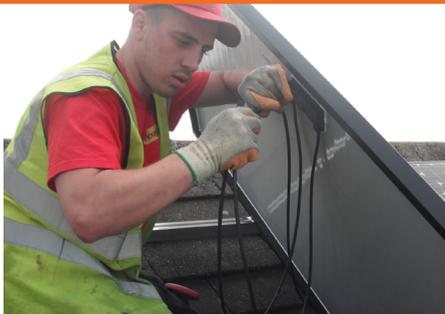


# SOLAR INSTALLATION



## Guidance for Property Owners



THE NATIONAL FEDERATION OF  
ROOFING CONTRACTORS LIMITED



This leaflet has been given to you by a member of the National Federation of Roofing Contractors Limited (NFRC), the UK's largest roofing trade association. By using an NFRC registered contractor, clients have the assurance of guaranteed protection and quality.

Within this free leaflet you will find all the necessary information you, as the property owner, will want to consider when looking to install solar. If you have any questions at all do not hesitate to talk to your chosen roofing contractor.

WHY?

## Why install a solar system?

There are many reasons why people chose to have solar installed on their property:

-  **saves money** and **protects you against energy price rises**
-  can **earn you money** through Government-backed schemes (*see below*)
-  **reduces** the amount of **harmful carbon dioxide** (CO<sub>2</sub>) produced by your property *i.e. an average system could save a tonne of CO<sub>2</sub> a year*

### Solar PV:

In April 2010, the UK Government introduced a scheme that provides individuals who use the sun's energy to generate electricity with long-term financial rewards. Known as FITs, the renewable **Feed-in Tariff** scheme, provides indexed linked payments that protect the home owner against future energy price increases. The best news is that FITs is government-backed, guaranteed for 25 years and all the work is charged at 5% VAT.

### Solar Thermal:

The Renewable Heat Incentive (RHI) will support solar heating installations for domestic properties starting from October 2012. It will pay householders for generating renewable heat energy in a similar way to the Feed in Tariff for electricity. Qualifying installations between now and October 2012 will be eligible for the full 20 years of index linked payments as if they were installed on the start date, and will also qualify for a grant of £300 under the Renewable Heating Premium Payment.

For more information go to the Energy Saving Trust [www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk).

## How do I get the Money?

For the building owner to qualify for the Feed-in Tariffs (the financial incentives) then the installer has to be approved under the Government Microgeneration Certification Scheme (MCS), as do the products they install.

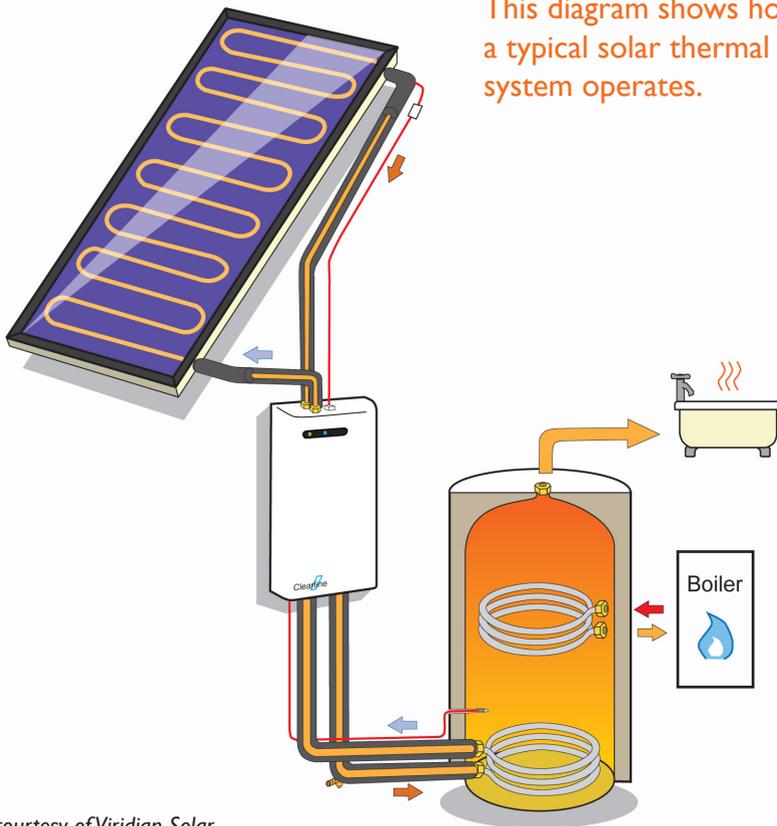
## The Different Types of Solar Energy

There are two main forms of solar energy system for buildings – Solar Heating and Solar Photovoltaics (PV)

### Solar Heating

A solar heating panel is very simply a black surface in an insulated container that absorbs light and heats up. The heat is then transferred into a working fluid that in turn moves the heat to a place where it is useful – perhaps a hot water store, swimming pool or space heating for a building.

