



Alpine Energy
Solutions UK Ltd

Sustaining your future!



How many more reasons do you need?

Alpine Energy Solutions specialise in different renewable energy technologies to suit both the domestic and the commercial market, we provide solutions to help combat climate change and rising energy costs. Burying our heads in the sand and pretending that these issues are not happening is not a way to continue it is all of our responsibility to at the very least to see if there are ways we can improve our carbon footprint.

Power shortage risks by 2015, Ofgem warns !!

Energy prices are rising at up to **eight** times higher than increases in average earnings according to new calculations by the Citizens Advice Bureau

Ofgem warns danger of power shortages has increased !!

Gas prices **will** rise unless Britain acts to stop Russia 'holding Europe to ransom'

Energy Secretary Ed Davey warns prices in the UK are vulnerable

Energy prices could soar by 60% by 2021, say experts

The world is not ready for the impacts of climate change, including more extreme weather and the likelihood that populated parts of the planet could be rendered uninhabitable, says the planet's leading body of climate scientists in a major new UN report.



Welcome

Alpine Energy is a market leader in renewable energy.

We believe in providing quality products & quality customer service.

25 years Experience in the solar industry.

The Complete Package

Our complete Solar installation package includes:

Full planning permission

Where planning is needed our experienced planning coordinators will take care of any application from beginning to end.

Scaffolding

Any necessary scaffolding is erected and dismantled quickly, ensuring minimal disturbances to your property.

Alpine Energy's Bespoke Scaffolding Solution

To meet Health & Safety regulations, scaffolding is a requirement on 75% of our installations.

One of the main complaints regarding scaffolding is the length of time it is left erected after the job has been completed – in many cases this is over 3 weeks.

To resolve this, we have our own bespoke scaffolding solution that can be erected and dismantled on the day of installation.

This is just one of the steps we have taken to ensure that you are completely happy throughout every stage of the installation.



Specialists in every type of solar panel

Years of research & development mean that we only install panels that have the best performance in the UK.

Full warranty on all products and workmanship

Complete peace of mind.



Accreditations

Alpine Energy is fully accredited to install and commission your system to the highest standard. This gives you complete peace of mind that the product, setup and aftercare is the best available.



Solar Myths & Facts

Too expensive and I cannot afford it.

Solar energy has never been more affordable. You pay for it with money you are giving to the energy companies anyway which you have to spend whether you like it or not.

Photovoltaic (PV)

Alpine Energy Photovoltaic System have the potential to provide the vast majority of your household needs.

The modular PV system can range anything up to 4kWp - so there is a system suitable for every budget and energy requirement.

All energy generated by Alpine Energy's PV System is utilised. Excess electricity is fed directly back to the national grid and is credited to you.

