

## REF Shed5.

# YOUR SOLAR QUOTE

Thanks for choosing us to provide a design for a solar PV system at , TD14 5AN.

We're delighted to supply the attached proposal for a 181.9 kW solar array.

We expect your system to generate 136,542 kWh of clean electricity every year, and save 28,992 kg CO2 of carbon.

There are full details on the following pages. We hope you enjoy the read!

Kind regards,

Conor Maden

Maden Eco



**181.90 kW PV System**

192 x 425W, 164 x 425W &  
72 x 425W panels,  
1 x Growatt 80KTL3 3ph &  
1 x Growatt MAX 100KTL3



Expected payback 8  
years. Estimated first  
year savings £6,221



**136,542 kWh/yr**

Annual CO2 savings  
of 28,992 kg

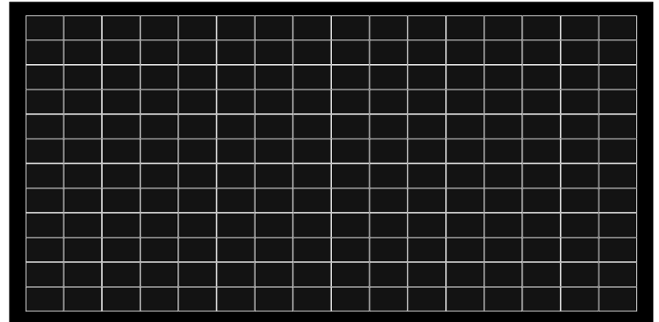
# System Overview

Your system comprises **428 Trina Vertex S 425W Black Framed Mono (White Backsheet) solar panels** to collect sunlight and turn it into DC electricity.

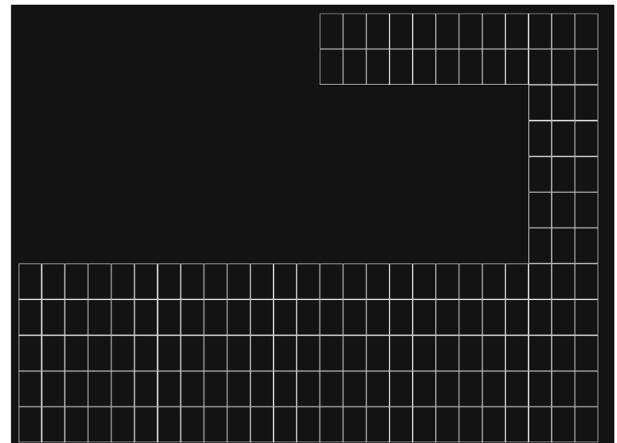
The panels will be connected to **1 Growatt 80KTL3 3ph inverter and 1 Growatt MAX 100KTL3 inverter**, which convert the DC electricity into mains (AC) electricity.

We include all the isolators, wiring and meters needed to connect the system safely to your electrical system. Your system will be installed and certified by our trained installation team.

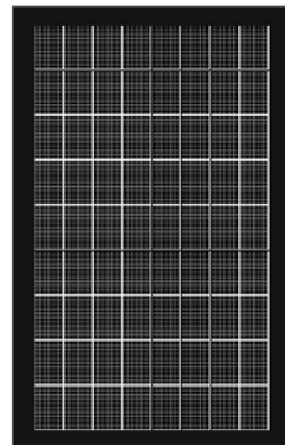
Roof 1



Roof 2



Roof 3



# System components



## Solar Panels: Trina Vertex S 425W Black Framed Mono (White Backsheet) x 428

The Trina Vertex S provides a great balance of power, size and weight, offering 21.3% efficiency, with up to 65W more power for just an additional 6cm...

Model	TSM-DE09R.08
Power	425 watts
Dimensions	1134 x 1762mm

## Inverter



### Growatt 80KTL3 3ph

Some of the most powerful Growatt inverters, the KTL3 offer lightning and fire protection as standard along with inbuilt diagnostics.



### Growatt MAX 100KTL3

The latest and most powerful Growatt inverters yet. The MAX TL3 inverters are ideal for medium-large scale commercial roofs and groundmount projects.