Higher-performing solar heating panels do not require direct sunshine and will collect heat on a cloudy day. Typically, the energy is used to provide hot water for washing, which is relatively constant throughout the year and better matches the availability of solar energy than space heating.



This diagram shows how a typical solar thermal system operates.

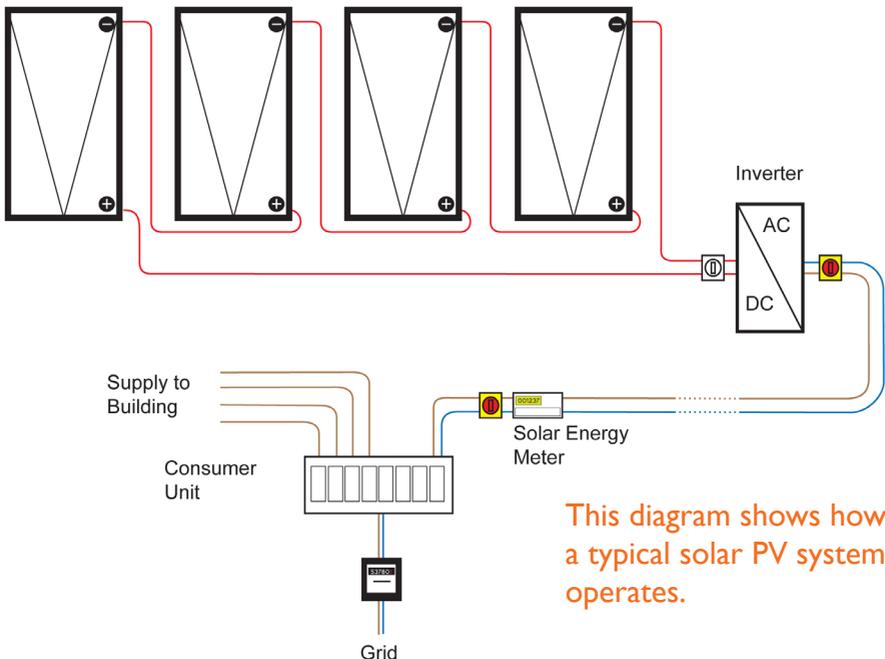
# SOLAR PV

Solar Photovoltaic (PV) cells convert light directly into electricity, and have become commonplace on devices such as calculators and watches. Costs have continued to fall as efficiencies of PV materials have risen, so the technology is becoming more and more cost-effective for generation of energy on buildings.

The most common technology uses thin wafers of silicon semiconductor materials connected together in a photovoltaic panel or module.

The panels themselves are then electrically connected together into an array. The direct current (DC) electricity they produce needs to be converted to alternating current (AC) to use in the building. A piece of electrical equipment called a solar inverter does this. Any excess energy which cannot be used in the building at the time it is generated can be exported to the electricity Grid to be used elsewhere.

PV panels connected in series



This diagram shows how a typical solar PV system operates.

Image courtesy of Viridian Solar



## Save Money

One of the best times to install solar is during a re-roof or extensive repairs or soon after, when the scaffold is still up. Equally, it makes economic sense and creates the least disruption if the building owner replaces the waterproofing when installing a solar system.

This is particularly important when the roof is likely to need renewing before the end of the expected pay back period.

Where a retro-fit is required independent of roofing works, NFRC members can ensure this is done as economically as possible by selecting the appropriate access by way of a risk assessment.

## Will it work on my property?

The potential performance of any installation should be covered at the initial design and survey stage, and discussed with you before you commit to a solar installation.

## Shading

It is crucial that your installation is free of all shades. Shading of one module can bring the whole array down to that one module's efficiency. Solar works best on a south-facing roof tilted at 30 degree angle (depending on the system chosen). It is possible for east and west facing roofs but this will reduce the efficiency potential of the modules by up to 10%. If there is a lot of shading on your roof, consider having solar installed elsewhere, on your shed or even on your garage.

## Selecting an Installer

As solar emerged from the electrical and plumbing trades, many installers are from these trades, but their roofing knowledge may be limited. NFRC recommends that home owners protect the integrity of the waterproofing by ensuring the trades work together or an MCS accredited NFRC roofing contractor is employed, this will ensure the installation is completed safely, economically and without damage to the roof.