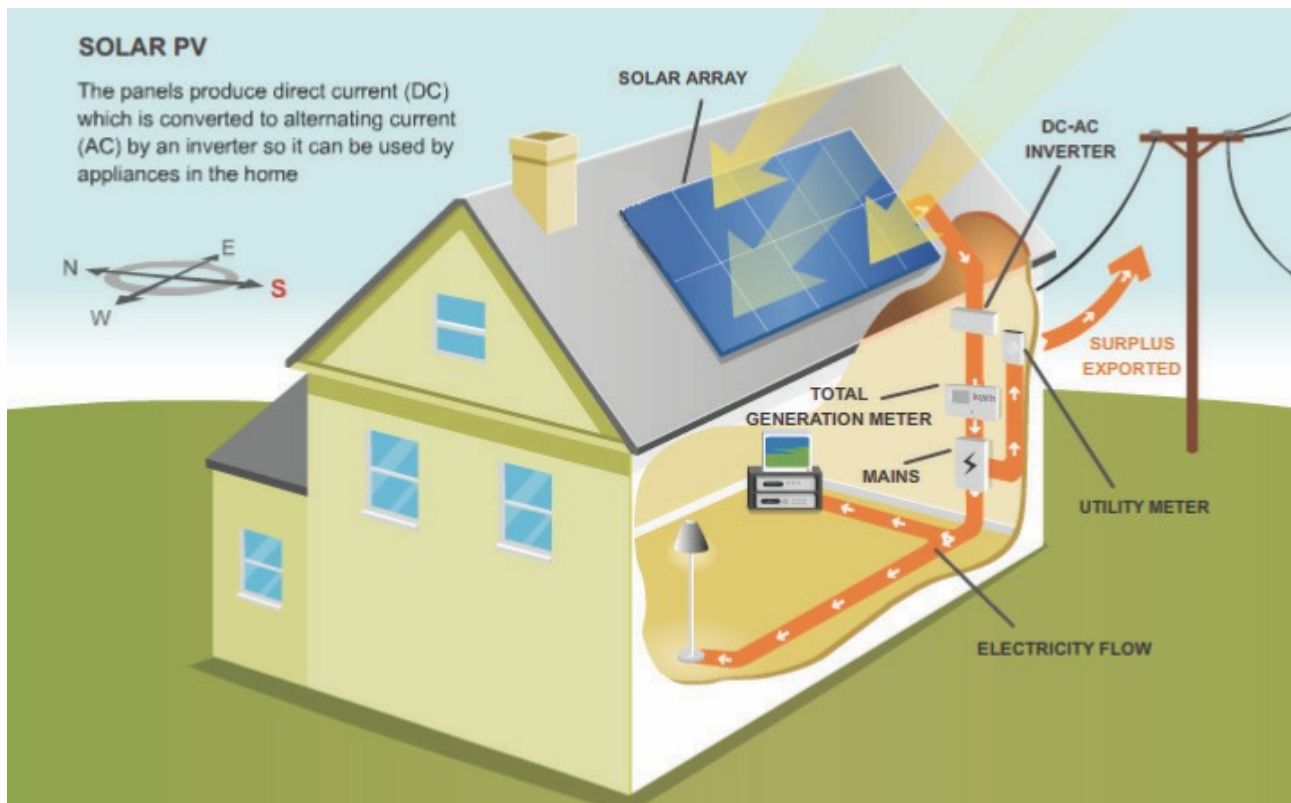
Alpine Energy's PV System never needs refuelling, has no moving parts, emits no pollution, is silent and requires NO maintenance.

Planning Permission is **NOT** usually required.

It could also increase the value of your property.



How it works



1. The PV array absorbs solar radiation and converts this to electricity.
2. The inverter converts the electricity from Direct Current (DC) to Alternating Current (AC).
3. The generation meter measures the amount of units (kWh) your PV system has generated since commissioning. It is also used to calculate your FITs payment.
4. The system is connected to your consumer unit, enabling you to draw power immediately from your PV system for your household electrical needs.

Inverter

Advanced inverter

Alpine Energy's choice of inverters aims to provide the best solution and provide you with the best ultra-efficient power conversion architecture to achieve superior performance – over 97% efficiency and best-in-class reliability.

Combats shading issues.

Possible to use multiple roof orientations with one inverter.

Makes each panel act as an individual cell therefore eliminating the weakest link theory which effect all other PV systems.

10 year standard warranty extendable if required.

Inverters



SHIFTING THE LIMITS



Installation

The weather and corrosion proof fixings of the mounting system is attached directly to the existing rafters.

Mounting railing is secured, ready for the placement of the PV panels.

The panels are fixed in place and your PV system is almost ready to start generating you an income.



Typical Installation Layout



The inverter is located out of sight. Normally in a loft or garage area.

The generation meter allows you to witness how much electricity your solar PV system is generating.

Your installation is complete. You can now enjoy all of the benefits of your new solar PV system!



