+++ for both heating and hot tap water.

The heat pump takes up little space and is lightweight.
The accompanying hot water storage has enough capacity to shower comfortably and is made of maintenance-free materials.

The system can be operated with a simple thermostat and monitored via the Internet.
No wifi required.

The heat pump is as quiet as a refrigerator



Size

PVT heat pump 3.5

Dimensions (h x w x d):
830 x 480 x 450 mm

Weight: 50 kg

Electrical connection:
1 phase, 230 V

COP B5-W35 4,7

Benefits

For the user

- Low energy consumption
- Low maintenance
- Low-noise
- Environmentally safe refrigerant propane
- Active cooling
- Extensive monitoring
- Can heat up to 70° C

For the installer

- Lightest heat pump on the market
- Small installation space
- Straightforward installation
- Flexible layout of the installation space
- Wall or floor mounting
- 230 VAC

New build

New build requires flexible solutions. The choice for a heating system often depends on the municipality where the new build will be located or on on-site requirements. Dense urban construction requires different solutions than the spacious layout of the countryside.

Below, a project in Utrecht where Triple Solar equipped a residential block of 40 homes with individual heat pumps, and on the roof PVT panels, supplemented with PV panels. The demand was for an energy-generating building. Drilling was no option, and there were noise restrictions with regard to the desired tranquility of the communal courtyard garden.

The Ronduit Utrecht Project - 40 energy-generating homes with PVT panels as the energy source

PVT heat pump hybrid

The heat pump

Many homes are not readily suitable for full fossil free heating. Hence, we have developed a hybrid PVT heat pump to save on fossil fuel. This heat pump functions in conjunction with the gas boiler.
If the outside temperature drops below zero, the gas boiler kicks in, so that the home is never cold.

The no-regret solution

As soon as the dwelling is suitable for fossil free heating, for example through insulation improvements, the Triple Solar PVT heat pump can be extended to all-electric heating.
The investment in the hybrid PVT heat pump will not be lost.

