

HEATING + COOLING FROM THE ROOF

Infobroschüre - Saubere Energie - Energieeffizienz

Electricity and heat completely from your own roof

Electricity - heating - cooling

Use the power of our sun

House roofs could produce electricity and heat the house with solar thermal energy - without any oil or gas.

The roof of a house is itself a large solar thermal surface.



The energy comes from above

The SolteQ-Plus-Plus energy house or German-KfW40++ house

Solar thermal function of a SolteQ solar roof

Obtain thermal heat from your own roof via solar thermal energy

Opportunities with new or existing heaters

Dear homeowners and those who want to become one,

our vision is still to "save the world" by contributing to a cleaner planet. To do this, we need each and every one of you - join us, because only TOGETHER can we make a great contribution to climate protection today. Our contributions would be:

1. EVERY roof on the planet has to generate electricity: We are making photovoltaics more attractive and affordable for every builder who can afford a new roof and normal PV panels.

2. Heating completely without CO2 emissions: The SolteQ zero CO2 heating

On almost every house roof there is also thermal energy that is not used. Instead, oil and gas is burned, even though the energy is on the roof, every day, clean and completely free. The SolteQ solar roof not only produces electricity, but is also a solar thermal system of gigantic proportions. The large roof area generates the required heating energy even in winter at minus 30°C, all for heating and hot water. For this purpose, the solar roof is combined with a heat pump. Absolutely simple and climate neutral. Pure solar energy.

3. Cars should drive without diesel and petrol: The e-car must be charged AT HOME and directly from your own roof, without burdening the public network.

The next topic I would like to present is our solar roof heating. SolteQ's „zero CO2 heating“ topic is even more interesting for builders than „just“ generating electricity. The heating concept „solar roof + heat pump“ was already developed in 2014 by SolteQ engineers. The SolteQ solar roof is the only solar roof that is suitable for this. We deliberately did not patent this principle, so that this excellent heating concept can be used by every heating engineer, because a heat pump is also required, which also represents great technologies. These can be introduced by the heating engineer himself. So we try to involve all craftsmen and trades, such as architects, roofers, heating engineers, because only TOGETHER we can save the world. I would be happy if you would help us to spread the word about clean and CO2-free heating. It's no longer purely about „earning money“ or „spending“. Anyone can afford a SolteQ solar roof.

It is ALREADY possible TODAY to cover a large part of your electricity requirements, as well as your ENTIRE heating energy requirements for heating and hot water, using solar energy. The SolteQ solar roof was developed with this background. It is

- a) a weatherproof and very stable roof covering and protects your belongings
- b) a photovoltaic system, chic and aesthetic, it embellishes your home
- c) and in addition it is a complete solar thermal system

Because the heating is NOT generated by the electricity generated, but also via the thermal energy in the roof, the electricity energy generated is freely available and can even charge the e-car.

It is our vision that in the future more will be benefited from clean solar energy, thus making a major contribution to climate protection. TOGETHER. We need energy. More and more in the future. With environmentally friendly energy production with today's fantastic possibilities and technologies, we make this, our planet, a paradise. More clean energy and clean drinking water ensure more agriculture, even in dry regions. Less meat consumption and more vegetarian food ensure less animal suffering and also better health. All of this ensures MORE QUALITY OF LIFE for people and animals all over the planet.

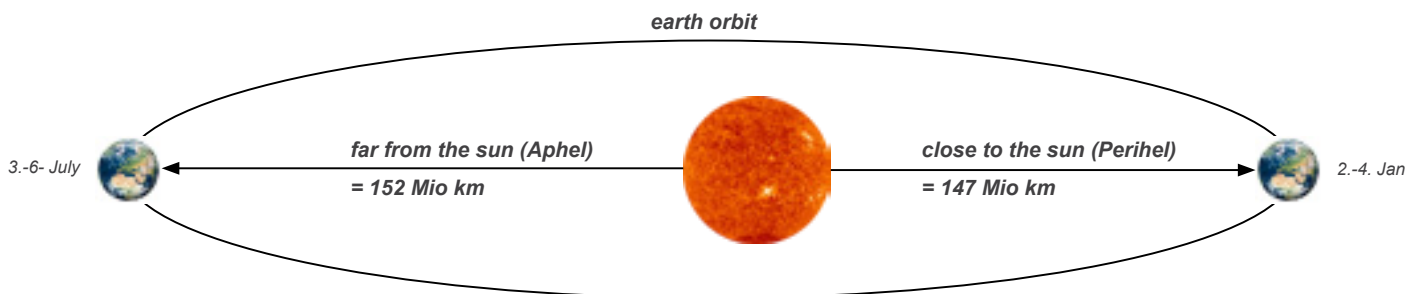
Together, we will do it.

Your
Berkay Bayer



POWER PLANT SUN

There is enough energy - on your roofs



And yet 1,400 watts of energy fall on every m²!

**Completely free
Is already on your roof every day - day after day.
Zero pollution - The SolteQ zero CO2 heater**

UNSERE SONNE

Distance from Earth:	150 million km
Diameter:	1.39 million km (109 times Earth's diameter)
Age:	4.5 billion years
Surface temperature:	5,800 Kelvin
Mass:	1 989 000 000 000 000 000 000 000 million kg

It burns 637 million tons of hydrogen per second, producing 632 million tons of helium and 385 billion billion megawatts of power. Of this, about 1,367 W per square meter fall on the earth's surface. This energy is 10,000 times more than all of humanity needs. What more do we want? There is enough energy for heat and electricity for all of humanity. Why are we still burning valuable raw materials?

The parabolic mirror example:

With a small parabolic mirror you can cook and grill. A parabolic mirror that is only 45 cm long generates a temperature in our latitude of approx. 700°C at its focal point.

A parabolic mirror with a diameter of 45 m generates a temperature of 4,000 °C at the focal point.

We don't need coal or nuclear power plants!

Our sun is the best power plant and completely free and clean.

***Solar energy is a free right for everyone.
Just like, oxygen and water***



Every day... we burn 90 million barrels of oil



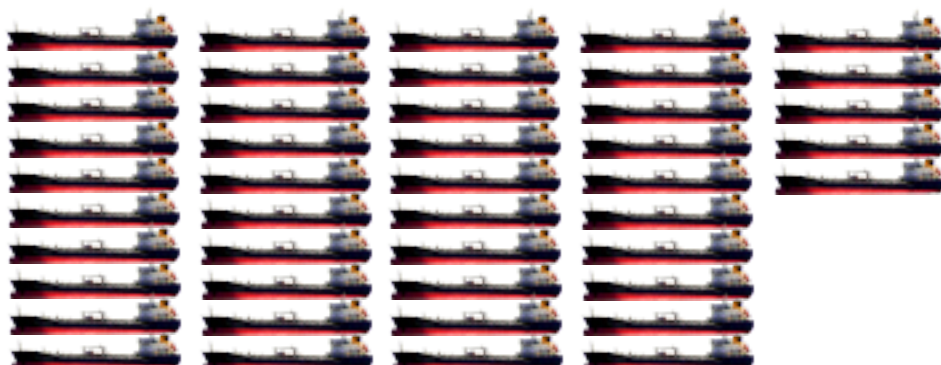
...or 45 supertankers.

day after day after day ...

We've been burning oil and gas for over 100 years now...



GAS



Every day:
OIL
96 million barrels or
over 16 billion liters
PLUS NATURAL GAS
Every day:
3.82 trillion cubic meters of natural gas

45 - EVERY DAY !

SolteQ-Solar Roof Tiles - change the world

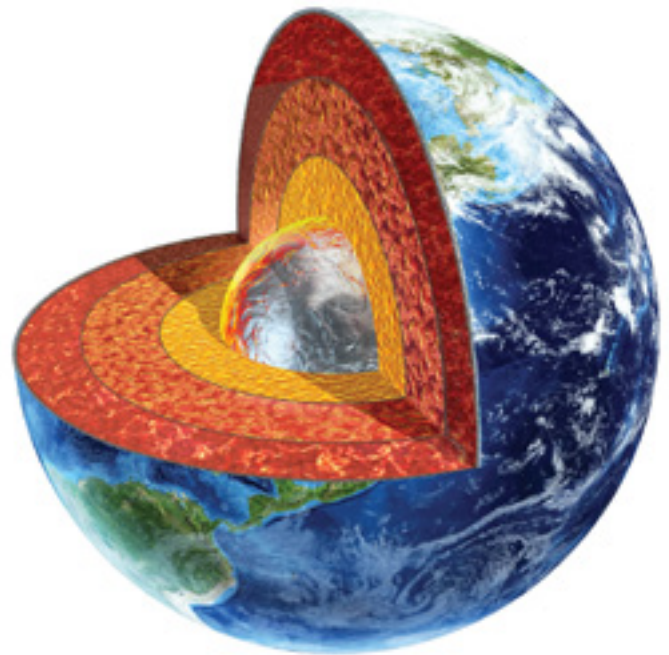
There are also incredible amounts of energy inside our earth.

Ways to use energy from the sun:

- Solar roof for electrical power generation for household electricity
- Solar roof to charge e-cars
- Solar roof for thermal energy production for heating and hot water
- Air/water heat pumps powered by a solar roof
- Geothermal heat pumps powered by a solar roof

The basis of all this is the use of the energy that is on your roof. If it's not used, it fizzles out. In any case, it is there. In recent years, highly interesting technologies for the use of solar energies have been developed. The solar roof that generates electricity and heating energy, the heat pump that collects the smallest amounts of energy from the ambient air and passes it on in concentrated form, the geothermal heat pump, storage solutions for electricity and heat, etc. A completely new way of generating energy has developed that should be used in the future. At the beginning of industrialization, oil and gas rendered good services, without which we probably would not have gotten this far. But now it's time to shift into another gear and switch to clean energy production.

No matter which of the options you choose, the goal is self-sufficiency, which is possible with the SolteQ solar roof. A geothermal heat pump can also be operated free of charge via the solar roof.



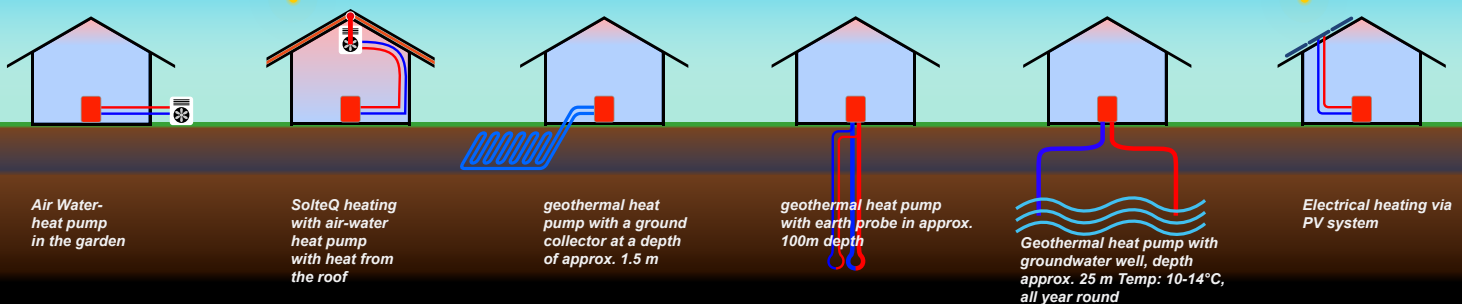
Useful information

Temperatures in the earth's interior:

Upper crust:	0-40 km	0-900 °C
Lower crust:	40-2,900 km	900 °C
Outer mantle (liquid):	2,900-5,100 km	
Upper mantle:		900-1,400 °C
Lower mantle:		1,400-2,500 °C
Outer core:		2,500-3,000 °C
Inner core (solid):	5100-6370 km	3000-6000 °C

The temperature rises by 3 °C for every 100 m, so that you can find boiling water in just 3 km.

General possibilities of solar heat generation



The **Plus-Plus**-Energy-House

Can you imagine that you cover all your energy needs for

1. Strom

2. Heizung

3. Warmwasser

4. E-Auto-Laden

obtain from your own roof ?



**We are part of nature - we must protect it
Without our nature we cannot survive**



Future returns are the money I don't have to spend.

*On your roof is gift and
free energy - use this gift !*

**no heating costs,
no electricity costs,
no more fuel costs!**

excess energy

In the future:



and



My new dream house, just the way I wanted it

No electricity costs ... 0,- Euro

No heating costs for oil and gas ... 0,- Euro

E-car charging for free ... 0,- Euro

... makes an average of: 0,- Euro

... hmmm ...

... how is that supposed to work?



With the **SOLTEQ - Solardach** to **Plus-Plus-Energy-House**

Chic roof + photovoltaic + solar thermal in one.



The SolteQ-**Plus-Plus**-Energy-House

Plus 1: *stands for clean power generation with surplus*

Plus 2: *Additional thermal energy for heating and hot water*

Make your house a **Plus-Plus-Energy house!**

The SolteQ solar roof uses every cm² of the roof surface to achieve maximum energy yield. High-efficiency solar cells, high-quality production at our own locations in Germany characterize the high-quality SolteQ solar roof. Almost all of the generated electrical energy is freely available, because the heating energy is NOT generated via electricity, but via the additional thermal heat energy from the roof. In addition, the solar cells are cooled and generate even more electricity.

All the energy you need is on your roof. Use them before burning oil or gas. We'll help you with that.

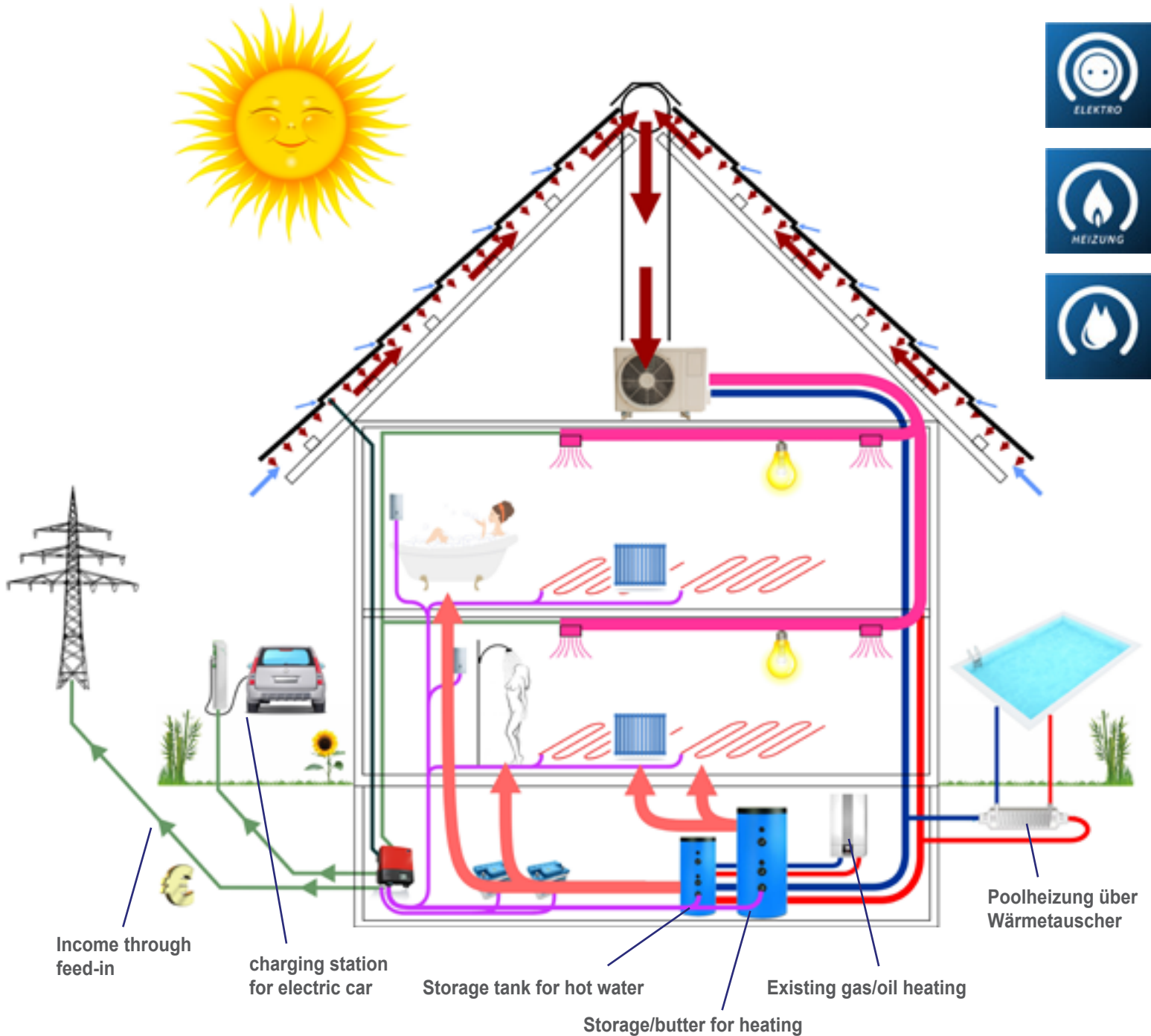
Electricity + heat directly from the roof

See how easy it is to reduce your heating costs to zero with a SolteQ energy roof:

The average value for thermal energy is 670 W per m² lying on your roof, in addition to generating electricity.

Now just imagine that two solar thermal vacuum collectors with an area of approx. Now we have the opportunity to use the entire roof area and the amount of heat that hits it. Everyone will now be able to imagine the gigantic amount of heat falling on our roofs and dissipating unused. On the contrary, we even try to cool the heat that enters the house with air conditioners. What a double waste of energy!

Example: A normal single-family home has an annual heating requirement of around 10,000 kWh. The roof is able to generate around 60,000 kWh. With good energy planning with a heat accumulator, you have excess heat at your disposal.



The heating function is also possible without a buffer.

Save money in this way instead of burning it - we will help you!