## Mounting: Renusol pitched roof mounting system

Renusol is a German engineered PV roof mounting system. It is extremely versatile and compatible with the most popular roof coverings used in the UK.

Designed for	Other roofs
Colour	Not specified

# System Performance

We have made an estimate of the annual energy generation of your system. This takes into account the following factors that affect the output of a solar array.

## The location of the system

Sunlight is weaker near the poles than near the equator. We use data from a meteorological model of the intensity of sunlight over the course of the year in different locations all over the world.

## The orientation of the system

Solar panels that face south receive a little more sunlight than panels that face east or west. However, in diffuse light the orientation of the panels makes little difference, so the effect is less marked than many people imagine.

## The degree of shading

If you have trees, neighbouring buildings or nearby high ground that will shade your PV array, the output of the system will be reduced. We have used a 'sunpath diagram' that estimates how often sunlight will be blocked from reaching the panels.

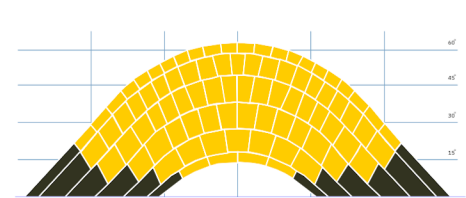
## Roof diagrams



Stringing diagrams indicate which solar panels are connected to which inverter inputs.

Full sunpath and stringing diagrams for this system are given on the following page.

## Sunpath diagrams



Sunpath diagrams indicate where the sky as seen from the solar array is blocked by neighbouring buildings, chimneys, trees, or other obstructions.

We expect your system to generate  
**136,542 kWh per year**

### Installation data

Installation capacity of PV system - kWp (stc)	182 kWp
Orientation of the PV system - degrees from South	See roof diagrams
Inclination of system (pitch) - degrees from horizontal	See roof diagrams
Postcode region	Zone 9S

### Performance Calculations

kWh/kWp (Kk)	See sunpath diagrams
Shade Factor (SF)	See sunpath diagrams
Estimated output (kWp x Kk x SF)	136542 kWh

### Estimated PV self-consumption

Assumed annual electricity consumption	326693kWh
Expected solar generation consumed in property	77761kWh

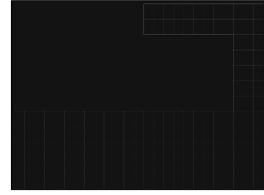
Important note: The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of sunlight from location to location and from year to year. This estimate is based upon a model that takes account of meteorological data at your location and makes an allowance for losses due to shading of the panels. This is a complex calculation however, and no model can be 100% accurate. It should not be considered a guarantee of performance.

If shading is present on your system that will reduce its output to the factor stated. This factor was calculated using industry standard shading methodology and we believe that this will yield results within 10% of the actual energy estimate stated for most systems.