Typical Roof Layout



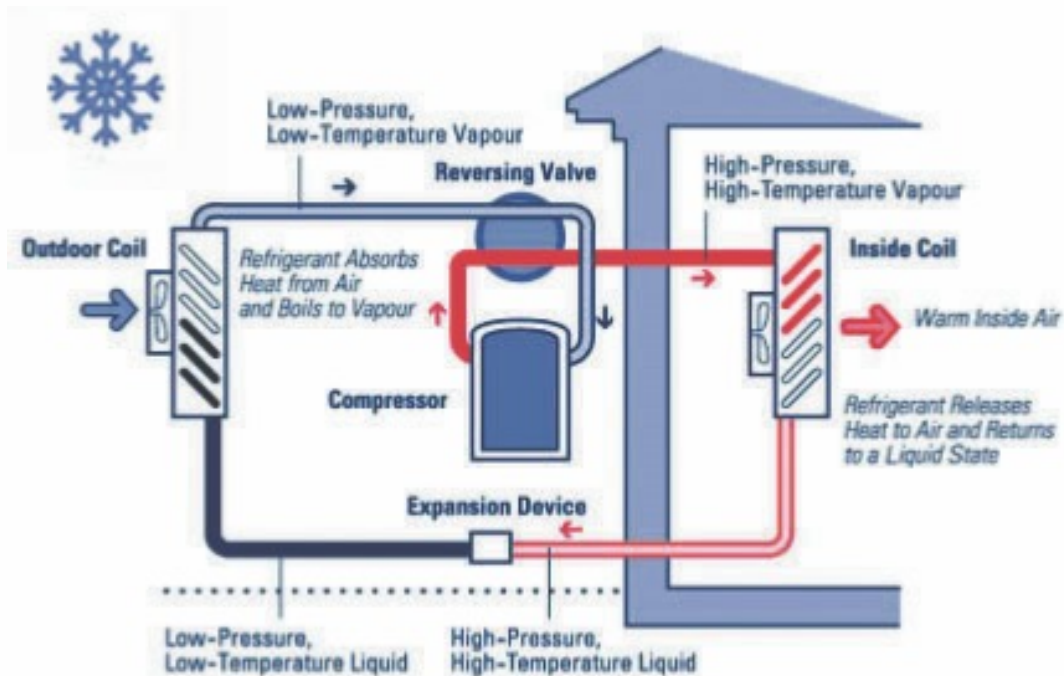
Air to air heat pumps

How it works

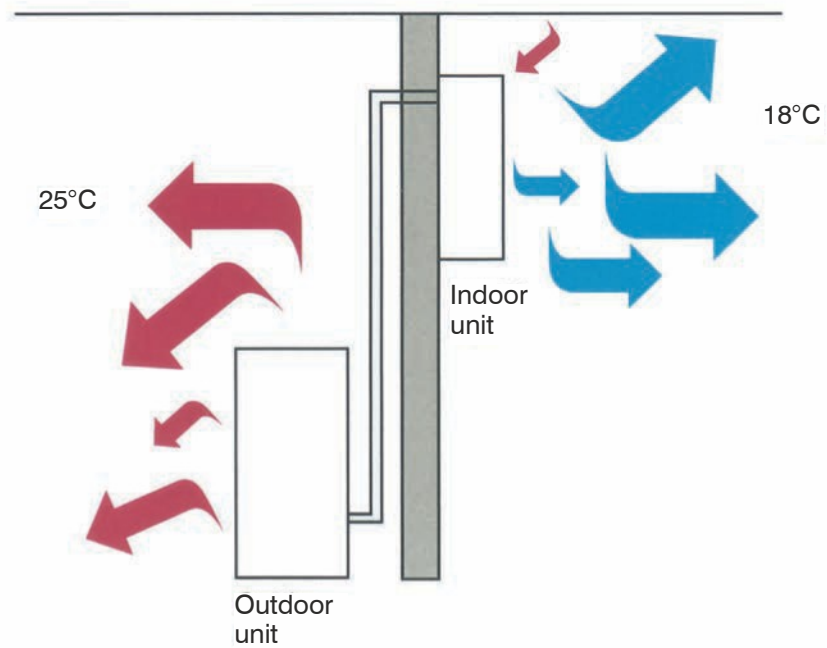
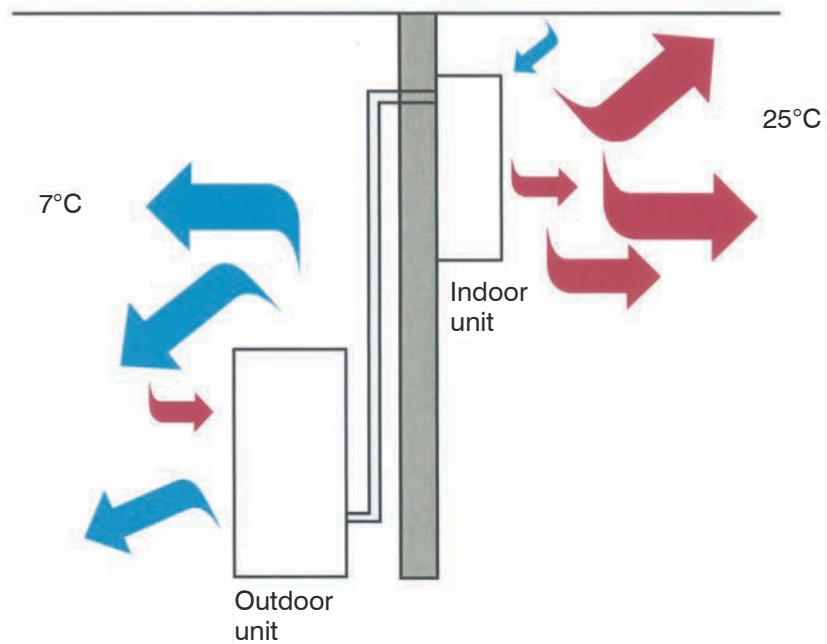
An ASHP works a bit like a refrigerator in reverse. The process consists of an evaporator, a compressor and a condenser. It absorbs heat from the outside air and the heat pump compressor then increases the temperature of that heat further to create useful heat. There are two main types of ASHP.