**Their roof area is huge and provides an enormous amount of free energy
Accept this gift !**

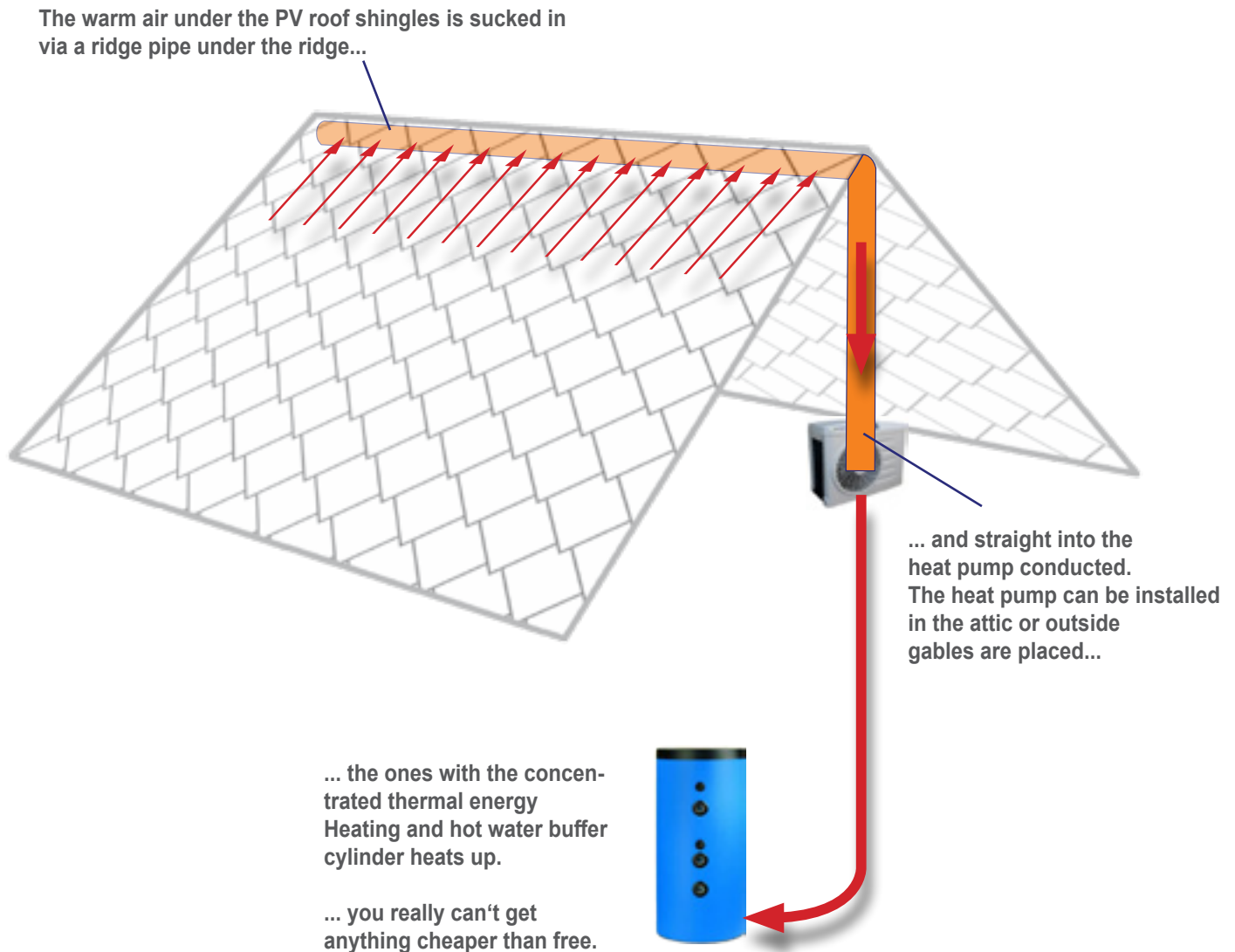
The SolteQ energy roof for heating and hot water

In addition to generating electricity, the SolteQ energy roof is a complete and invisible solar thermal system.

The required heating energy is generated via the warm air under the roof, even in winter at minus 30°C. Your heating requirements are not generated by electricity, but by the heat of the sun falling on your roof. Day after day, and ideally completely covered. On average, around 1,400W of pure thermal energy falls on your roof per year and m², which fizzles out unused.

The SolteQ energy roof absorbs almost all of the thermal energy under the energy shingles and feeds it into an air-water heat pump, which in turn fills the heating buffer tank. This leads to several advantages:

1. The heat energy hitting the black roof surface is sucked off by a heat pump and supplied to the heating
2. Positive side effect 1: This cools the energy roof shingles at the same time and increases their efficiency enormously
3. Positive side effect 2: By extracting the warm layer under the roof skin, the house is prevented from being heated
4. Positive side effect 3: Air conditioning becomes superfluous, which in turn saves energy and CO²



*Heat as much as you want!
There is excess heat on your roof*



PLUS1: POWER GENERATION ... with excess via a chic SolteQ energy roof

SolteQ offers stylish roof variants, in which no „photovoltaic system“ or solar thermal system can be seen, but primarily a chic, great roof that goes well with the house. It consists of small roof tiles made of heavy-duty safety glass with integrated, high-quality solar cells (monocrystalline photovoltaic cells).

Each roof shingle has an output of approx. 45 Wp, which turns your roof into a power pack. This corresponds to an output of approx. 220 Wp per square meter (including weak light use).

**You don't see a photovoltaic system, but a rustic and chic roof
Suitable for new roofing and also for roof renovation**

*Energy in abundance, completely free from our sun -
Take advantage of this gift!
... always in harmony with the house*

*Energy in abundance, completely free from our sun -
Take advantage of this gift!
... always in harmony with the house*



SolteQ's Vision:

Every house has to cover its entire energy needs from its roof. Our sun is an incredibly great gift in our universe. It gives us life and it gives us energy.

Enabling every builder to have an affordable energy concept so that all of the electricity and heating are generated from their own roof and with a surplus that brings in additional income.

Zero CO2 emissions and a clean planet. we only have one Money isn't everything in life. Together, we will do it.

Clever heating Tip: SolteQ-PED

Use that

Personal Energy Design (PED) by SolteQ!

The PED includes a complete calculation and design for your own energy production via your roof and, if necessary, facade.

Clean energy production, use and storage, to bankable documents.

Inquire today!

100%
Made in
Germany 



Das SolteQ-Solar Roof **Pure architecture and aesthetics!**

The best roof in the world is the one that suits your house.

*Classic rustic look, combined with the latest technology:
The new energy roof with small, stylish roof tiles
Why a second roof skin made of PV modules? It is better to use PV shingles as roofing and save double the costs! No more roof shingles + attached or „inserted“ PV modules, which don't exactly look nice either, but chic roof tiles with PV function as direct roof covering.*

What does the energy of the future look like ?

- ▶ A roof has to go on the house anyway, but then immediately with electricity generation in order to use the area
- ▶ 100% rainproof and waterproof
- ▶ A chic roof where you don't see a photovoltaic system directly, and no „photovoltaic system with blue panels“ as a roof or in-roof PV system
- ▶ The house gets an ecological and optical added value - beautiful and aesthetic appearance is in the foreground
- ▶ You don't see a photovoltaic system, but a beautiful roof! Every builder wants a fancy house with build a fancy roof. A chic roof with small, filigree pantiles (with power generation)
- ▶ Also suitable for east/west roofs, for new builds and renovations, as well as for monument protection
- ▶ Simple and inexpensive assembly
- ▶ With built-in safety shutdown and preventive fire protection
- ▶ Power storage for night-time use
- ▶ Additional use of thermal energy for heating + hot water
- ▶ The ideal case: covers the entire energy requirement of the house - no more electricity, oil or gas costs!
- ▶ The goal: Completely self-sufficient energy supply for electricity and heating
- ▶ long service life, low-maintenance
- ▶ Affordable

That is exactly what the SolteQ energy roof is!

WINNER

**from 880 European companies
in the categories:**

- **Design**
- **Architecture**
- **Invisible photovoltaics**
- **Sustainability**
- **Pioneer**



WINNER OF GERMAN SUSTAINABILITY AWARD 2021

PLUS2: HEATING + COOLING + WARMWATER ... with excess

A SolteQ energy roof is an energy roof and not just a photovoltaic roof. By „energy“ we mean the entire energy supply, i.e. electricity and heating as well as hot water.

When you talk about „energy on the roof“, you first think of a photovoltaic system and electricity generation. The energy requirement for heat, i.e. heating and hot water, should not be neglected. Here are guidelines for a four-person household in a single-family house:

Electricity energy requirement per year: 4...5,000 kWh

Heating energy requirement per year: approx. 10,000 kWh

Thermal energy is actually a much bigger factor to worry about as well, and not just electricity. However, until now there has been no sensible alternative to gas or oil heating. So far, solar thermal energy was only a solution for hot water supply, but not particularly popular because of the unattractive appearance and relatively short service life of the collectors.

With the new SolteQ energy roof, a new concept is presented here that generates electricity and heat energy with a visually great overall look of the house, both even in excess.

A SolteQ energy roof is usually able to generate more electrical energy and additional thermal energy than is required in addition to the electrical energy to be used. With optimal dimensioning, both in excess.

This can now be fed into the grid or used in other ways, e.g. for charging the electric car, or for heating and/or fed in and harvesting yields.

Heating and hot water can be supplied using excess electrical energy or using an air/water heat pump using the thermal energy of the roof. Every roof gets warm. An air/water heat pump generates heat even at sub-zero temperatures by collecting small amounts of heat (even at -15°C) from the ambient air, e.g. placed in the garden, and passing it on in concentrated form.

The SolteQ energy roof is able to generate electricity via the integrated, highly effective solar cells. In addition, the warm air under the chic PV roof shingles can be extracted and thus more energy can be supplied to a heat pump than it would get free-standing in the garden. This pays off especially in winter. Added to this is the heat generated by the solar cells' self-heating, which alone represents a good basis for the heat pump, much more than just the ambient air in the garden. Energy in abundance, as we will show you below how easy it is.

The following options exist:

a) Operate the existing heating system with excess electrical energy (entirely or as heating support)

Here, the heating buffer tank is heated up by means of an electric heating element.

Suitable for systems with radiators as well as for water-based underfloor heating.

b) Operate the existing heating system with thermal energy from the roof using a heat pump

Here, the heating buffer tank is heated by a heat pump.

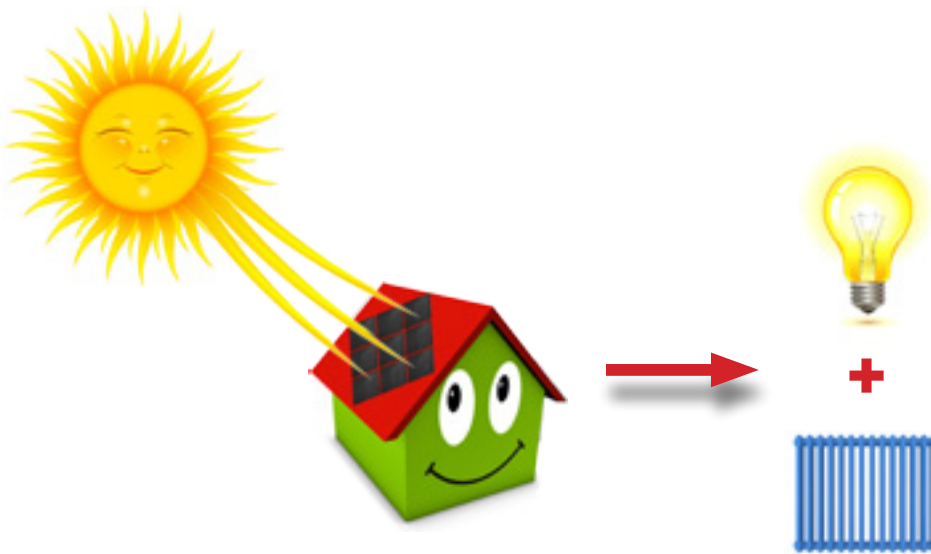
Suitable for systems with radiators as well as for water-based underfloor heating.

c) For new construction or for retrofitting: Electric underfloor heating, which is operated directly via the electrical energy from the roof.

d) For new construction or for retrofitting: heating system via warm air distribution, which is operated directly via the electrical or thermal energy from the roof.

e) Heating via geothermal energy using a geothermal heat pump

Energy efficiency - if so, then right!



Tip from the frog: Excess heat from the roof

Thermal composite systems with styrofoam panels for insulating the house may have a good insulating effect. However, the disadvantages cannot be overlooked: the walls cannot breathe, mold quickly develops and other disadvantages for the building fabric. Instead of packing the house airtight with styrofoam, it is much better for the house substance if normal insulation is used and there is simply more heating and ventilation. There is enough thermal energy, heat and ventilate a little more.





Heating costs



No more electricity or heating costs

You save CASH MONEY every month

Invest in your own roof instead of insecure stocks.
The electricity costs you don't have to spend,
THIS is the return of the future.



ARCHITEKTUR PREIS GEBÄUDEINTEGRIERTE SOLARTECHNIK 2020

**The ideal solution:
Solar thermal energy via the SolteQ energy roof**

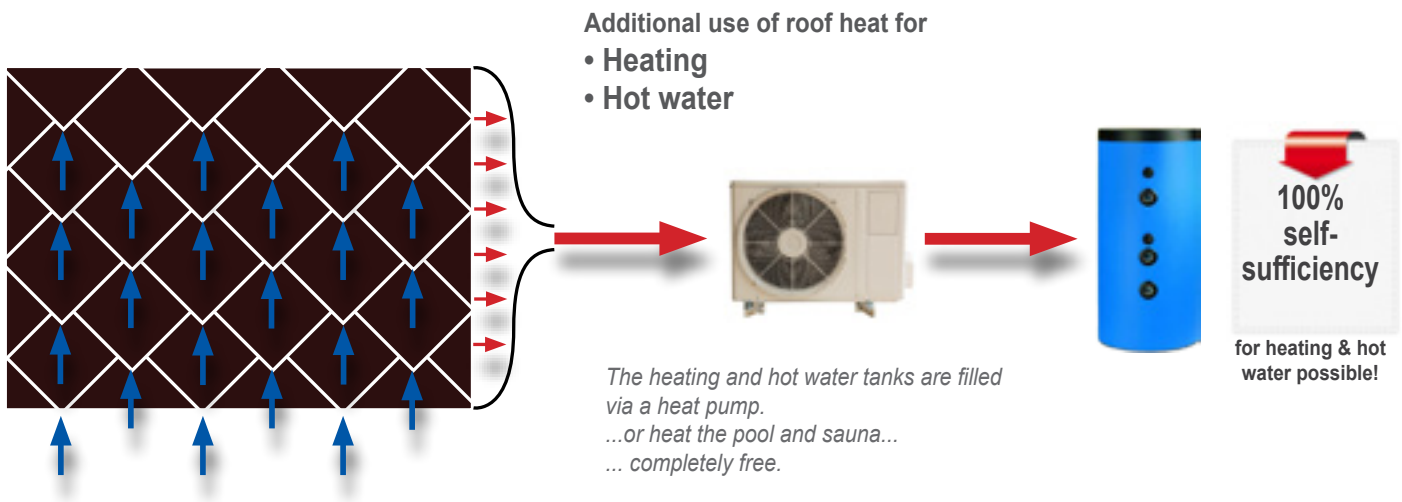
Electricity + heat directly from the roof

SolteQ offers stylish roof concepts in which no „photovoltaic system“ can be seen, but primarily a chic, great roof that goes well with the house. It consists of small roof tiles made of heavy-duty safety glass with integrated, high-quality solar cells (monocrystalline photovoltaic cells). Optionally, it can be supplemented with a heat pump in order to also use the thermal energy of the roof surface.

One roof - 7 functions:

1. Chic, noble overall look of the house
2. Weatherproof roof covering
3. Photovoltaic electricity
4. Solar thermal heating
5. Heat and cold insulation
6. Active cooling of the roof from above
7. Charger for your e-car - no more fuel costs!

**Cover all your electricity needs
and heating completely over your roof!**



Grow your money instead of burning it and safe our planet

With a smart concept you have more money every month in your pocket than what you are paying for now. we show you how here. Safe and with government support.



Heating supply via thermal energy from the SolteQ energy roof using an air/water heat pump

The large roof area of a house represents an enormous source of thermal energy, comparable to solar thermal collectors. If two solar thermal collectors are usually sufficient for a detached house, you can imagine the amount of energy the entire roof area can supply. Use this thermal energy that would otherwise simply be „blown away“. The positive side effect that the PV shingles are better cooled as a result, also increases their efficiency for power generation. The warm air behind the shingles can be extracted using a heat pump and used to generate heat, even in winter.

Double benefit:

- a) Thermal energy for heating + hot water => more electricity is freely available
- b) Cooling of the PV shingles => better efficiency and thus more electricity yield

This method is the most cost-effective variant, because the entire heating requirement can be covered with a small investment of e.g. 3-5,000 euros for a heat pump.
... no more heating costs!

The heat pump can
a) in the attic or
b) be placed on the outer wall (gable).

excess energy
Save the cost of expensive thermal bonded panel insulation, which „suffocate“ your house because the walls can no longer breathe. Mold binding and rotten masonry are the result. Invest in your roof instead. Rather ventilate several times a day, with natural solar energy. Also in the winter.

The Buffer Storage is usually present in every heating system. The existing buffer storage can continue to be used. If the amount of storage is not sufficient, another storage can be placed in parallel very easily in order to increase the amount of energy storage. Various forms of storage are now available on the market. If there is no space inside the house, an insulated storage tank can be placed underground in the garden with simple and inexpensive means.

insulating effect
The insulation of the roof can usually be thinner, since the SolteQ energy roof has an insulating effect. In summer, it protects the house against excessive heat from the sun thanks to its cooling properties and rear ventilation. In winter: A SolteQ energy roof also gets warm in winter due to the dark surface and thus keeps the cold away from the house. In addition, each solar cell in each PV roof shingle also generates a certain amount of heat. This heat acts as radiant heat, which radiates onto the inner roof skin and insulates well against the cold and thus supports the insulating wool.

Split heat pumps with cooling function (reversible HP)

Modern devices can not only heat, but also cool via the underfloor heating. So you always get a pleasant feel-good climate - summer and winter.



Split heat pump with cooling function
Fig.: Buderus indoor and outdoor module of the Logatherm WPLS air/water heat pump.



