

PV-T collectors + geothermal heat storage



an all season energy solution
with no CO²

electricity
heating
domestic hot water
summer cooling



advantages of photovoltaic thermal PV-T

Hybrid technology that combines, monocrystalline photovoltaics and a high efficiency solar thermal collector.

A simple low cost, low maintenance energy solution able to facilitate the governments zero-carbon strategy.

At least 25% higher output efficiency than equivalent monocrystalline PV.

Space saving as only one panel is required to produce both heat and electricity.

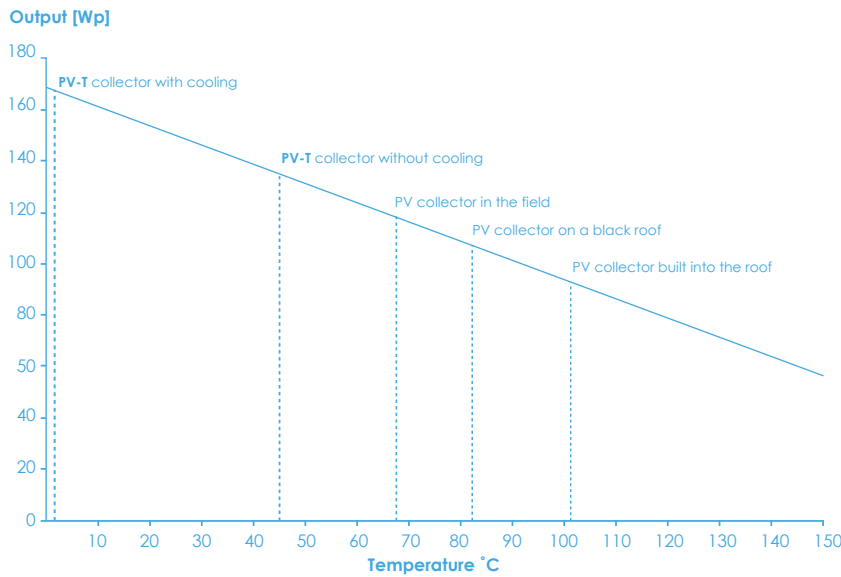
Greatly improved paybacks in generally less than fifteen years.

Low maintenance – unlike heat pumps, wind turbines, or other renewable sources of energy, virtually fit and forget.

Providing opportunities to most residential and light commercial low energy buildings to reach zero-carbon.

Cost including ancillaries, roughly £7,000 per 1kwpk of electrical and 4.5kwpk thermal energy (at a ratio of 4.5:1).

PV-T and PV performance



Effective PV performance / operation temperature. Note this is for nord west europe. Data source: ISFH and IEA

what is a PV-T collector?

a PV-T collector is a combined assembly of a: PV module - for the conversion of electrical energy and a high efficiency flat plate solar collector - for the conversion of thermal energy

Photovoltaics (PV) are semiconductors so have one draw back, degradation in performance due to temperature. In the UK on a sunny summer's day in the middle summer, when you hope to be making the most of your PV, array panel temperatures can reach over 100°C. At this temperature the system will produce less than 10% of its maximum output rendering it largely useless for a much of the day.

By regulating panel temperature using a fluid cooling system a balanced system can be produced trading off between PV efficiency and thermal output. Using this principle it is possible to obtain a higher electrical yield - up to as much as 40% increase in electrical yield compared with the equivalent area of mono-crystalline PV and enough free heat to offset a low energy buildings annual heating requirements.

what can be achieved with a PV-T collector?

PV-T collectors allow you to setup a "total solar energy system", for both electric and thermal energy generation. Also because of its cooling-effect on the PV module this system has a higher efficiency at a much lower cost price than separate systems "good price and performance". In combination with geothermal storage, this system can be used to take low energy buildings to, or near to zero-carbon.

what is geothermal heat storage?

Geothermal heat storage is a means of storing thermal energy in the ground, the heat obtained from solar thermal, or PV-T panels during summer months is stored deep in the ground where it can be extracted during winter months when there's not enough solar energy to adequately provide heat to a building.

Through the use of geothermal heat storage it is possible to store thermal energy for more than a year. It has been shown that with 25m² of PV-T on an average 140m² low energy house (20-25kWh/m²/a) located in North West Europe it is possible to cover all the buildings annual, electricity and heating requirements.

To book a consultation with one of our experts call:
0845 293 7554 and quote CFG
 or email: enquiries@carbonfreegroup.com

www.carbonfreegroup.com
www.newformenergy.com

Newform Energy are members of the Carbon Free group and supply integrated renewable energy systems to industry, public sector and domestic customers.



members of the



carbon free group