Air-to-water systems take heat from the outside air and feed it into your wet central heating system. As the heat produced is cooler than that from a conventional boiler, you may need to install larger radiators or underfloor heating in your home to make the most of it.

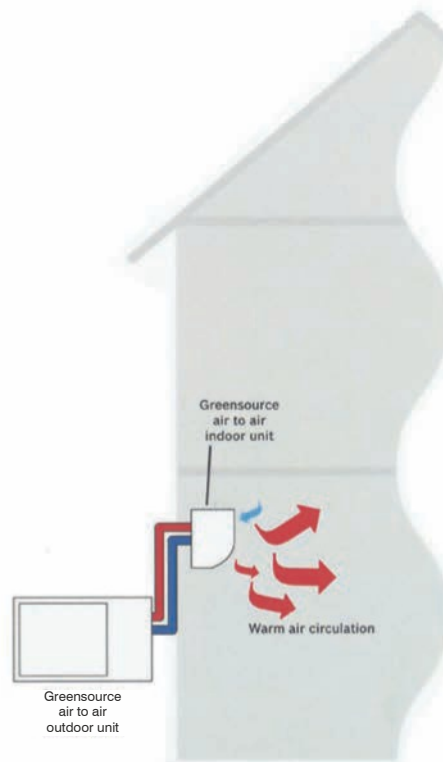
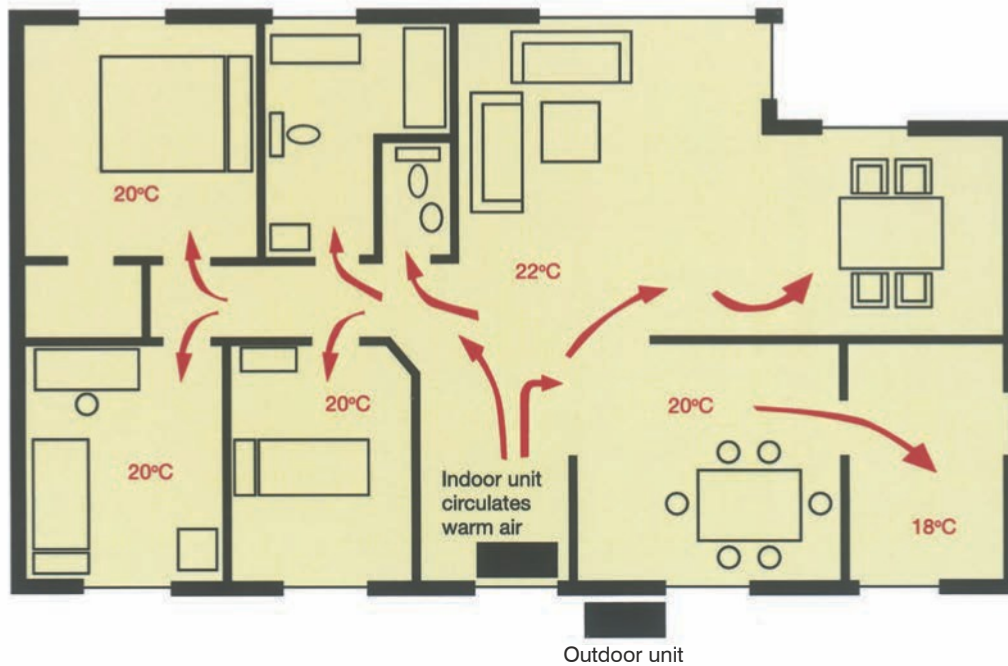
Air-to-air systems take heat from outside air and feed it into your home through fans. This type of system cannot produce hot water. In the summer, the ASHP can be operated in reverse, like an air-conditioning unit, to provide cool air for your home.