The various heating options with a SolteQ solar roof with new or existing heating systems

a) Operate the existing heating system with excess electrical energy, Filling of the heating buffer tank via an electric heating cartridge

Heating system: SolteQ energy roof with radiators or water-based underfloor heating using electrical energy from the roof

The SolteQ energy roof usually generates more electrical energy than is required. The heating buffer tank and the hot water tank can be heated very easily with the surplus energy. For this purpose, electric heating rods are installed in the (combi) buffer tank, so that no water-carrying lines from the roof to the tank are necessary. This makes the system very low-maintenance.

Advantages:

- ▶ Simple retrofitting to existing installations or gas/oil heating systems without great effort
- ▶ Parallel operation with conventional heating for support possible
- ▶ Very simple and inexpensive storage option using additional, standard heating buffer storage tanks as required
- ▶ Coverage of heating energy (approx.): 70%

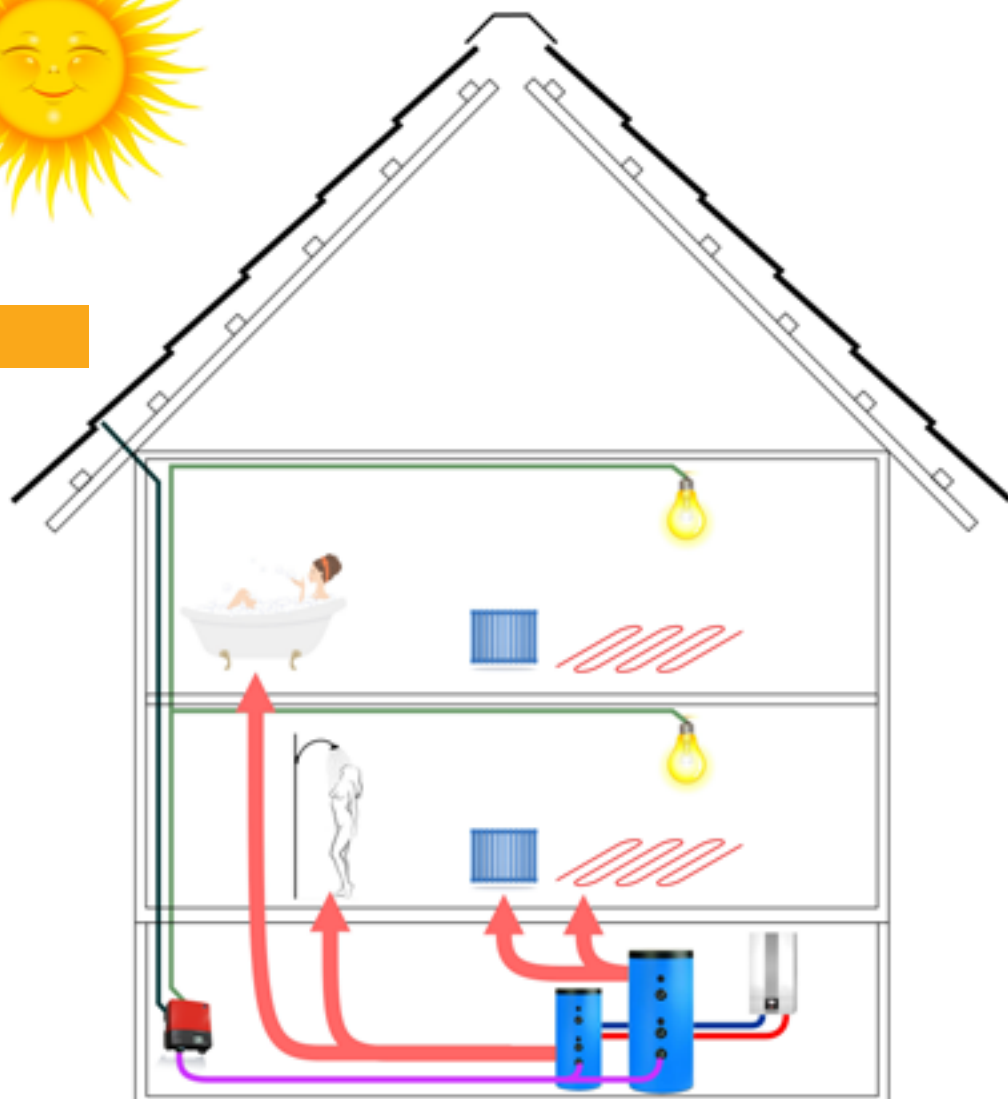
Disadvantages:

- ▶ Efficiency: specified by the existing heating system
- ▶ Useful only if there is a surplus of electricity
- ▶ Pumps that still require electricity, but which can be operated free of charge using the electrical energy from the roof
- ▶ Water-carrying pipe system
- ▶ Useful only as a supporting system



Note:

A heating system with radiators usually requires a flow temperature of 75..90°C. An air/water heat pump generates a maximum of approx. 70°C. For this reason, infrared heaters, for example, should be planned as a supplement.



YOUR CONTRIBUTION TO CLIMATE PROTECTION

The environmental benefit of solar thermal

In our latitudes, a 6 m² standard collector system produces around 2,200 kWh of useful heat per year. If the heat supply of a conventional gas boiler is replaced in this way, the environment will save 500 kg of carbon dioxide annually. With an oil heating system it is 700 kg and when replacing a hot water system with electricity in North Rhine-Westphalia even 2,350 kg. After about a year, the solar system has produced the amount of energy that was required for its production.

A SolteQ energy roof with only 100m² generates approx. 66,000kWh/year.

The environmental advantage of photovoltaics

With the electricity yield of a 1 kWp system, around 900 kg of carbon dioxide emissions are saved in North Rhine-Westphalia per year. The energetic return time („harvest factor“ or the ratio of the energy yield of the system and of the energy required for their manufacture) is currently 3 to 5 years. downward trend. Conventional power plants, on the other hand, which provide electricity from finite resources, cannot pay for themselves in terms of energy.

b) Existing heating system with thermal energy from the roof, filling of the heating buffer tank via an air/water heat pump

Heating system: SolteQ energy roof with air/water heat pump and water-based underfloor heating

- The ideal solution for new construction and retrofitting-

The ideal solution, because the electrical energy (photovoltaic) is not required for heating and is completely available. For the heating energy, the thermal energy under the PV roof shingles is also used, which otherwise simply fizzles out. By using or extracting the warm air under the roof skin. Every roof gets warm - use this free thermal energy!

Advantages:

- ▶ Free thermal energy that would otherwise go to waste on the roof
- ▶ Inexpensive purchase: Today, heat pumps are standard and inexpensive in every new heating system
- ▶ Heat generation day and night - The heat pump also generates energy at night or in the dead of winter. Absolute zero is -273°C , anything above that is energy.
- ▶ Electricity energy from the roof is freely available, the thermal energy for heating is also produced
- ▶ Excess electricity can be fed into the grid profitably instead of using it for heating
- ▶ Simple retrofitting to existing installations or gas/oil heating systems
- ▶ Parallel operation with conventional heating for support is possible and also recommended
- ▶ Very simple and inexpensive storage option using additional, standard heating buffer storage as required
- ▶ Even with medium-sized roof areas, there is usually an excess of thermal energy
- ▶ Complete self-sufficiency in combination with electricity storage and geothermal heat pump is very possible, with sufficient roof area
- ▶ Additional side effect: By using or extracting the warm air under the roof skin (PV roof shingles), the efficiency of the PV cells in the PV roof shingles is increased by cooling => more electricity
- ▶ Great additional option: The house can be pleasantly cooled in summer via the underfloor heating via reversible heat pumps

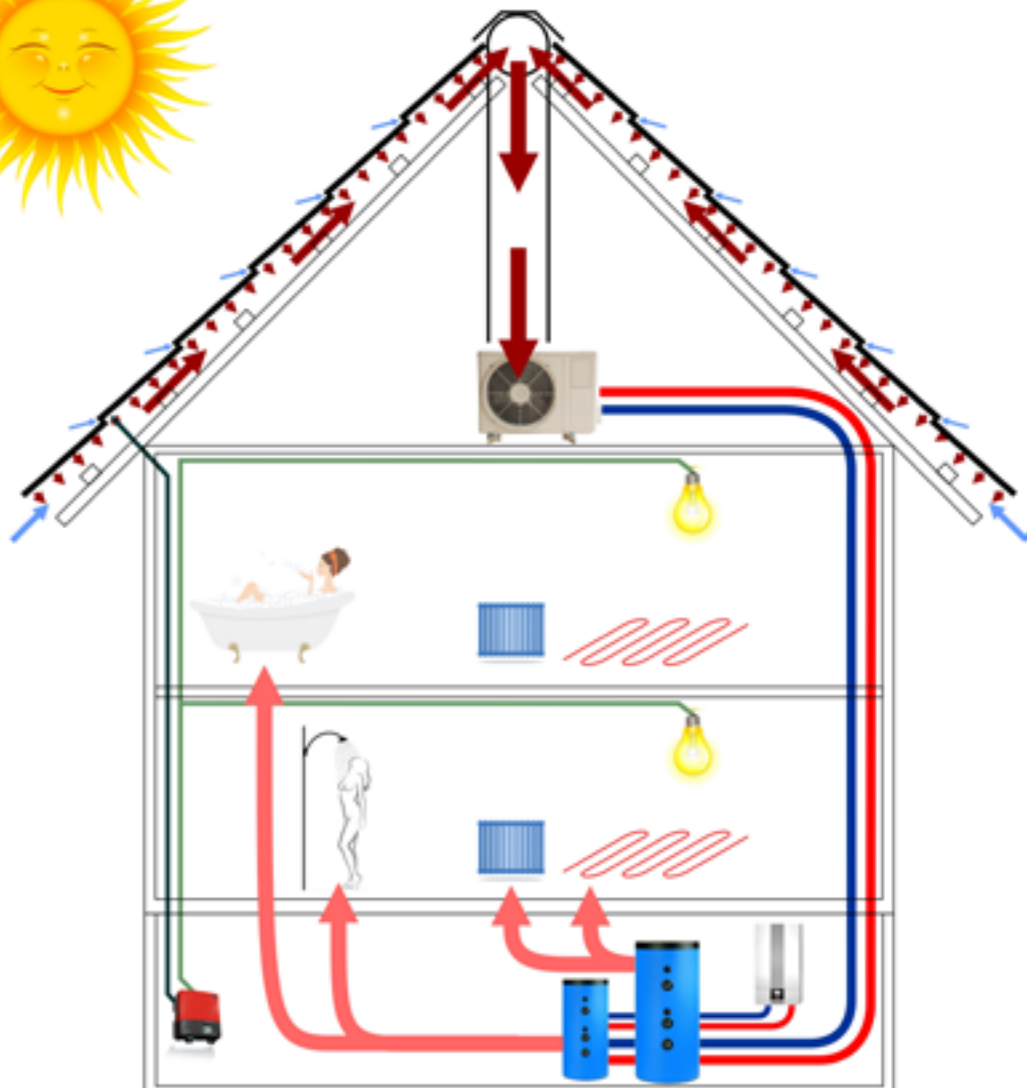
Disadvantages:

- ▶ Efficiency: Specified by existing heating system
- ▶ Pumps that still draw power necessary, but about the electrical energy from the roof can be operated free of charge
- ▶ Water-carrying pipe system



Please note::

No matter which system you choose, a backup heating system should always be provided. There will always be periods when the heat from the sun is insufficient to create cozy warmth. A fireplace with a heating connection would be helpful, for example. Even if it's only a matter of a few days a year, you want it to be warm. A simple fireplace or a geothermal heat pump are also very suitable as a backup system, since heat can be generated day and night regardless of the sun. The geothermal heat pump can also be operated using an electricity storage system without operating costs. In any case, cozy warmth is guaranteed.



c) Heating system completely on electric basis or electric underfloor heating / possibly additional infrared heaters

Heating system: SolteQ energy roof with surface heating with heating cable, infrared heaters

Panel heating is the ideal solution for energy efficiency. In combination with a good photovoltaic system and, if necessary, a heat pump, they ensure cozy warmth thanks to their even heat distribution. No cold feet, pleasant indoor climate. Conventional heaters, such as radiators, heat up the room from top to bottom, since the warm air directly above the radiator initially moves upwards. With underfloor heating, electric or water-based, the floor slab is heated evenly and the room is warmed up homogeneously with a low flow temperature, evenly and comfortably. This ensures a uniform temperature distribution in the room, avoids air turbulence, so that less dust is whirled up, ideal for allergy sufferers.

With water-based systems, the flow temperature is only 30 to 45 °C and is therefore ideal for energy-efficient houses. Such surface heating systems can also be laid as wall or ceiling heating systems, with simple laying in the floor being the most widespread. The electrical variant on an electrical basis with heating cables is also well suited for retrofitting due to its low design. The thin heating cables can be laid in the screed, under tiles, under laminate or laid in the wall and simply plastered over. In the meantime, heating foils are also available which, with a construction height of less than 0.5 mm, are ideal for laying under tiles or laminate.

Advantages:

- ▶ Efficiency 100% - The solar power flows directly into the heating cable of the underfloor heating or infrared heating without losses
- ▶ Maximum efficiency: It is only heated as needed, directly and without lossy water buffer storage. Electricity that is not required can be stored in an electricity storage device for later or nightly use, or it can be fed into the grid for profit. 100% use of electricity.
- ▶ In combination with an electricity storage heater, day and night
- ▶ Feeding in the surplus energy
- ▶ Inexpensive acquisition, easy and quick installation

Heating cables are very cheap compared to an oil or gas boiler + piping + pumps (which also require electricity).

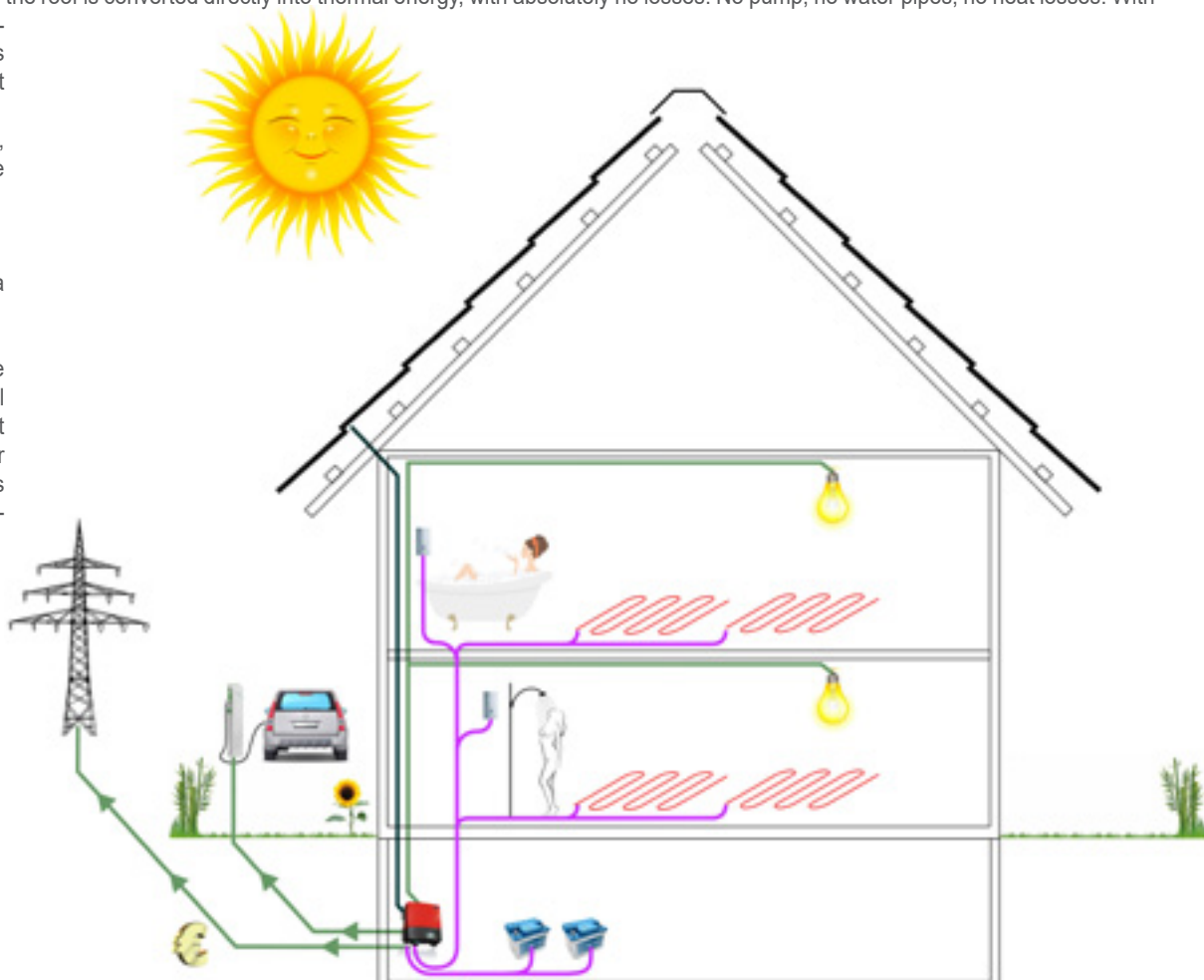
- ▶ Retrofitting is also possible for existing buildings or substrates
- ▶ No heating boiler, no buffer storage and no more pumps necessary
- ▶ no pumps that consume electricity almost all day and are subject to wear and tear
- ▶ No radiators in the room
- ▶ Absolutely maintenance-free
- ▶ No wearing parts
- ▶ Very long service life
- ▶ No heat losses through pipework for hot water, heating takes place directly at the tap using a continuous-flow heater.
- ▶ No water-carrying piping
- ▶ Precise control of the room temperature

This variant has significant advantages, including: The electrical power from the roof goes directly into the electrical heating cables without losses. There, the electrical energy from the roof is converted directly into thermal energy, with absolutely no losses. No pump, no water pipes, no heat losses. With 100% efficiency, the electrical energy from the roof is used in this way - it couldn't be better.

... a lot of space saved, 100% efficiency and still the best feel-good warmth.