## Planning

In normal circumstances, solar panels are considered to be 'permitted development' under planning law so there is no need to apply for planning permission.

There are exceptions to this though; such as if your building is Listed or in a Conservation Area, then you must check beforehand as conditions may be imposed. For example, you may be asked to site the PV system on a roof face not visible from the main road or perhaps on an outbuilding if possible. Also, it is important that panels do not extend above the ridge line or more than 200mm above the roof surface generally.

## Pitched Roofs

Pitched roofs are suitable for solar installations with the best returns coming from predominantly south-facing elevations. Roofs facing East to West will also work but will provide slightly less performance. Shading also needs taking into account, as does the angle of the roof.

The suitability of the structure to accept the weight loading of the panels must be checked. Similarly, the potential impact on the manufacturers and/or installers guarantee should also be checked.



Image courtesy of Marley Eternit

## Flat Roofs

Solar systems are suitable for use on most flat roof waterproofing materials. The suitability of the structure to accept the weight loading of the panels must be checked. Similarly, the potential impact on the manufacturers and/or installers guarantee should also be checked.

Things like shading also need taking into account as this can affect the performance of the solar system, as can the colour of the roofing material. Dark coloured roofs reach higher temperatures than light coloured roofs, this can reduce the performance of solar panels. The roof surface temperature can be reduced through a light coloured waterproofing, solar reflective coating or a green roof.

## Weather Proofing

It is important that the solar system interfaces well with the roof covering it is intended for. The fixings and any flashings, penetrations etc. should be checked to ensure they produce a robust detail which will integrate properly with the roof covering. This is one area where it is important that the product is appropriate for the roof covering and that the installer has is fully competent in roofing work or the roof could leak, leading to a potentially costly repair bill.

## Weight & Structure

The weight of the panel, including the wind loads should be taken into account when designing a system and checking if the structure is suitable (age of roof, condition, bearing sizes etc). This again, is something which should be covered at the design and survey stage, especially if some structural work is required. Under the Building Regulations, if the weight increase is over 15% then a structural survey is required.

## Guarantee & Warranties

The installer should provide the homeowner with a guarantee/warranty for the work that they have undertaken. All NFRC members can offer a ten year insurance-backed warranty on installations and roofing works, and also have access to system insurance.

## Maintenance

Is generally low you will need to keep the panels relatively clean. If you have trees close to your roof ensure that they don't over time begin to overshadow them. Should a maintenance programme be required, this should be discussed and agreed with the original installer wherever possible rather than a third party.

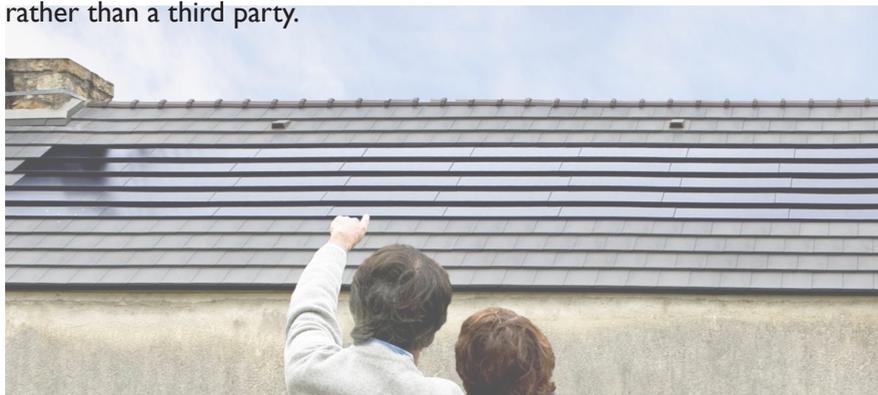


Image courtesy of Solar Century

# CHECKLIST

## Have you done the following?

- Decided what system you want installed? PV, thermal or both?
- Found up to three accredited roofing companies in your area to get quotes. We recommend that you always double check their membership details.
- Discussed the following points with the contractor:
  - Confirmed that the roof is in sound condition
  - If not, what work will need to be done in order to get it up to peak condition
  - Confirmed that the installation will meet the Building Regulations for weight.
  - Possible maintenance considerations

### For more advice contact:

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Roofing House, 31 Worship Street, London EC2A 2DY

**Tel:** 0207 638 7663

**Email:** [info@nfrc.co.uk](mailto:info@nfrc.co.uk)

**[www.nfrc.co.uk](http://www.nfrc.co.uk)**

*The following company is a Registered Member of The National Federation of Roofing Contractors Ltd:*

*To check a contractor is a member, please see our website or contact us on the above details.*