Air to air heat pumps



Air to air heat pumps



A typical air to air heat pump system layout

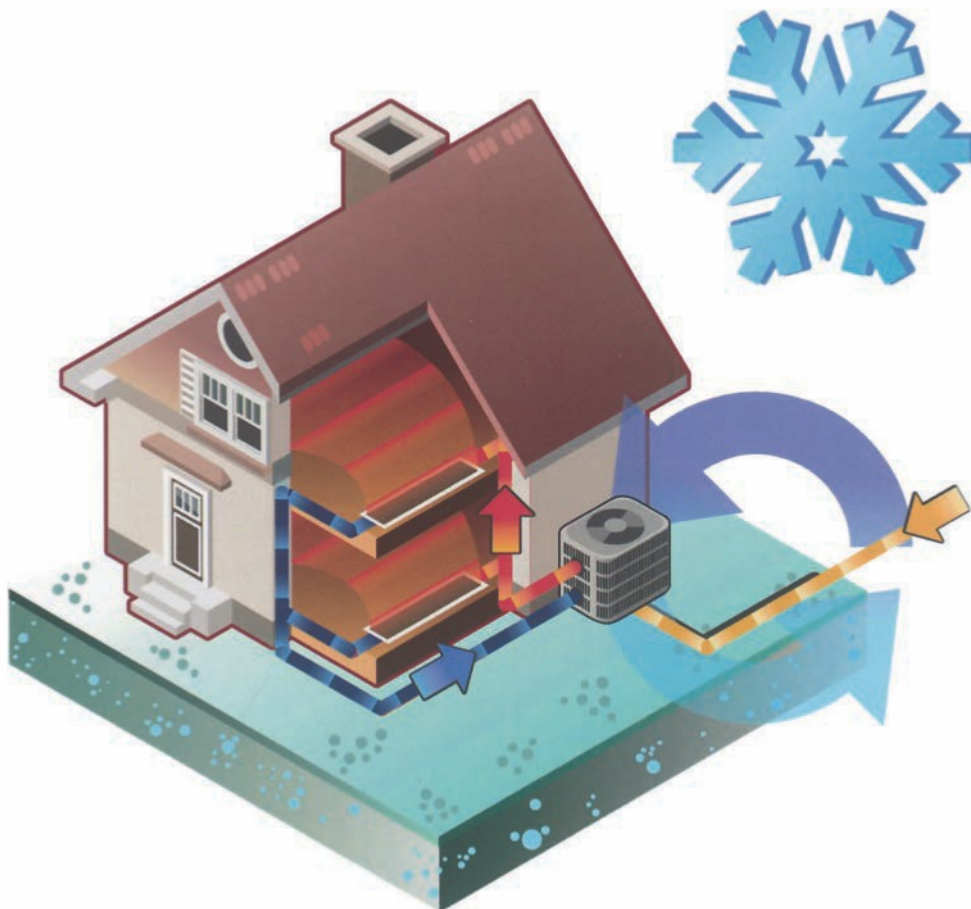
Air to air heat pumps

Air to Air heat pumps can be seen as reversed air conditioners

However air to air heat pumps have been designed primarily to heat your home and so will be much more efficient than if you used a standard air conditioning unit to heat your house.

The mechanics are simple. The system takes the heat from the outside air and transfers this to warm air to heat your house. They are simple to use and simple to install as they can be wall mounted.

The level of overall efficiency depends on how they are being used, the hotter you want your house the more energy will be required, especially if the outside air is very cold.