Disadvantages:

- ▶ Useful only if there is a surplus of electricity
- ▶ Power storage required
- ▶ In the case of stand-alone operation (without gas-oil heating support), sufficient power storage is required for the evening and night hours or longer periods without significant solar radiation



d) Heating system via hot air distribution, possibly additional infrared heaters

Heating system: SolteQ energy roof with air/air heat pump and air pipe system

As an alternative, controlled warm air can be generated via the heat pump, which can be distributed to the usable rooms via ventilation ducts.

Advantages:

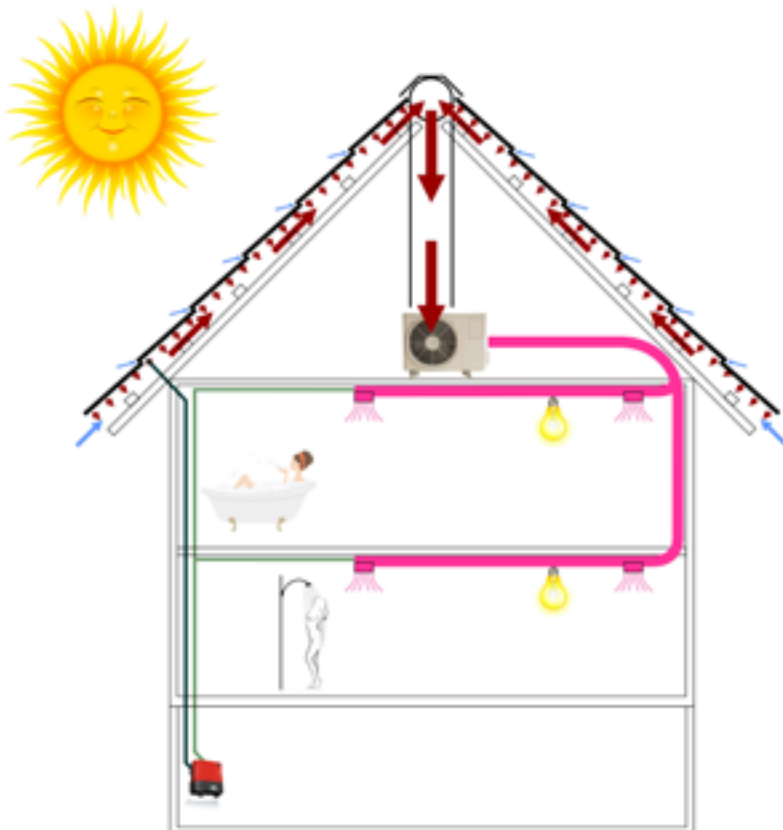
- ▶ Efficiency 100% - The thermal energy flows directly into the rooms without losses
- ▶ Maximum efficiency: It is only heated as needed, directly and without lossy water buffer storage.
- ▶ Heating day and night
- ▶ Feeding in the surplus energy
- ▶ Inexpensive acquisition, easy and quick installation
Ventilation pipes are the cheapest option in comparison
- ▶ Retrofitting also for existing buildings or substrates possible
- ▶ No more heating boilers, no buffer storage and no more pumps necessary
- ▶ no pumps that consume electricity almost all day long and with wear and tear are afflicted
- ▶ No radiators in the room
- ▶ Absolutely maintenance-free
- ▶ No wearing parts
- ▶ Very long service life
- ▶ No heat losses
- ▶ No water-carrying piping
- ▶ Precise control of the room temperature

... a lot of space saved, 100% efficiency and still the best Feel-good warmth.

Disadvantages:

- ▶ Rooms are heated from top to bottom, similar to a radiator system
- ▶ Operation of the heat pump during the day with electricity from the roof, at night with electricity battery storage or grid power

Note: A heat pump does not run all day. It starts up to fill the buffer tank, then it's off again. Modern devices work whisper-quiet, so that no loud noise development has to be expected. A steel plate and rubber buffers under the device also have a positive effect. At night, the room temperature is usually reduced anyway, so that the heat pump rarely runs in the evening hours and almost never at night. As a guideline it can be said that with a good system design, the heat pump is in operation for approx. 3-4 hours a day. However, this depends on several factors, such as the adjusted size of the buffer tank, the performance of the heat pump, etc.



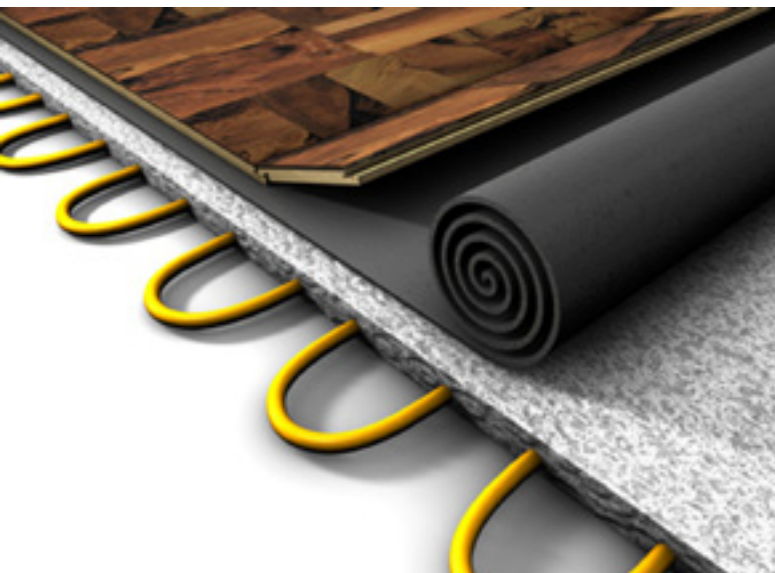
Tip from the frog: Electric underfloor heating and infrared heaters

In new buildings, it makes sense to design the space heating via electric heating cables in the floor and infrared heaters on the walls. Pros: High efficiency, zero losses, low maintenance, no water pumps that also use electricity. At the same time, this is usually the cheapest heating option for a new building.

Heating cable as underfloor heating is a very cheap solution, both in terms of purchase and installation. In addition, it is the variant whose efficiency is 100%, because the system has no losses.

Available in different variants:

- Floor heating pipes
- Heating mats (very thin) for floor or wall
- Infrared heaters in various forms for walls and ceilings (pictures, mirrors, etc.)



e) Heating via geothermal energy using a geothermal heat pump

If the roof area is not sufficient, a geothermal heat pump can be used, which can be operated free of charge using the electricity from the roof. A geothermal heat pump works with the geothermal heat from the interior of the earth. For this purpose, the heat is conveyed upwards via a 100m deep borehole and a water cycle, where it is compressed and can be used. This requires a pump that is powered by electricity. A geothermal heat pump has a performance factor that is defined as (approx.) 1:4. This means, for example, 100W are brought in and 400W of heating energy is gained. The pump can be operated free of charge via the SolteQ energy roof, the heating storage tank can be filled and the house can be heated completely free of charge, even day and night in combination with a power storage unit.

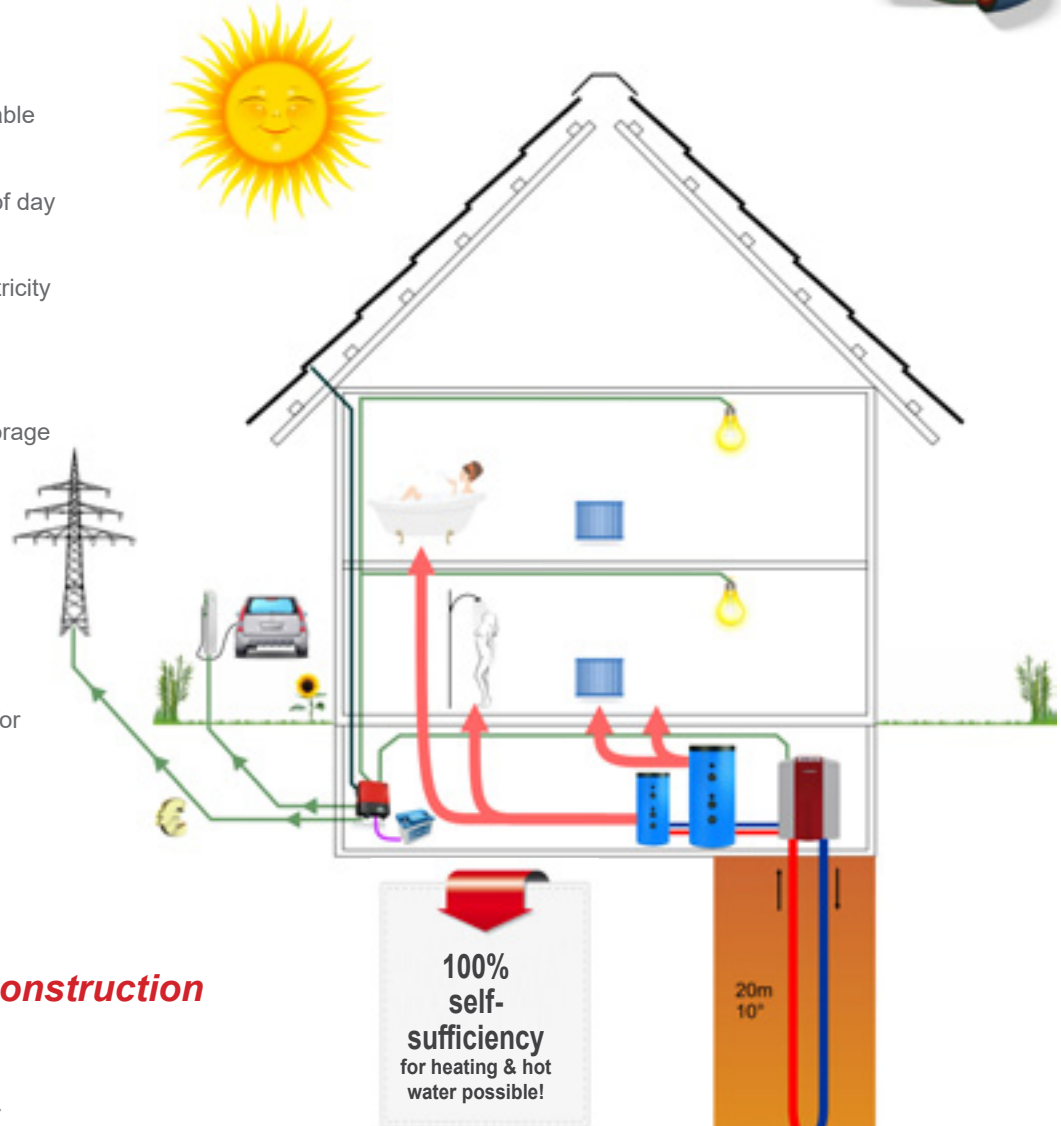


Advantages:

- ▶ Electricity and heat are always available
- ▶ The heat pump runs free of charge
- ▶ Huge advantage: annual and Always warm regardless of the time of day available
- ▶ High efficiency
Efficiency Factor: 1:4 (One part electricity in (pump) / 4 parts heat energy out)
- ▶ No heat accumulator necessary
- ▶ Simple retrofitting to existing ones heating systems
- ▶ Self-sufficient thanks to electricity storage
Heating operation simple and safe possible
- ▶ A small buffer tank is sufficient

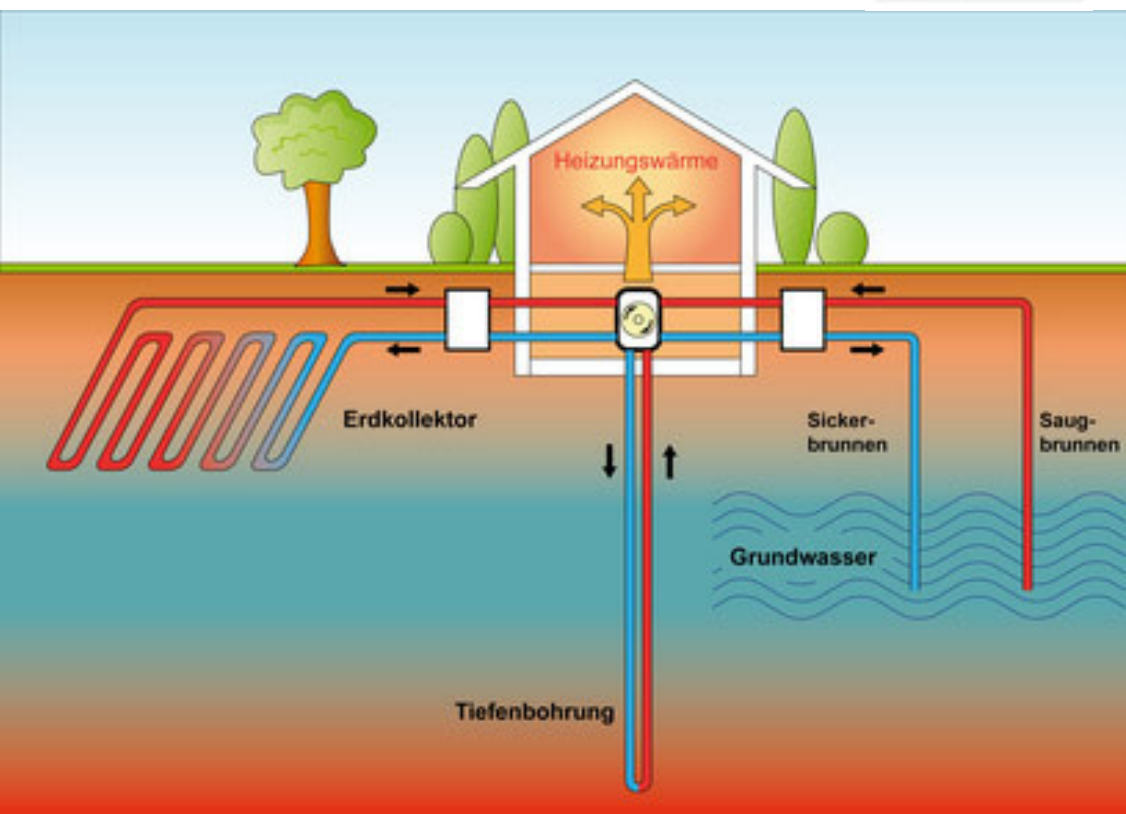
Disadvantages:

- ▶ High costs for the earth drilling or earth probes
- ▶ Pump requires electricity that could be used otherwise
- ▶ Medium maintenance requirements for geothermal heat pump
- ▶ Danger of destroying the probes by earth movements



- Ideal solution for new construction and retrofitting -

Possibilities of using geothermal energy



**ENERGY
SAVE UP**
with most modern
**HEATING
TECHNOLOGY**

f) Electricity + heat via the roof + chimney integration as an additional buffer

Heating system: SolteQ energy roof with air/water heat pump and water-based chimney

If a fireplace is already planned in the house, it can be perfectly integrated into the heating system. The chimney is provided with a water attachment so that it can fill up the heating buffer tank if necessary. There can always be longer periods without significant solar radiation. An energy roof also works dependent on the sun, which is why a backup system is always recommended. With a fireplace, which you want anyway for the cozy hours, you can implement a perfect backup system for safety. For this purpose, fireplaces are available with the appropriate water attachments that can be integrated into the heating system. In cold and sunless periods, a few logs can be used to provide cozy warmth without the need for a gas or oil connection.

Advantages:

- ▶ All advantages as under point b)
- ▶ Perfect and inexpensive backup system if there is a fireplace, because even we cannot guarantee that „sufficient“ heating energy can be generated 365 days a year. Everyone heats differently, every roof is aligned differently, the roof area is what is there. And all it takes is a volcano to erupt again in Iceland... But the probability of generating a lot of heating energy via the roof, possibly even working in the direction of 100% self-sufficiency, is relatively high.
- ▶ No additional costs for backup systems, such as gas heating or pellet stoves, etc.

Disadvantages:

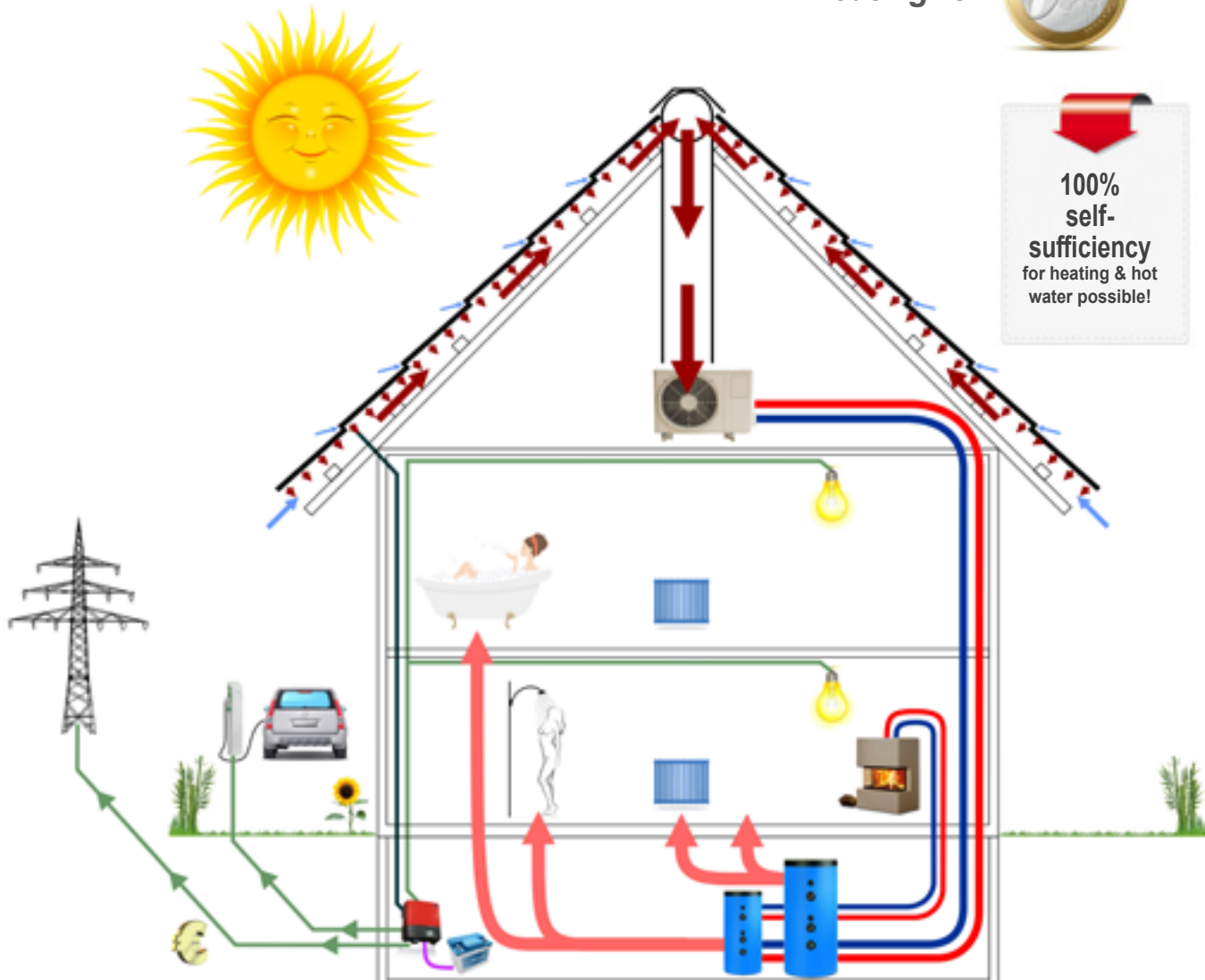
- ▶ - none -

- Ideal solution for new construction and retrofitting if a chimney is available -

Electricity + heat directly from the roof
The energy that our sun has given us is already on your roof, bring it into your house!