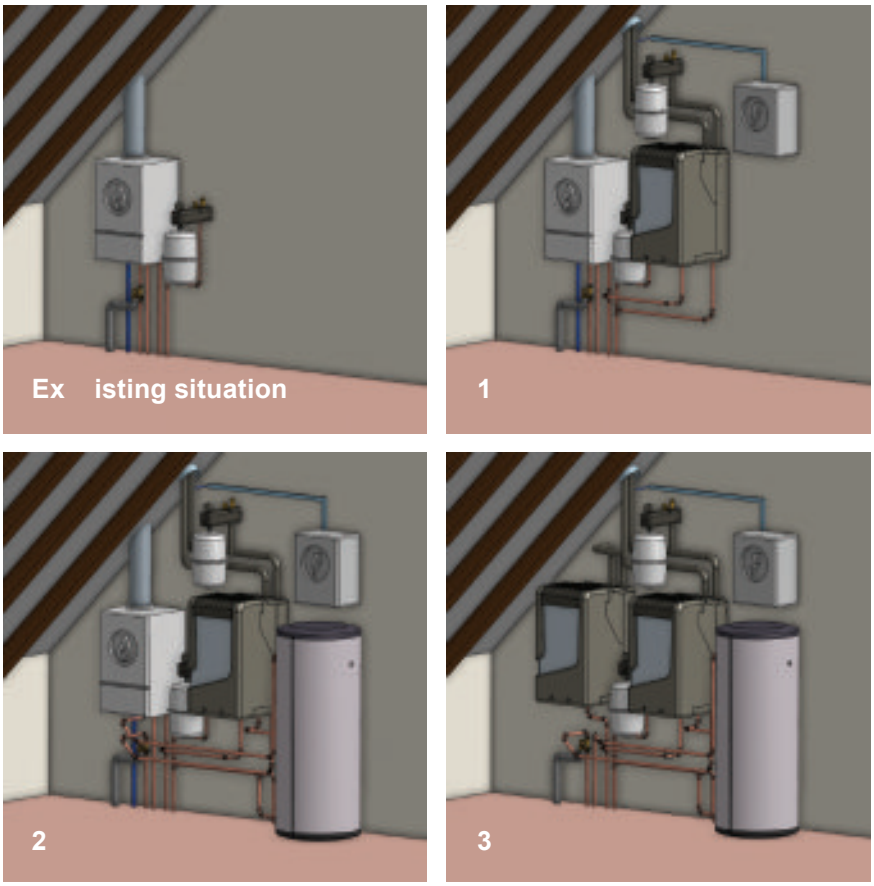
The Triple Solar 1-2-3 system

In 3 steps from fossil fuel to all-electric

Step 1
Saving up to 60% gas on heating
Installing 3 PVT panels on the roof, and the PVT heat pump 3.5 adjacent to the existing gas boiler.

Step 2
Saving up to 80% on heating and domestic hot water
Installing a hot water storage. The PVT heat pump makes hot water in an economical way.

Step 3
100% gas-free heating
Installing 4 additional PVT panels on the roof, and replacing the gas boiler with a second PVT heat pump.



For step 3, the house needs to be well insulated and have underfloor heating or low-temperature convectors installed.

The benefits of hybrid

Economic

The Triple Solar PVT heat pump 3.5 always performs, even in freezing weather. As a result, it saves more energy than traditional heat pumps that no longer function below an outside temperature of 4 °C.

Hot water

The PVT heat pump provides domestic hot water all year round. This generates additional savings. Most traditional hybrid heat pumps do not provide hot water.

High living comfort

Triple Solar provides great living comfort. The heat pump and hot water storage are of high quality, low maintenance and as quiet as a refrigerator. In the outdoor area there is no noise at all.

Save on fossil fuel with self-generated electricity

Important questions

Will I receive a grant?

The Boiler Upgrade Scheme (BUS) is a government scheme designed to help homeowners in England and Wales afford the upfront costs of installing a heat pump. The policy provides homeowners with a grant of £5,000 to have a heat pump installed.

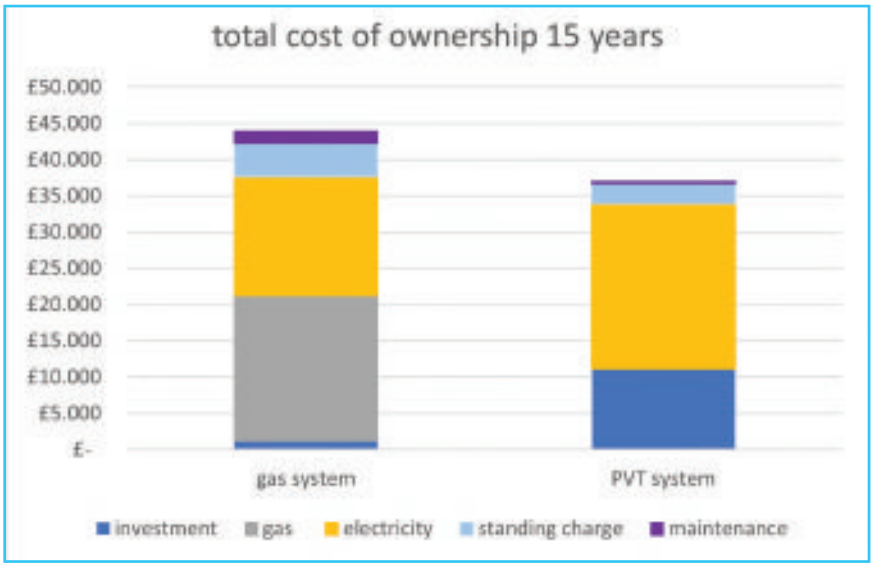
Does PVT also work in the winter?

Yes it does. Triple Solar heat pump panels extract their energy from the outside air, up to an outside temperature of -10 °C. Should the temperature drop below that, the heat pump also provides electric auxiliary heating.