Solar Definitions

AC – Alternating current: electrical current in which the direction of flow is reversed at frequent intervals.

AC cables – A cabling system suitable for conducting the AC produced by the inverter and connecting it in parallel with the main supply.

AC isolator – Electrical device capable of isolating the inverter from the 230v mains supply.

Array – A collection of electrically connected photovoltaic (PV) modules.

Array current – The electrical current produced by PV array when it is exposed to sunlight.

Azimuth – Horizontal angle measured clockwise from true north; 180 degrees is true north.

Base load – The average amount of electric power that a utility must provide in any period.

Current – The flow of an electric charge in a conductor between two points having a difference in potential (voltage).

DC – Direct current: electric current flowing in one direction only.

DC cables – A cabling system suitable for conducting the DC current produced by the PV module.

DC isolator – A means of isolating the PV module output from the inverter.

Diode – Electric component that allows current flow in one direction only.

Duty cycle – The ratio of active time to total time. Used to describe the operating regime of appliances or loads in PV systems.

Efficiency – The ratio of output power (or energy) in input power (or energy). Expressed as a percentage.

Energy meter – A meter which indicates the amount of electricity produced by the PV array.

Export meter – A meter which indicates the amount of energy exported out into the national grid and not consumed within the property.

Grid – Term used to describe an electrical utility distribution network.

Instantaneous short circuit (Isc) – The amount of current produced by an illuminated PV cell, module or array when its positive and negative output connections are shorted.

Incident light – Light that shines onto the facade of a solar cell or module.

Inverter – In a PV system the inverter converts DC power from the PV array to AC power compatible with the AC load of the building.

Inverter Parallel connection – The AC output from the inverter is connected side by side with the incoming AC supply. The inverter must automatically disconnect from the mains if there is mains power failure. The PV system cannot work stand-alone to produce electricity in the event of a mains power failure.

Irradiance – The solar power incident on a surface. Usually expressed in kilowatts per square metre.

Kilowatt hour (kWh) – One thousand watt-hours. A unit of energy. Power multiplied by time = energy.

Kilowatt peak (kWp) – The value of power generated by a PV panel under full solar radiation. Solar radiation of 1000 watts per square metre is used to define standard conditions.

Load – The amount of electric power used by an electrical unit or appliance at any given time.

Load current – The current required by the electrical device.

Module – The smallest replaceable unit in a PV array. An integral, encapsulated unit containing a number of PV cells.

MPP – Maximum Power Point: the point on the current-voltage (I-V) curve of a module under illumination, where the current and voltage is maximum.

NOCT – Nominal Operating Cell Temperature: the estimated temperature of a PV module when operating under 800 W/m² irradiance, 20°C ambient temperature and wind speed of 1 metre per second. NOCT is used to estimate the nominal operating temperature of a module in its working environment.

Nominal voltage – A reference voltage used to describe modules or systems.

Open circuit voltage (Voc) – The maximum voltage produced by an illuminated photovoltaic cell, module or array with no load connected, measured across the positive and negative connections. This value will increase as the temperature of the PV material decreases.

Peak load – The maximum load demand on a system.

Photovoltaic system – An installation of PV modules and other components designed to produce power from sunlight and meet the power demand for a designated load.

Rated module current – The current output of a PV module measured at standard test conditions.

Solar constant – The strength of sunlight: 1353 watts per square metre in space and about 1000 watts per square metre at sea level at the equator at solar noon.

Solar elevation angle – The angle made between ground level and the sun's height above the horizon (0° when the sun is at the horizon and 90° when directly above).

Standard test conditions – Conditions under which a module is typically tested in a laboratory: irradiance intensity of 1000 watts per metre square, air mass 1.5 solar reference spectrum and a cell or module temperature of 25°C, plus or minus 2°C.

String – A number of modules or panels interconnected electrically in series to produce the operating voltage required by the load.

Sun path diagram – Graphical representation of the sun's height and azimuth.

Tilt angle – The angle of inclination of a solar collector measured from the horizontal.

Voltage at maximum power – The voltage at which maximum power is available from a module.

Watt hour (Wh) – A unit of energy equal to one watt of power connected for one hour.

Zenith angle – The angle between directly overhead and the line intersecting the sun (90° - zenith is the elevation angle of the sun above the horizon).