It is possible !



g) Night storage heaters

Heating system: SolteQ energy roof and night storage heater

The heating costs for night storage heaters are more than twice as high as for heating with gas or oil. The situation is similar with emissions. While the use of electrical storage heaters is almost completely dispensed with in new buildings due to the EnEV, these can be combined very easily and inexpensively with a SolteQ energy roof and used as heat storage. Basically completely free of charge, because there is no disposal, you even save the disposal costs and the heat storage question would be solved.

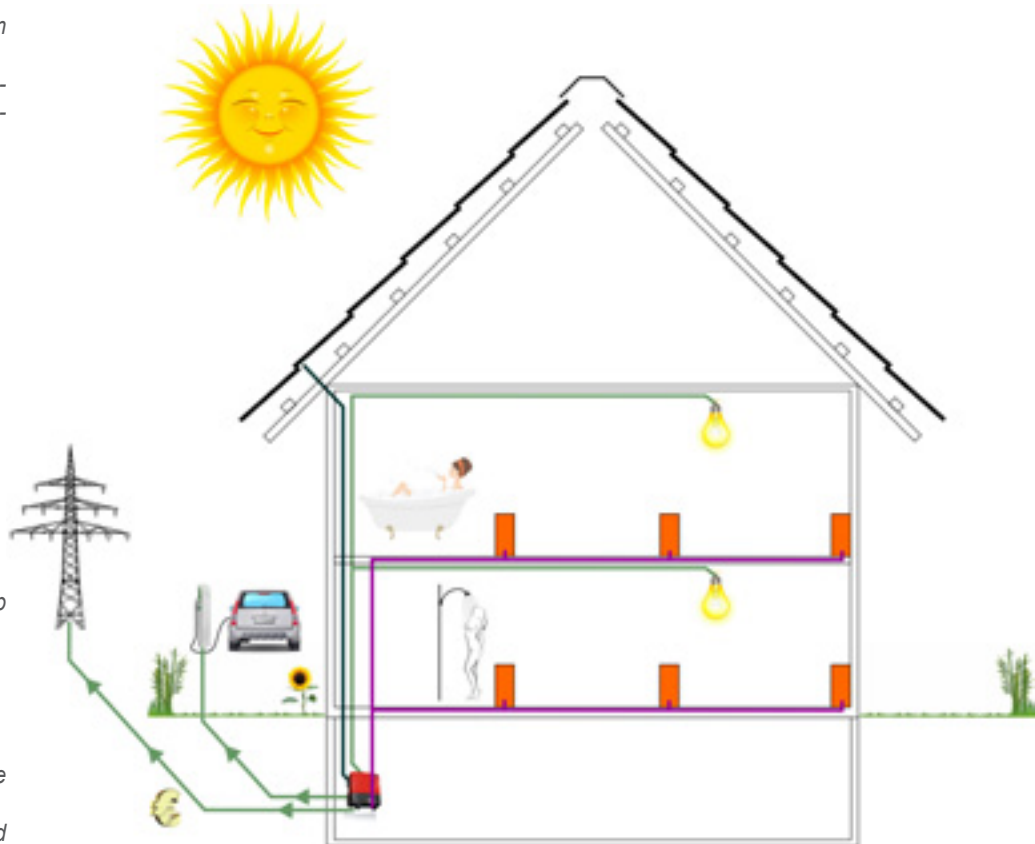
The storage heaters are constantly charged and heat day and night.

You can continue to use the existing electric storage heaters and do not have to exchange them for a new heating system.

Charge your storage heaters free of charge during the day and also use the heat in the evening hours. Completely free.

Advantages:

- ▶ the existing night storage heaters use and no more heating costs
- ▶ No buying a new heater, only new roofing. nothing more
- ▶ Totally free heating - day and night
- Night
- ▶ With sufficient roof area SolteQ-Energy roof completely sufficient, otherwise expandable with ground or roof heat pump
- ▶ Inexpensive solution with heat accumulator, no additional memory required
- ▶ The public network can be used as a backup will
- ▶ Very cost-effective solution:
 - Disposal costs of the night storage heaters omitted
 - No additional heat accumulator necessary
 - Acquisition of only the energy roof, otherwise Nothing
- ▶ The excess electricity can be fed into the grid will



Disadvantages:

- ▶ - none -

This version is even conceivable for new builds, as it is a simple and inexpensive solution. The system represents heating and storage at the same time.

As you can see, there are many and relatively simple ways to save money today. If you need to replace your roof or are thinking about insulating your house in an energy-efficient manner, get advice from a specialist or energy consultant in your area. By the way: Energy consulting costs are subsidized at 50%.

Insulation using heat bonded panel systems sounds good at first. However, the disadvantages quickly become apparent: mold growth, damp spots, etc., because a styrofoam panel on the wall no longer allows the wall to breathe, mold forms and the substance does not improve as a result.

A SolteQ energy roof generates more thermal energy than you actually need.

Example: A family of four in a detached house has an annual heat requirement of approx. 10,000 kWh of thermal energy. A SolteQ energy roof in combination with a heat pump generates 60,000 kWh, so you have an excess of thermal energy. Instead of packing the house in styrofoam and locking in as much heat as possible and ventilating as sparingly and as little as possible, use the excess energy and ventilate properly. Ventilate more often, so there is no longer any risk of mold, healthy house walls and house substance and a great and healthy feel-good climate. Add a rear-ventilated facade and nothing better can happen to your house.



**save your money
instead of giving it away!**



Energy roofs vs. ground mounted systems

There is so much existing and unused roof space in the country that, if used optimally, would make all nuclear and coal-fired power plants unnecessary. Namely roof areas.

The SolteQ energy roof is not just a „photovoltaic system“. It's an energy concept.

There is no need to sacrifice valuable farmland or landscape just to generate electricity. The roofs are already there on every house anyway. Why not use ? These areas are really ideal, otherwise they just lie around unused.

*Join us and help make all fossil fuels history very soon.
Energy is the future, but it has to be clean and free!*

Join the campaign: „Use all roofs in the country energetically and protect our nature!“

Tip: Buy quality products from the region and not from the Far East!

*Buy cheap, then buy twice.
Buy quality, then it works!*

Everyone should know these sayings, because if something is produced „cheaply“, savings are made somewhere in the product. e.g. on the material or on a production step. That should be clear to everyone.

*Give up cheap products from the Far East, buy products from Europe and show patriotism.
SolteQ produces exclusively in-house, all supplied parts are 100% products from the EU.*

The SolteQ energy concept:

you receive

- a new roof that looks like new even after 20 years
- the right roof for every taste
- with a very long service life, you have at least 50 years and more peace of mind with the roof
- You no longer have electricity and heating costs
- Your house will increase in value immensely
- and all this at no extra cost per month, so you pay less than for a clay pan roof. That costs you the financing every month for 20 years. The money for it is gone!

... what more do you want ?

If there is a need for a new roof covering, there is no reason not to take a SolteQ energy roof!

Grow your money instead of burning it

With a clever concept, you have more money in your pocket every month than what you are paying now. Here we show you how. Safe and with government support.





Underfloor heating - great thing! ... and cheap, efficient and healthy at the same time!

- *Very easy to lay*
- *Inexpensive*
- *No casualties*
- *Always pleasantly warm feet*

„The thermometer shows 23 °C and yet your feet are cold.“ - This cannot happen with well-dimensioned underfloor heating.

Cold feet can make you sick

„Keep your head cool, your feet warm, that makes even the best doctor poor.“ - this is a popular German health rule. In fact: warm feet have a beneficial effect on our entire organism. And with cold feet you feel uncomfortable and experience has shown that you get sick more quickly.

Good reasons for warm feet

The rule of health is derived from the ancient physician Hippocrates, who wrote: „If you want to stay strong, healthy and young and extend your life, keep your head cold and your feet warm.“

Cold feet can lead to a cold.

(Source: State Center for Health Promotion in Rhineland-Palatinate e.V.)

We recommend:

New building: a) Water-based underfloor heating with SolteQ heating system

b) or electric underfloor heating with a suitably large roof area and large power storage

Renovation with existing, water-based heating system:

SolteQ solar roof with heating package with heat pump

There is a lot to be said for underfloor heating. Let the local heating engineer you trust advise you.





Water-based underfloor heating

can be laid on a grid foil using staples ...

Water-based underfloor heating (usually new build)

- Very easy to lay
- Inexpensive (PVC pipes in the middle are very inexpensive and easy to lay)
- Very low losses, only in the boiler room in the basement
- Efficiency: 98-99%

Small disadvantage compared to electric FBH:
Pumps and electricity required

Big advantage compared to the electric FBH:
Can be operated via solar thermal energy

„Energy loss“ occurs in the form of heat that escapes unused. With electric underfloor heating, the electrical energy (=electricity) is converted directly into the desired heat and fed directly into the room. There is practically no loss at all.

The following losses occur with water-based underfloor heating:

- Electrical energy is required to operate the pumps
- Pumps must be serviced and replaced every year
- Heat is lost in the basement

Despite all this, a water-based FBH is a very efficient heating system. The losses mentioned are listed for the sake of completeness, but are negligible.



... and simply integrated into the screed.



Electric underfloor heating

be laid on the screed and integrated into the tile adhesive.



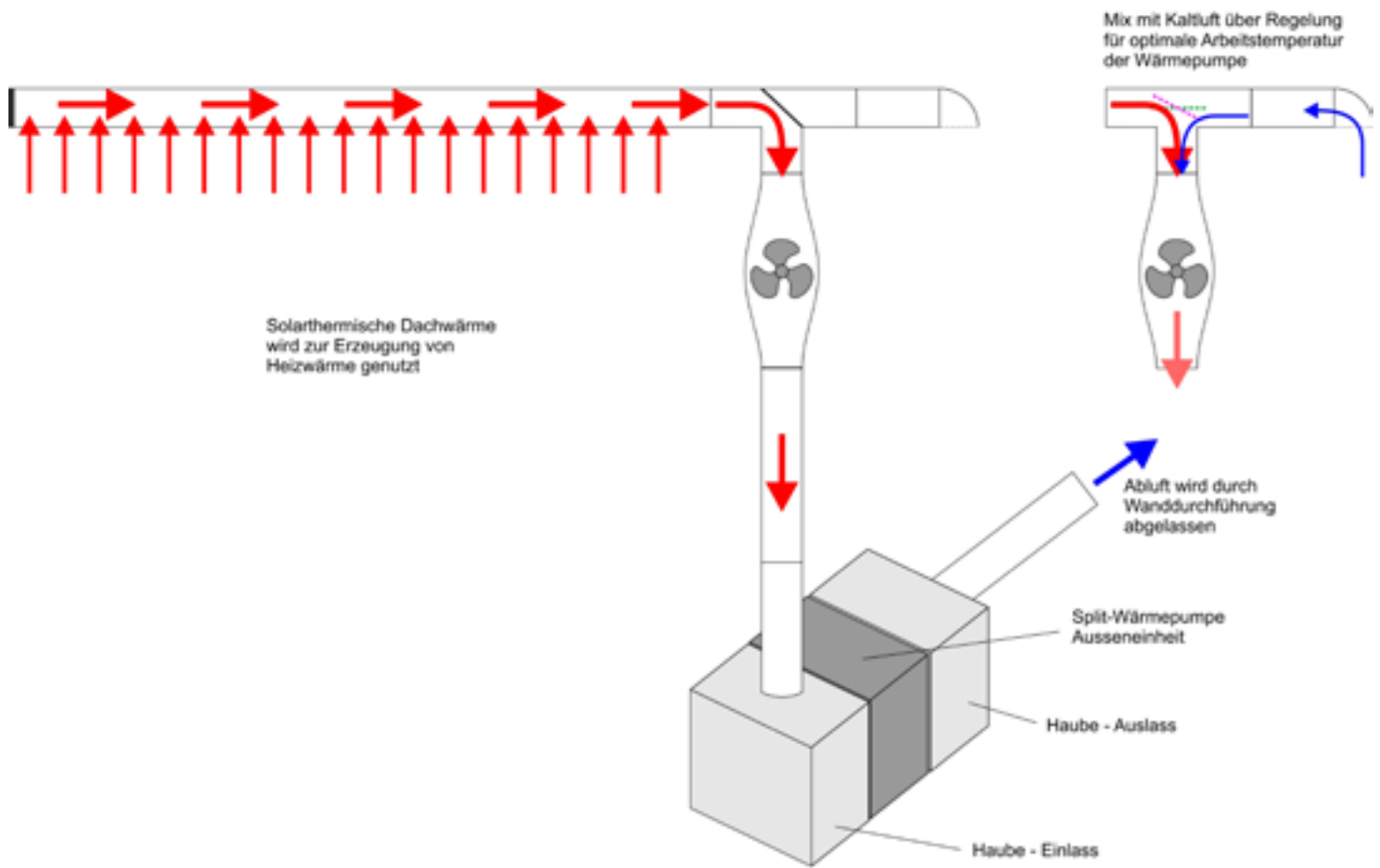
Electric underfloor heating

- Very easy to lay
- Can also be retrofitted into existing buildings
- Very cost effective
- No casualties
- Efficiency: 100%

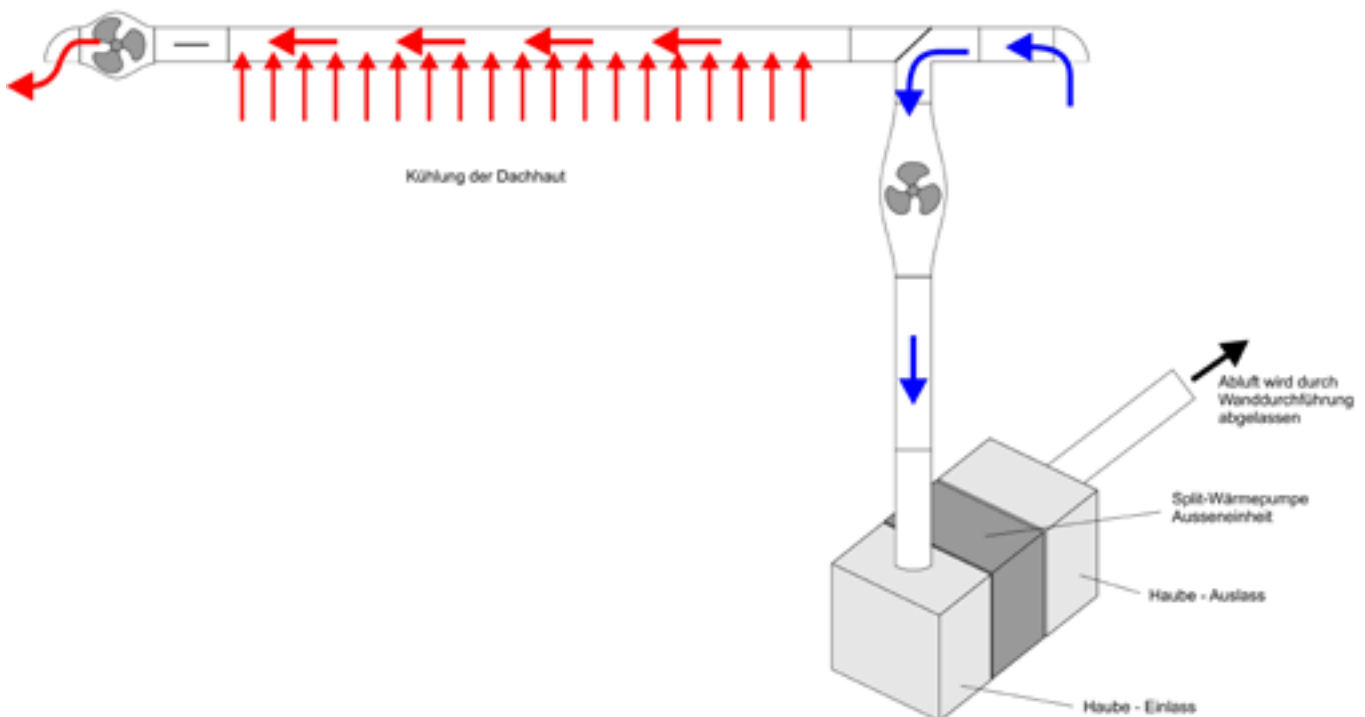
*Big disadvantage compared to water-based FBH:
Operation only with electricity, which is why a lot of electricity is required. The solar roof must be correspondingly large so that household needs can be covered and heating can be generated. Large power storage makes sense in any case, otherwise the heating is operated in the evenings and at night using expensive mains electricity, which makes the whole thing unprofitable.
Big advantage compared to the water-based FBH:
Very easy to install, even when renovating. zero losses.*