Total Cost of Ownership

Save more, with less

Over a period of 15 years, the yearly recurring energy bill quickly adds up to a large sum. The Triple Solar PVT system replaces gas with electricity as a heat source, in a highly efficient way. So efficient in fact, that every unit of heat coming from the Triple Solar PVT system saves money, compared to heat from gas. These summed up savings outweigh the initial spending on the Triple Solar PVT system. When comparing energy systems in a financial perspective, one should use Total Cost of Ownership, or TCO, as a metric. TCO takes into account all spendings related to energy use over a period of time: the investment in a gas boiler or heat pump, the yearly spending on energy, standing charges and maintenance costs.



TCO comparison is calculated for the equivalent of 12.000 kWh gas use per year, 2.900 kWh energy use for household appliances, and is based on energy prices at price cap level, with 5p of SEG per kWh for solar energy.

Looking at the TCO for a gas system and a Triple Solar PVT system, it becomes clear that a gas system might not be expensive to buy, but is in fact expensive to use. The Total Cost of Ownership of a gas system quickly overtakes the TCO of a Triple Solar PVT system.

Monitoring

For the resident

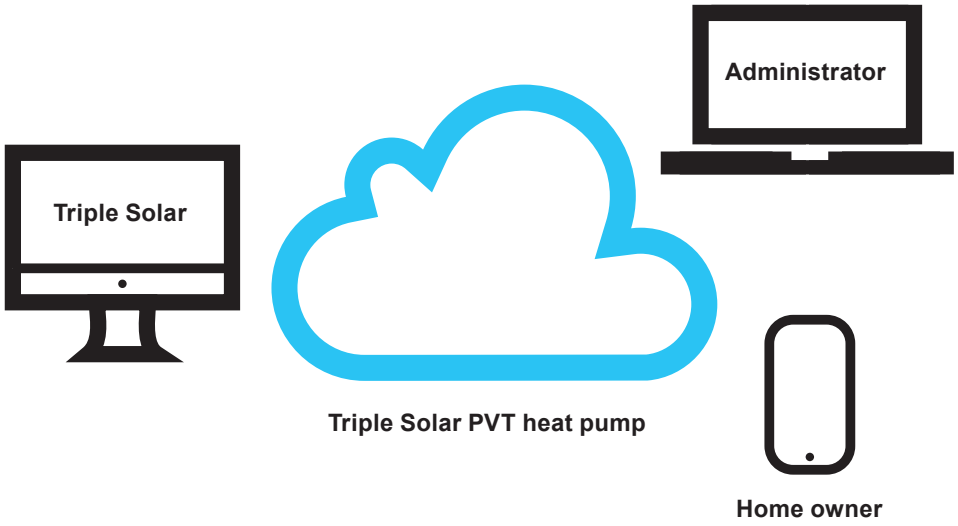
The resident can operate the heat pump remotely and receives automatic updates via the SIM card in the interface.

For the administrator

The installer or service organization can monitor whether the heat pump is working properly and whether its performance is satisfactory. Also, the installer is notified when preventive maintenance needs to be done.

For Triple Solar

If required, we can monitor and give advice to the installer and the user. This insight into the installation gives more security and guarantees proper operation over time.



Where to buy?

The installer

The certified installer is the designated point of contact. He or she is trained at the Triple Solar Academy and provides the guarantee of operation.

The distributor

The installer buys the PVT heat pump and PVT panels as a package from the distributor. This is the cheapest and most efficient way. The distributor also supplies all additional required mounting materials.

Thus, the installer does not have to buy from different places and there is only one sustainable transportation.

Where to find us?

The sales office

Tt. Vasumweg 170
1033 SH Amsterdam
info@triplesolar.eu
www.triplesolar.eu

Expedition and training center

Programmeurstraat 6b
1033 MT Amsterdam

The factory

The PVT panels are produced according to ISO 9001 and Solar Keymark in Emmen, the Netherlands.

ISO 9001:2015

BISOL

TNO innovation for life