Functional modes of the SolteQ Solar Roof heating/cooling

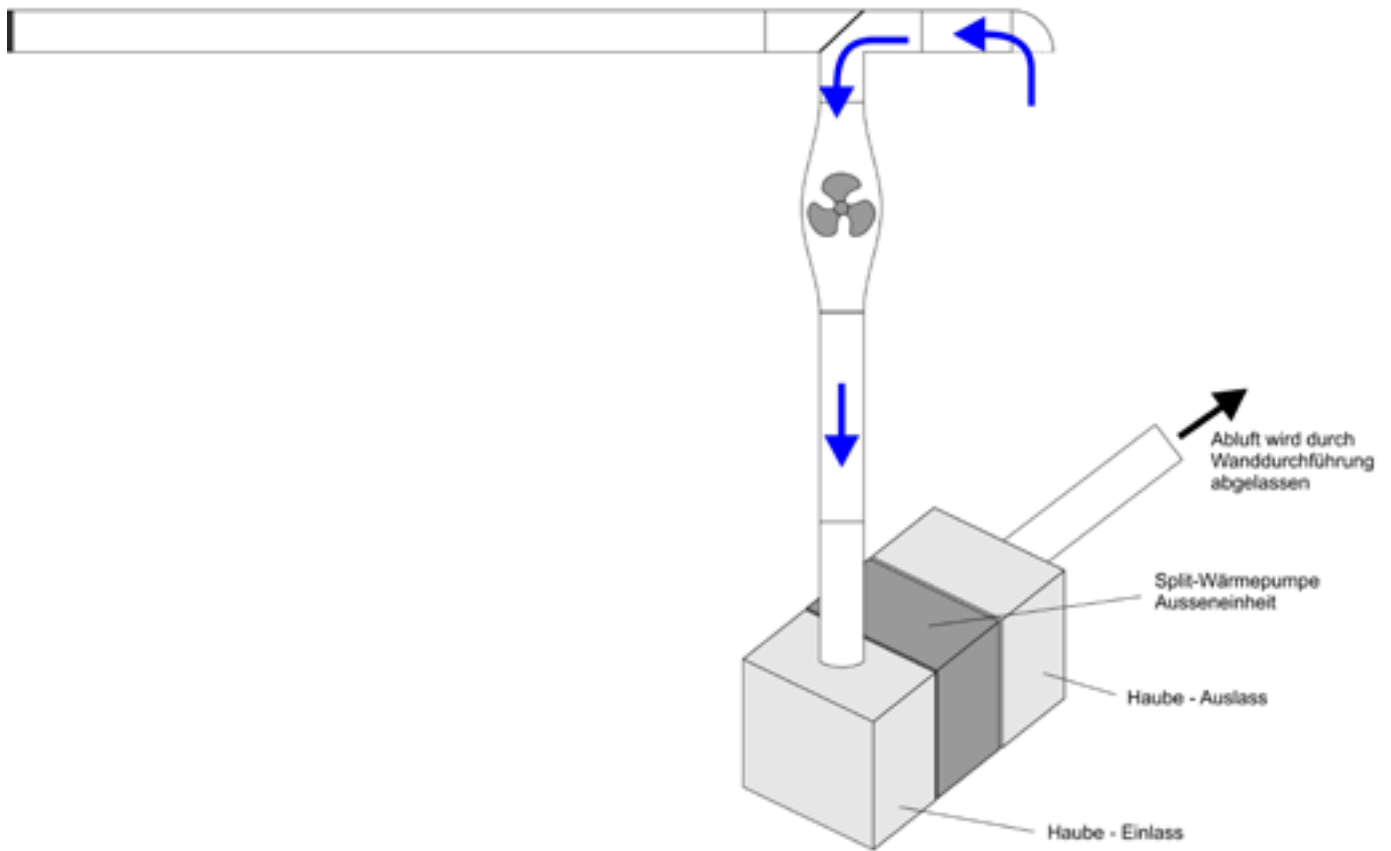
1. Heating mode



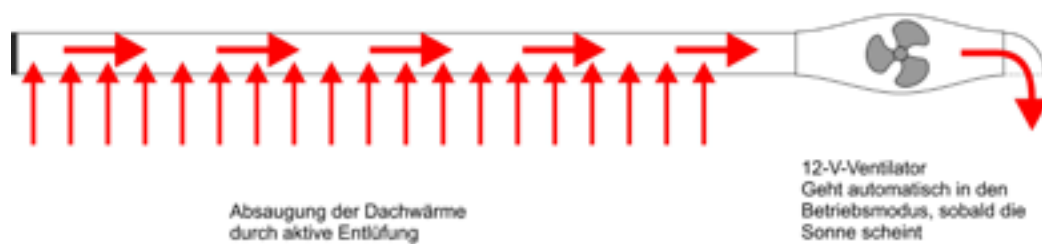
2. Cooling mode Cooling via roof + heatpump



3. Cooling mode Only cooling via heat pump



4. Cooling mode Only cooling via roof



Cooling from above

In summer the house is heated from above. Cooling the roof means that the heat doesn't even get through.

Double effect:

- 1. Pleasant climate inside*
- 2. Air conditioning may not be necessary - save costs!*
- 3. Energy is saved because air conditioning is less*



SolteQ

EXCLUSIVE
SOLARDÄCHER

Photovoltaics can be so beautiful

The SolteQ solar roof costs just as much as a conventional roof covering plus on-roof PV

Your roof will be custom made to fit your home perfectly.



WINNER

Your roof will be made especially for you, perfectly fitting your house.
German Sustainability Award 2021
as a pioneer for sustainability + Architecture & Design

**SOLAR ROOF TILES ACCORDING TO THE
RULES OF THE GERMAN ROOFING CRAFT**

**GERMAN SOLAR TILE MANUFACTURING
BUILDING-INTEGRATED PHOTOVOLTAICS AT ITS BEST
GERMAN BRAND QUALITY**

WWW.SOLTEQ.US

100% Made in Germany

The roof of the future

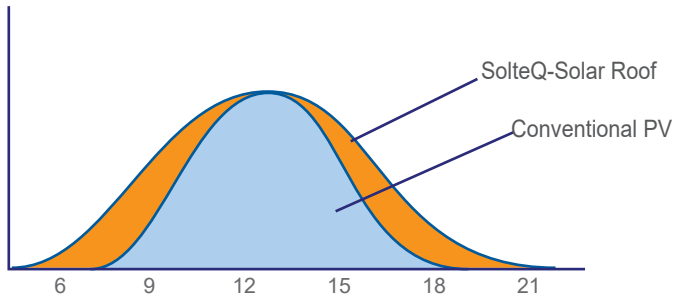
1. Good weather protection
2. Great optics
3. Current
4. Heating
5. ZERO CO₂
6. Charge the e-car

SOLTEQ.



Energy generation of a SolteQ energy roof over the course of the day

The excellent weak light behavior enables power production even in the twilight hours. While conventional PV systems are still “sleeping”; the SolteQ energy roof already generates electricity. 2 hours in the morning and 2 hours in the evening more yield, the total yield over the day and over the year is about 20% more.

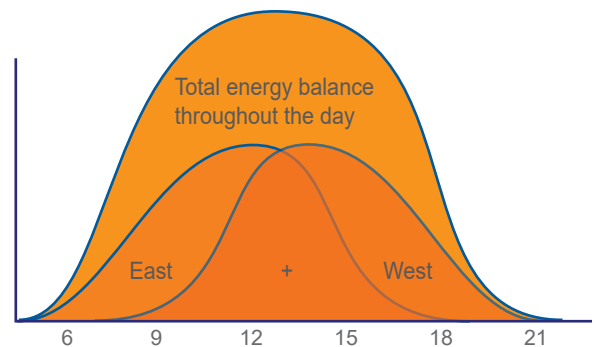
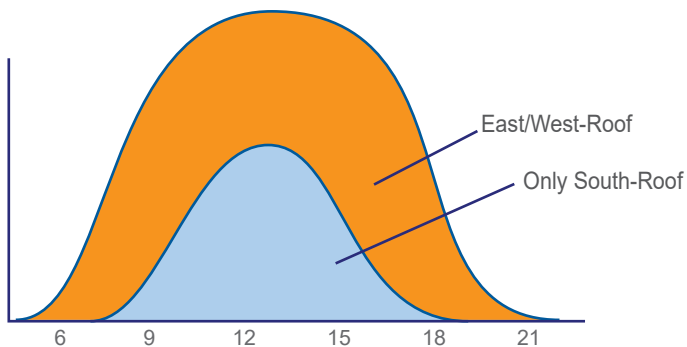


20% additional yield per year through the excellent use of weak light of a SolteQ energy roof!

East/West roofs are very effective!

In the morning the sun shines with full vigor on the east area, from midday the west area takes over more and more. At noon it shines on both surfaces for several hours at the same time, i.e. double the yield. Big advantage: There is no longer a midday peak, the electricity production is distributed over the entire day. Energy yield until the sun goes down, it doesn't get any better than that.

East/West occupancy means almost twice the investment costs. But don't let that put you off, because the yield is twice as high. As a rule, the amortization period and the monthly load are the same as with a purely south-facing roof. But the big advantage is: After the amortization period, you get twice the income in your pocket.



Ideal: east/west roofs with full occupancy

1. Maximum possible energy yield
2. Homogeneous course of energy throughout the day
3. Best use also of the twilight phases



topic of photovoltaics Important to consider:

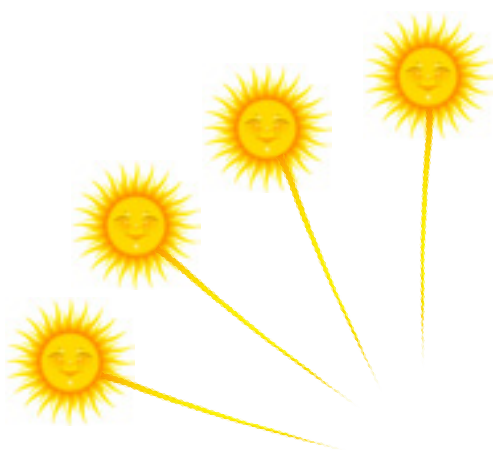
A photovoltaic system does not consistently generate the same amount of energy throughout the year. Every photovoltaic system in the world generates an average of only 24% of the installed capacity in winter. The art of optimally calculating a photovoltaic system consists of explaining this to the customer and not "quickly selling a PV rooftop system".

We therefore warmly recommend using the Energy Design Consultation or Personal Energy Design (PED).



Sommer

Im Winter
nur ca. 13°



In winter, facade systems work better

The low position of the sun in winter is perfect for facade systems. Added to this is the colder air, which cools the cells excellently. On a winter's day with lots of sun and cold air, a PV system can produce more than on a hot summer's day. Lots of sun and cold is the perfect combination for solar energy via photovoltaics. With an additional facade PV system, the low yield from the roof can be compensated very well.

Notice

Calculations and yield values and trends depend on many factors, such as the size of the roof area, inclination, orientation, location, electricity storage, etc. Your personal consumption behavior also plays an important role. If you follow our recommendations, you will get a very high self-sufficiency for electricity and heating energy, possibly even up to 100% if all parameters are right.





Unsere Sonne Das beste Kraftwerk der gesamten Galaxie

The SolteQ energy concept

With today's possibilities, it is easily possible to cover the entire energy requirement of a house purely with solar energy. It's not priceless either. You just have to want it.

With this information brochure, we would like to show you how you can take a small or large step towards energy efficiency and the energy transition for any budget and save a lot of money. With electricity generation and heat generation via photovoltaics in combination with heat pumps and storage options, even a small family home can save several tons of CO₂ per year.

The roof of a house gets warm, in summer around 62°C and in winter it is usually above zero under the roof skin. A heat pump can extract enormous amounts of thermal energy from the ambient air, even at sub-zero temperatures, and even more from the preheated air from the roof. Everything above absolute zero (-273°C) is energy.

It is simply incomprehensible to pay money for 10,000kWh p.a. for gas or oil when even a small roof can supply 40,000kWh p.a. and more completely free of charge.

The fossil fuel savings can completely finance your new roof or even your whole house in the long run. Feel free to ask, we will show you how you can save a lot of money and CO₂. A consultation is completely free.

SolteQ's philosophy

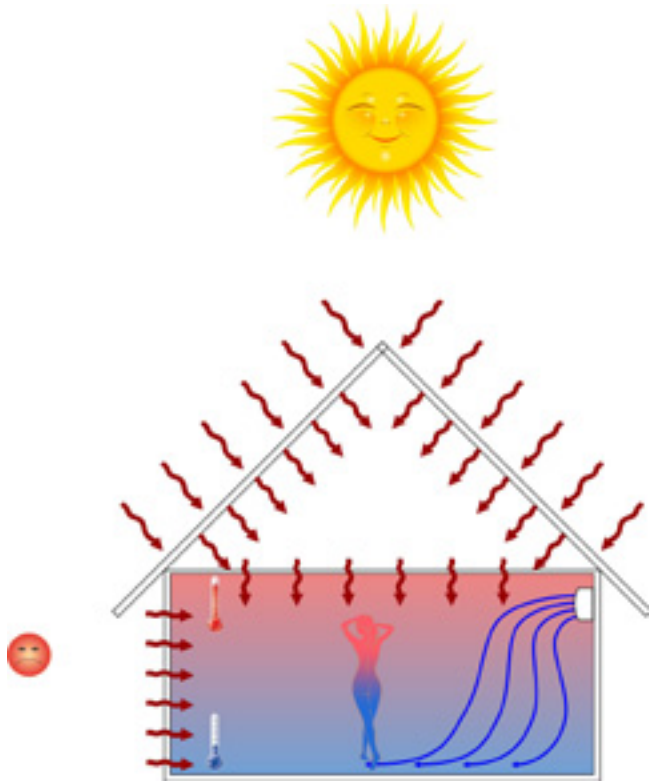
Why do institutes and some rich people invest in rockets to travel to dead planets or space? Why is so much money going into space exploration. dead planets, settlement ventures on the moon and Mars, although there is still so much to explore and discover here?

There is so much to do on our own and so amazing planet. Animals must be protected from humans, e.g. from poachers and environmental pollution. Oceans need to be cleaned again. There is so much to research and develop in clean energy generation. It is time. At least that is the goal of SolteQ.

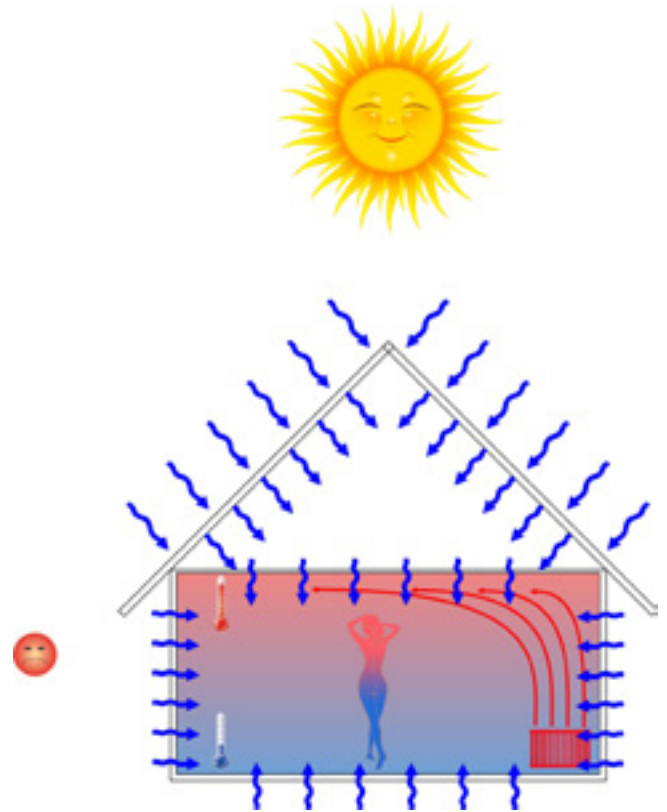
The SolteQ Group is a 100% family-run company, consists of several companies with different areas of activity and employs numerous people worldwide. The SolteQ Group exclusively develops and produces technologies and products for a clean planet. Solar roofs, wind turbines for drinking water production without diesel (SolteQ-Energy FreshWaterMill), yachts and boats that charge themselves with solar energy and much more.

Worldwide there are over 2 billion people and animals without access to clean drinking water. People and animals in Africa and other parts of the world drink brown broth. And we Europeans flush our toilets with the cleanest drinking water. „A shame“ said the founders of SolteQ and founded their own charity organization. SolteQ donates and builds, among other things, from the profits from sold solar roofs, photovoltaic groundwater wells and wind turbines for drinking water production in South America and Africa. SolteQ is now represented worldwide with its own branches.

Conventional heating systems

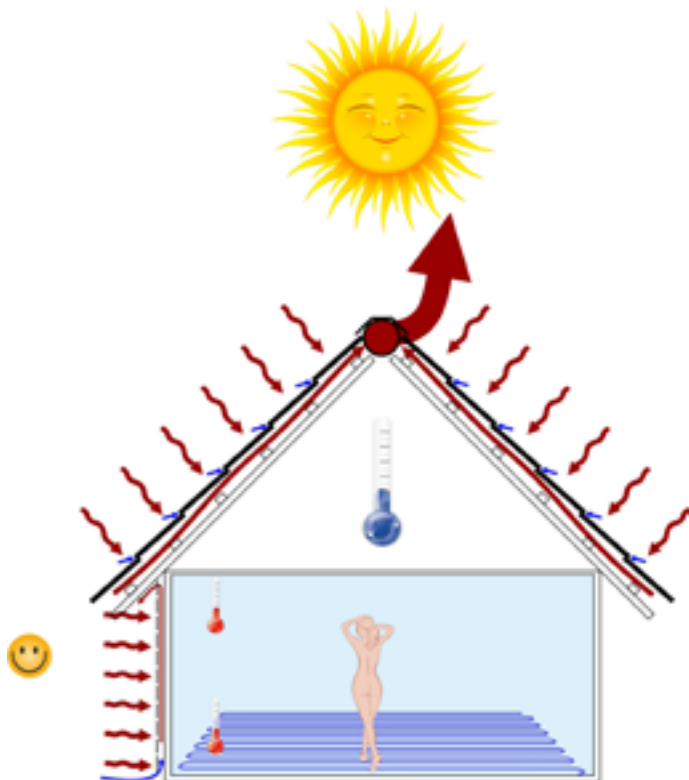


Normal clay tile roof in summer Heat penetrates from above, air conditioning is running at full speed - cold feet, hot head

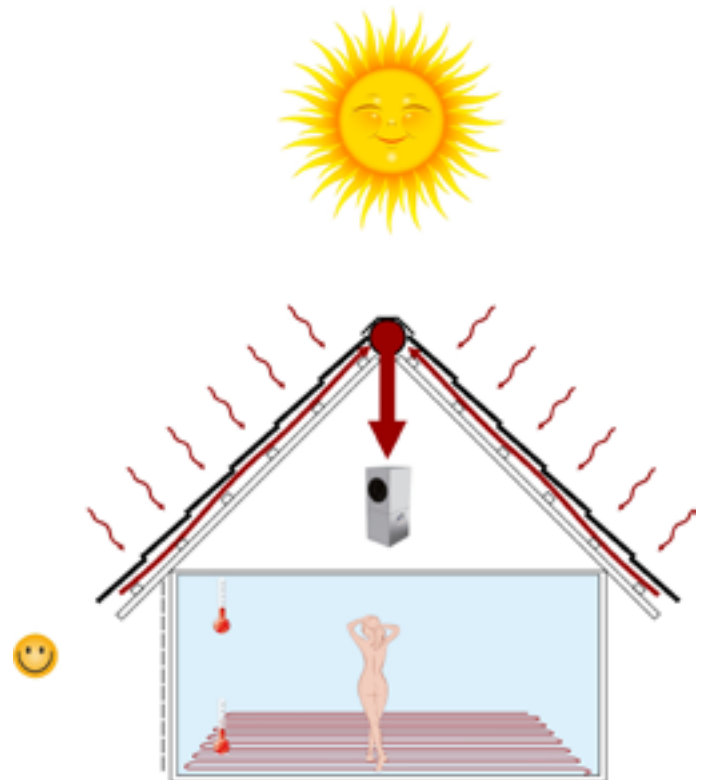


Normal clay tile roof in winter Cold penetrates from all sides, radiator heating is set to 22°C - cold feet, hot head

Feel-good climate



SolteQ solar roof with active cooling in summer Heat from above is prevented, no air conditioning required, heat in the roof skin is reliably „blown away“. Ideally with a reversible heat pump and underfloor cooling. Pleasant climate for head and feet



SolteQ solar roof with SolteQ heating in winter Cold from above is prevented, geothermal or air/water heat pump and underfloor heating or complete electric underfloor heating. Pleasant climate for head and feet

Possibilities for storing the thermal heat or thermal heat energy for the 100% solar heated house.

Storage of thermal energy makes sense to bridge periods of low sun. The cycle times of e.g. heat pumps can also be shortened so that they are not constantly switched on and off, which extends their service life. The buffer tank is absolutely necessary for the hot water supply, because a heat pump is not a continuous-flow heater.

In a detached house, a storage temperature of 40-50°C is completely sufficient with a flow temperature for the heat pump of approx. +5K more, i.e. 45-55°C. This also increases the efficiency of the heat pump. Various technologies are now possible for storing thermal heat energy, and we would like to show you the most important ones below.

a) heating buffer tank or

With low to medium heat requirements and short bridging cycles, it is usually sufficient to connect one or two additional heating buffer tanks in parallel to the main buffer tank. The storage capacity is usually limited to the needs of a few days. The storage medium is water.

b) latent heat storage

A special class of solar storage tanks are long-term storage tanks that do not use water as the heat transfer medium. These include latent heat storage and thermochemical storage, which store heat in endothermic (heat-consuming) reactions and release it again through exothermic reactions.

c) Long-term heat storage

Long-term thermal storage is an insulated water tank embedded in the ground under the floor slab or alongside the building. The bridging time is relatively long if the tank is dimensioned accordingly.

The storage medium is usually water or water with gravel, or just gravel as a storage medium.

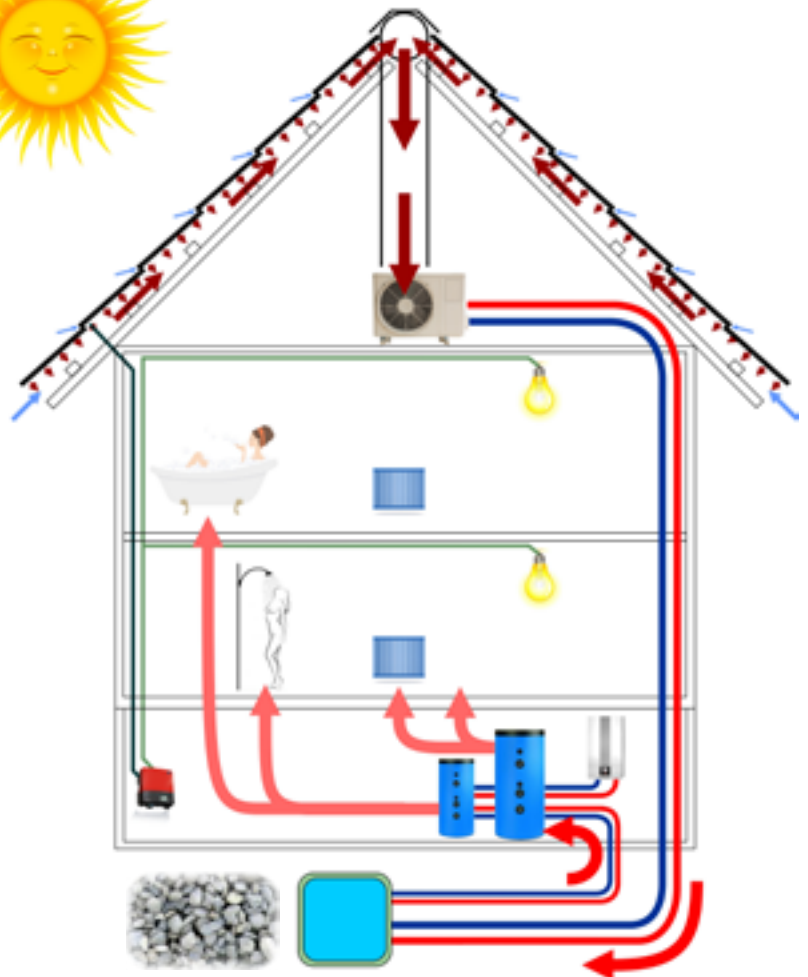
d) Season Memory

A seasonal tank is also a well-insulated water-based tank, but with a very large storage volume. The bridging time is several weeks to months.

A conceivable possibility for new buildings would be an underfloor storage reservoir under the house floor slab made of water or gravel, which can even store the heat for several weeks. In neighboring countries, e.g. Sweden, this is already being practiced successfully, the so-called „Sweden plate“.

Special feature of the SolteQ energy roof:

The storage is fully charged by the SolteQ energy roof in summer. The storage is dimensioned in such a way that a bridging period of several weeks is sufficient, so oversized dimensions are not necessary, since the SolteQ energy roof permanently charges the storage, even in winter when the temperatures are below zero. Due to the heat pump technology and the enormous amount of heat from the roof, charging takes place during the day and at night. In the summer the battery is practically fully charged, in the other periods of the year it is charged with less thermal energy, practically as a trickle charge. This is the solution for a completely self-sufficient heating operation.



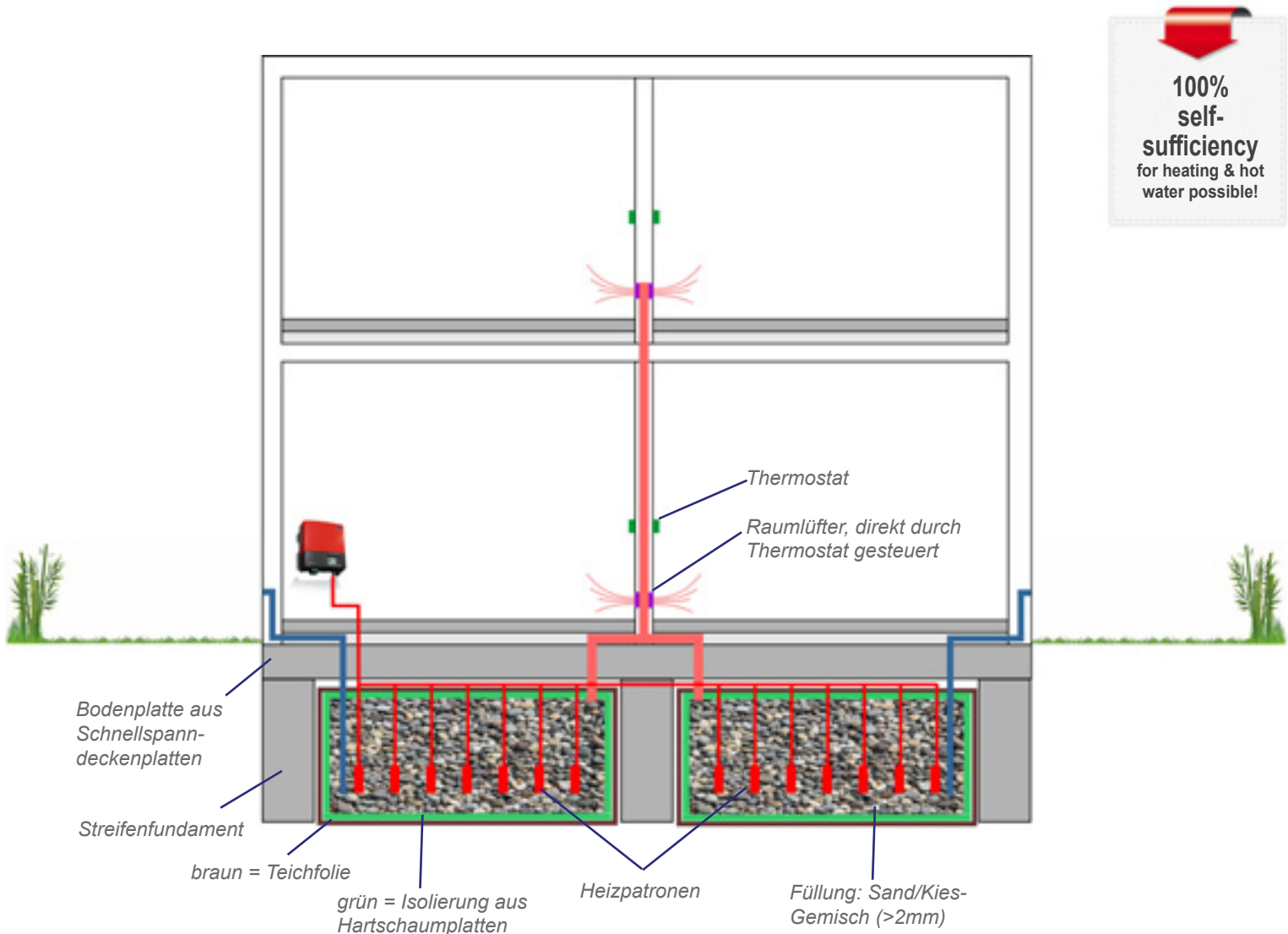
House core storage
Huge advantage: zero loss



SolteQ tip:

The do-it-yourself underfloor long-term storage - cheap and highly effective

It has been practiced in Sweden for decades: heating up the ground under the house in summer and using the heat in winter. Here we show you a simple and inexpensive way to store thermal energy. It doesn't matter whether the storage is 100% tight or not. Still, it's very easy to get good insulation.



The principle is simple: like a night storage stove, only much larger, since larger amounts of energy are to be stored for longer periods of time.

A gravel reservoir is created under the floor slab, consisting of pond liner, insulation made of damp-proof foam boards (Styrodur or similar). The pond liner is first laid as a watertight separating layer on the compacted sand substrate between the strip foundations. In the interior, the hard foam panels are laid on the floor and on the walls. Then the whole thing is filled with regular river gravel. The heating elements, which are supposed to heat up the gravel, are embedded in the lower third, as well as the pipe for supplying fresh air on the outside. Hard foam panels are then placed as a cover and the pond liner is sealed airtight. The suction is embedded on the inside. The best heat accumulator imaginable for a house is ready.

The room is ventilated directly via the room thermostats, in that when heat is required, warm air is sucked out of the heat accumulator via the room fan integrated in the wall.

The heat accumulator is charged free of charge by the SolteQ energy roof, the rooms are kept at the desired temperature fully automatically via the thermostats. Totally free heating. What more do you want ...

SolteQ tip:

Use of heat from the exhaust air from the heat pump

The heat pump is fed with the warm air from the roof. However, the heat pump does not extract all the heat from the exhaust air. It uses a large part of the thermal energy, but part remains in the air that exits the heat pump again.

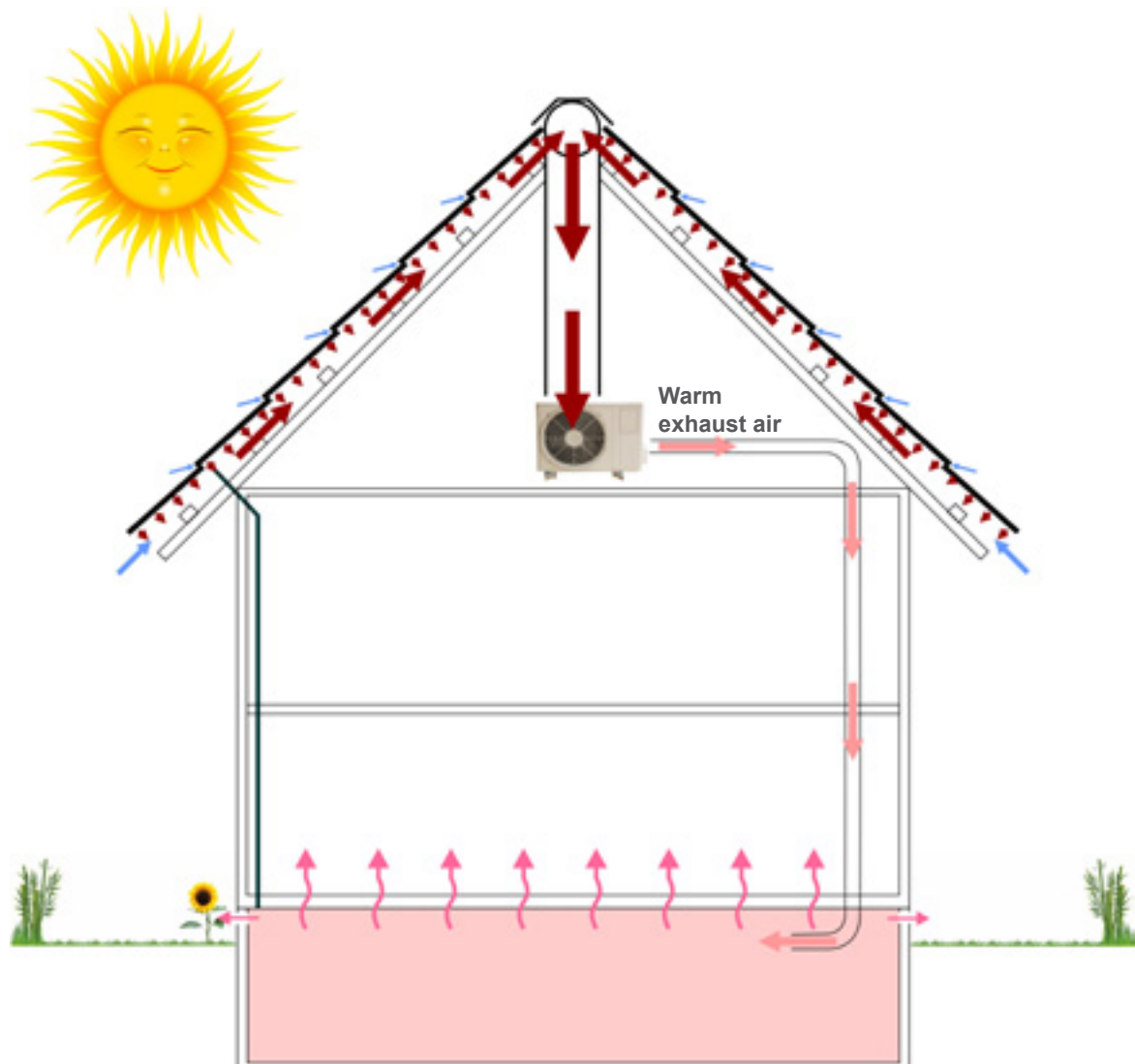
The exhaust air from the heat pump is therefore still relatively warm during the day. Why not use?

This residual heat can also be used relatively easily:

The exhaust air is directed into the cellar and the other rooms in the basement. Don't worry, the air is completely clean, the heat pump does not produce any exhaust gases. In this way, the basement is heated and the heat also reaches the upper floors.

Simple and easy to implement.

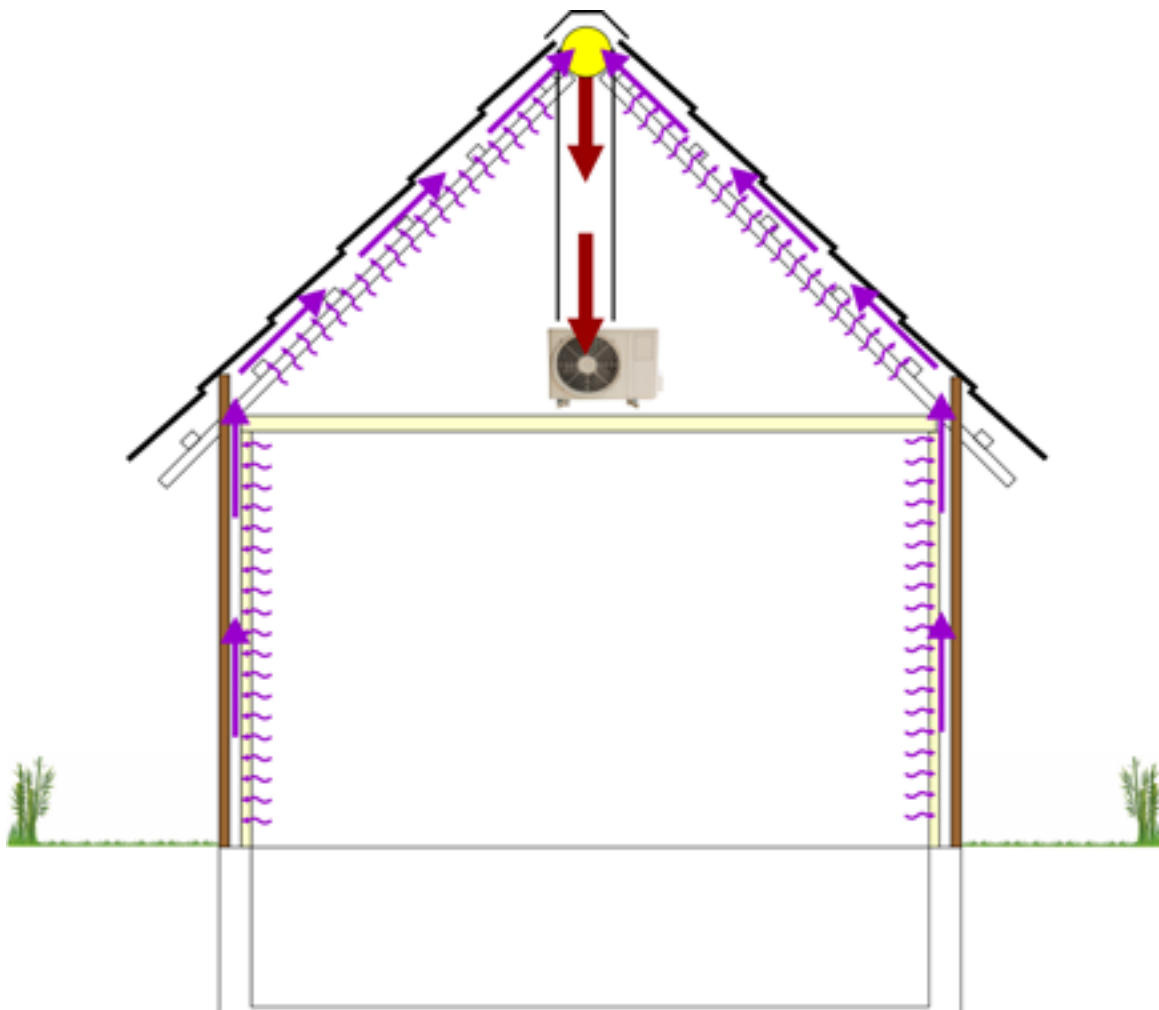
The heat pump also runs at night, but then it works with air that has not been preheated by the roof, i.e. pure ambient air that is sucked in via the roof. In order not to cool the basement again, the night-time exhaust air can be directed outside directly in the attic. This can be done with electrically adjustable air recirculation flaps and a simple timer or smart home control.



SolteQ tip:
heat recovery

Heat loss escapes through the walls and the roof. Now imagine that the heat that wants to get out through the walls and roof is intercepted again and fed to the heat pump. This is then fed back to the house and losses are reduced to a minimum. This principle is presented below:

The house consists of a double-walled wall structure, which is usually built anyway. Save yourself the insulation between the walls. On the one hand, the air between the walls has a good insulating effect. On the other hand, this is our „intake channel“ through which the escaping heat is captured again. Better energy efficiency is no longer possible...



There is free energy on your roof - use it!

On average over the year, our sun gives us the following amounts of energy:

Electricity (photovoltaic): approx. 950 kWh/m²/kWp (= „ground reference value“, average Germany)

Thermal energy: approx. 1,100 kWh/m² (mean value for Germany)

Example: 100m² south-facing roof

Electricity (photovoltaics): 17,300 kWh per year

(an average single family house has a power requirement of approx. 5,000 kW)

Thermal energy: approx. 110,000 kWh per year

(an average single family home has a heating energy requirement of approx. 10,000 kWh)

... further questions ?



CO² savings

it's so easy for everyone to protect the environment in everyday life. Improve your CO₂ balance and actively contribute to environmental protection!

Guide values for CO₂ savings: Photovoltaics: 0.65 kg / kWh

Condensing gas heating 260 g / kWh

A SolteQ energy roof from the Quad series saves 9.2 tons of CO₂ per year with an installed capacity of 16.2 kWp on a 100m² roof area.

With heating support even 11.8 tons.



Amortisation

The SolteQ energy roof costs slightly more than a conventional roof covering plus on-roof PV system and pays for itself completely, including photovoltaics, solar thermal, insulation, insulation and all roofing work (!).

The SolteQ energy roof concept is the only roof system that gives you something in return. Normally, a roof never pays itself back, at most a PV system.

We will show you how an entire roof structure pays for itself after e.g. 10 or 15 years. Not just the photovoltaic system, but the entire roof!

Then it cost practically nothing.

We would be happy to plan your project and create a profitability calculation.

... a roof for free and it brings in money - SolteQ makes it possible!



The SolteQ-Concept

- ▶ A house with a stylish energy roof
Every house has a roof, the area is there anyway and should definitely be used.
- ▶ Maximum generation of electricity, including storage for evening use
- ▶ Generation of heat for heating and hot water purely from the roof
- ▶ Vehicle charging

Busy like the bees
The SolteQ energy roof.



**Energy transition ?
Just start now!**



Electromobility

Charge your car for FREE !

Drive to work every day for free. As a housewife, you can drive the children to kindergarten and go shopping for free. Electric cars do not (yet) have a long range, but they are already perfect for short distances because they can be driven completely free of charge. It's possible - we'll show you how!



The SolteQ house concept:

buy a house with an energy roof,
Get a house with an electric car

And in the future
no electricity, no heating,
and no more fuel costs!

We would be happy to work out a house concept
for you,
in which an electric car is included in the house
financing for almost free.

Buy a house - get a house and an electric car.
... without a catch.

**Pack the sun in your tank!
FOR FREE !**



picture.: Renault-Zoe-Z.E.

A frequently asked question:

Is a completely self-sufficient energy supply possible?

Answer: yes! Everything is possible !

It's just a question of the size of the roof area, the energy requirements and the budget.

a) electricity

A 100m² roof area with an installed capacity of 15.5kWp generates around 14,500 kWh of electricity per year when facing south. That is far more than a four-person household needs. East/West orientations generate at least 80% of the power of a South orientation.

With an electricity storage solution, there is a very high probability that you will cover all of your electricity needs with the SolteQ energy roof.

The storage system should be well matched to the needs and the roof capacity so that the calculation really works. The roof has to cover the energy needs of the occupants during the day, even in winter, and at the same time be able to charge the storage tank so that the electricity is also available at night. A bridging time for 2-3 sun-free days must also be taken into account. If the house roof area is not sufficient, you can take the garage or carport with you. In any case, the possibilities are there.

b) heating

An output of 670W/m² per m² falls on our roofs, we know that from solar thermal collectors. The amount of energy that a black roof area of 100m² delivers is simply immense. In summer, a clay tiled roof heats up to approx. 62°C, a SolteQ energy roof with quad anthracite roof tiles heats up to approx. 70°C. This heat is extracted and concentrated via the heat pump.

By the way: a good heat pump still generates plenty of heat energy even at -10°C, i.e. also at night if necessary.

The heat generated can be used directly, but should also charge a heat storage tank (heating buffer storage tank) with sufficient volume for the night.

Costs:

A heat pump with an additional heat storage tank or heating buffer storage costs about as much as a good gas heating system. For one-time costs of only 5...8,000 euros, including installation, heating costs can be saved completely.

The following parameters must be taken as a basis to achieve self-sufficient supply:

- Usable roof area, if necessary, the garage and the carport must also be found
- Electricity and heating or heating requirements per year
- Consideration of electricity usage over the course of the day and effective adjustment (e.g. use large consumers, such as washing machines, during the day)
- Provide storage facilities for electricity and heat energy
- Bridging period without any solar radiation, if necessary, a backup energy source must be planned (electricity/gas)
- Budget planning

With a correct calculation and sufficient design, a 100% own energy supply is guaranteed!

Our team likes to help you ! We create a preliminary calculation free of charge, which is designed for your building and your needs. Simply send us the above information and we'll see how we can achieve a self-sufficient solution or at least maximum performance within the budget.



Heat your pool, spa or sauna completely for free!

Heating a pool is expensive. The SolteQ energy roof does this free of charge. Especially in our latitudes, you can enjoy the pool longer in the year if it is heated.

Even at temperatures below 10°C it is possible to reach a water temperature of a pleasant 25°C.

What to look for when buying a heat pump for the pool

Of course, it is important to ensure that the heat pump offers the right output for your own pool. However, the selection of the necessary power depends on several factors:

- Desired water temperature
- Outside temperature
- water volume
- Degree of isolation of the pool to the ground
- With / without pool cover with insulation
- Free pool surface

The following table shows example pool sizes and suitable heat pump outputs: at an outside temperature of +10°C and a water temperature of 25°C:

30-40 m³ => 8-10 kW
40-60 m³ => 11-13 kW
50-80 m³ => 15-17 kW

The performance of the heat pump should never be dimensioned too low, as otherwise the heating takes too long or cannot take place sufficiently.

heating

a) Via the stream from the roof

When the roof area is fully occupied, the SolteQ energy roof produces surplus, which can be used to heat the pool via a corresponding instantaneous water heater. A part of the SolteQ energy roof from e.g.

b) About the thermal energy from the roof

With a heat pump heating system, part of the thermal energy from the roof can be used to heat the pool via a heat exchanger.

Electricity and heat for your wellness oasis completely off the roof and completely free!

heating for



Atmospheric garden lighting, pool lighting ... free of charge.

*To be too good to be true ?
This is the case with many things in life.*

*We will show you that this is possible in the field of energy today. The vision of SolteQ and current, very cheap subsidies and grants make a relevant contribution.
Simply let us advise you free of charge and without obligation.*

*Operate your wellness oasis
completely off the roof and completely free!*

**electricity +
heating +
light**

everything for



Heating packages suitable for the SolteQ energy roof

Heating packages suitable for the SolteQ energy roof heating package 1: For the single family home with a maximum of approx. 200m² of living space

Consisting of:

- Mitsubishi ECODAN Power Inverter HEAT PUMP SET SPLIT, heat pump set 2.2, consisting of fan unit PUAZ-SW50VHA and indoor unit EHSD-VM2C, power electric heating rod 2kW, heating output/COP (A7/W35): 5.91 /4.45
- Special spiral duct for the ridge for suction
- Heating buffer tank 1,500l
A design as a buffer/combined storage tank is possible for an additional charge.
- Power storage, 4.8kWh, single-phase
- Connection accessories for assembly
- Assembly and commissioning will be charged at cost

Heating package 2: For the larger family home with approx. 200...500m² of living space

Mitsubishi ECODAN Power Inverter
HEAT PUMP SET SPLIT
5kW:
consisting of
heat pump set 2.2,
consisting of fan unit PUAZ-
SW50VHA and
indoor unit EHSD-VM2C,
Power electric heating rod 2kW,
Heat output/COP (A7/W35):
5.91/4.45

Devices are only examples, delivery



And never again heating costs!

Power storage, 4.8kWh:
consisting of
- 4xAGM batteries or LiFePo4
- 1x battery inverter SMA or similar.
single-phase, without outer casing

A notice:
The power storage in the heating
package is intended exclusively for
safe heating operation. If a power
storage unit is also required for
other types of power storage, this
must be ordered separately.
However, combined operation may
also be possible by increasing the
output, our technicians will be hap-
py to advise you.



+



Heating buffer tank, 1,500l
(Combined tank possible for an extra
charge)

These are just examples of possible system configurations. The suitable devices are determined individually depending on the system and availability in the market.

- Devices and prices are only examples -
In the event of an order, suitable devices, if necessary from alternative manufacturers, are selected in the course of system planning

Heating package 3: For the apartment building or hotel with approx. 500...2,000m² of living/usable space

Consisting of:

- a) SPLIT HEAT PUMP SET Heliotherm or similar
- b) Special spiral duct for the ridge for suction
- c) 2,000l heating buffer tank
A design as a buffer/combined storage tank is possible for an additional charge.
- d) DHW tank, 600l
- e) Power storage, 4.8kWh, single-phase
- f) Connection accessories for assembly
- g) Assembly and commissioning will be charged at cost

Higher services are possible for a corresponding surcharge. The offer includes the buffer tank connection. The buffer tank is connected to the heating system on site and is not included in the offer. Prices plus VAT and shipping.
The offer is non-binding and only applies in connection with a SolteQ energy roof.

*Heliotherm HEAT PUMP SET
SPLIT,
6.5 ... 15kW:
consisting of
heat pump set
consisting of fan unit and
indoor unit
Optional electric heating rod 2kW,
Heat output/COP (A7/W35):
5.98/4.8*

*Devices are only examples, delivery
can also take place with alternative
devices.*

*A notice:
These are only exemplary heat
pumps and types. Others can also
be used.*



*Power storage, 4.8kWh:
consisting of
- 4xAGM batteries
- 1x battery inverter SMA or similar.
single-phase, without outer casing*

*A notice:
The power storage in the heating
package is intended exclusively for
safe heating operation. If a power
storage unit is also required for
other types of power storage, this
must be ordered separately.
However, combined operation may
also be possible by increasing the
output, our technicians will be hap-
py to advise you.*



And never again heating costs!

*Heating buffer tank, 2,000l
(Combined tank possible for an extra
charge)
+ DHW tank, 200l*

+



+



From planning and implementation to the completed project with commissioning and funding service, our employees are there for you on site. The installation is carried out by one of our specialist partners in your region.
We look forward to your call.

WE SUPPORT

*Schützt unsere wunderschöne Umwelt !
Wir haben nur einen Planeten*

www.animalsunited.de

Sponsored by:

SolteQ

SolteQ Europe GmbH



Stiftung Der grüne Baum

Zertifiziert durch



TPS Technische Prüfstelle für Solartechnik



Kennst du den wahren Preis für deinen Pelz?
Zu Billigpreisen und auf Kosten Millionen gefolterter Füchse, Waschbären, Hunde und Katzen. Erschlagen. Erstickt. Vergast. Lebendig gehäutet.
Pelz ist peinlich!

Wer Pelz trägt, trägt den TOD

FUCHS
KILLED IN FIRELAND

Weißt du was du trägst? Bist du gelabelt? www.gelabelt.de

Fotograf: Michael Bink
Maskenbildnerin: Dora Ott
Model: Sandy P. Peng

animal 2000



*Save our wonderful environment !
We have only one Planet*

There are climate protectors and there are climate gossips.
SolteQ acts!
SolteQ offers everyone the opportunity to actively participate in climate protection in the form of citizen participation. Already possible from 100 euros. SolteQ solar roofs are the ideal means to make the planet free of CO2 emissions. For this purpose, „SolteQ Solar-RoofCenters“ are being set up nationwide and worldwide, which are intended to advise citizens and craftsmen on „clean energy generation from their own roof“. Anyone can take part in the SolteQ project and contribute to the short-term spread of SolteQ solar roofs and other products for clean energy generation and earn money from the sale of each solar roof.
Project: Solar roof advisory centers for active climate protection.



www.KlimaschutzAktiv.eu



Stiftung Ein Euro Spende
www.EinEuroSpende.eu



www.animalsunited.de

„Wer PELZ trägt, trägt den TOD.“
Peter Maffay

Kennst du den wahren Preis für deinen Pelz?
Zu Billigpreisen und auf Kosten Millionen gefolterter Füchse, Waschbären, Hunde und Katzen. Erschlagen. Erstickt. Vergast. Lebendig gehäutet.

Weißt du was du trägst? Bist du gelabelt? www.gelabelt.de

animal 2000 Antiquar. Handel. für
Reisende/Lebende - Bonn, D

HOW DO PEOPLE ACTUALLY DEAL WITH ANIMALS?

KILL - KILL - KILL

The eternal war against ourselves and our roommates, who cannot protect themselves because they are not that „intelligent“ and have not developed guns, do not wage wars and want to live peacefully.

Man considers himself to be the „most intelligent species on earth“ and destroys everything and DEAD.

Wouldn't it be „smarter“ if man protected his planet?

Stoppt den Haustier- abschuss

**KEINE JAGD OHNE
VERNÜNFTIGEN GRUND***

www.stopkilling.info



* Tierschutzgesetz § 1: „... Niemand darf einem Tier ohne vernünftigen Grund Schmerzen, Leiden oder Schäden zufügen.“
Jäger/innen töten in Niedersachsen jedes Jahr etwa 20 – 30.000 Katzen.



It takes 10 kg of grain to produce 1 kg of beef.
A fattening pig eats 300-400kg before it is killed at 25kg.
Plus the feed for the 2,500 kg sow.

What's the point of killing?

Stoppt die Fuchsjagd

KEINE JAGD OHNE
VERNÜNFTIGEN GRUND*

www.stopkilling.info



* Tierschutzgesetz § 1: „... Niemand darf einem Tier ohne vernünftigen Grund Schmerzen, Leiden oder Schäden zufügen.“
Jäger/innen töten in Deutschland jedes Jahr fast eine halbe Million Füchse.



The SolteQ Plus Plus energy house Electricity + heating purely from the sun

... for a happy future and more quality of life.

Become



SolteQ exclusively develops and produces technologies for a clean environment. From every solar roof sold, 1-2% goes to animal and environmental protection. We are also active, cooperation or membership with



Solarenergieförderverein Bayern e.V.
Bavarian Association for the Promotion of Solar Energy



Vereinigung zur Förderung des Deutschen Brandschutzes e.V.
German Fire Protection Association

Wir unterstützen:



www.vier-pfoten.de



www.peta.de



ifaw.org



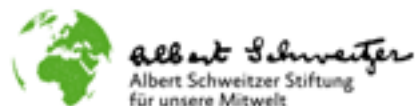
www.welthungerhilfe.de



www.duh.de



www.greenpeace.de



www.albert-schweitzer-stiftung.de

SolteQ Solar GmbH
Willesch 6
D-49779 Oberlangen

Tel: +49 (0)5933 - 92 48 0
Fax: +49 (0)5933 - 92 48 29
email: info@solteq.eu