# Roof diagrams



Roof 1 Orientation: -55° Pitch: 10°

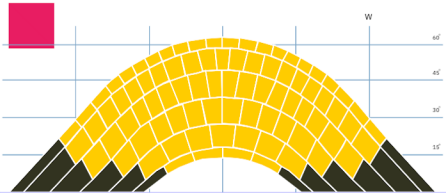


Roof 2 Orientation: 95° Pitch: 10°

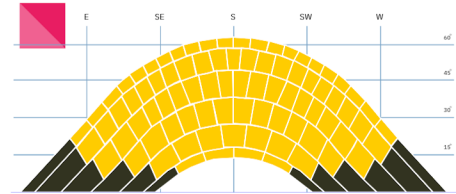


Roof 3 Orientation: 95° Pitch: 5°

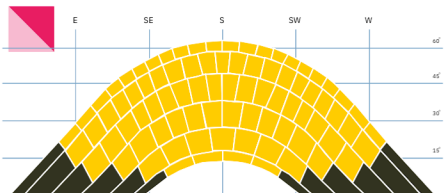
# Sunpath diagrams



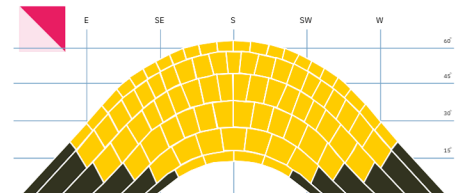
Shade factor: 1.00 Kk: 776



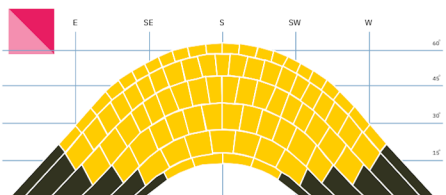
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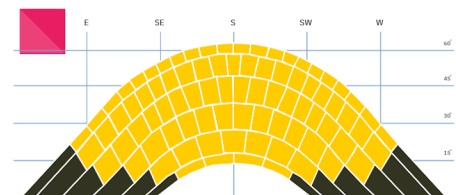
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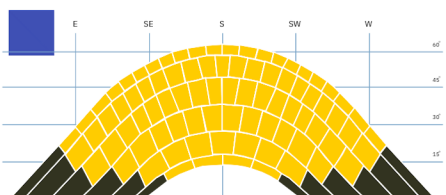
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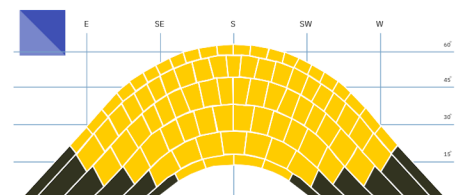
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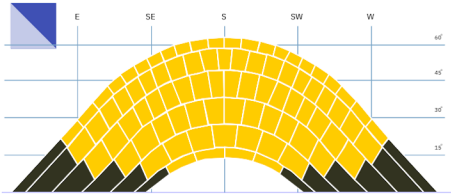
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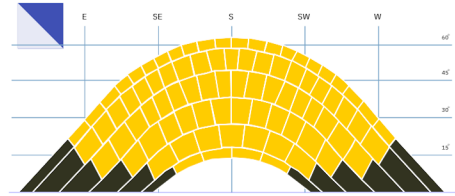
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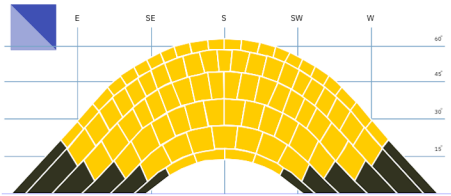
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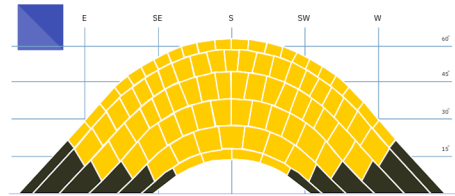
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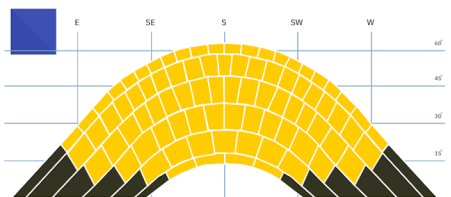
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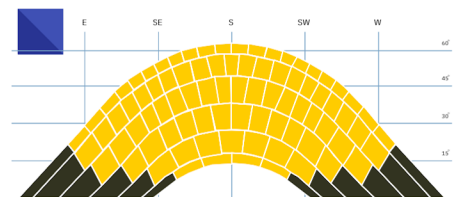
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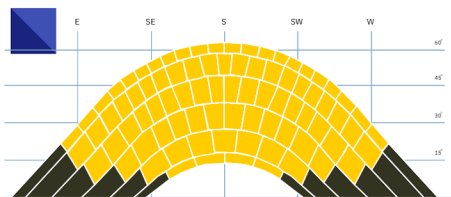
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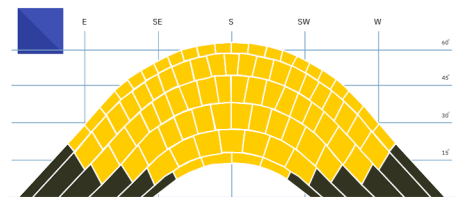
Shade factor: 1.00 Kk: 733



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# Your energy explained

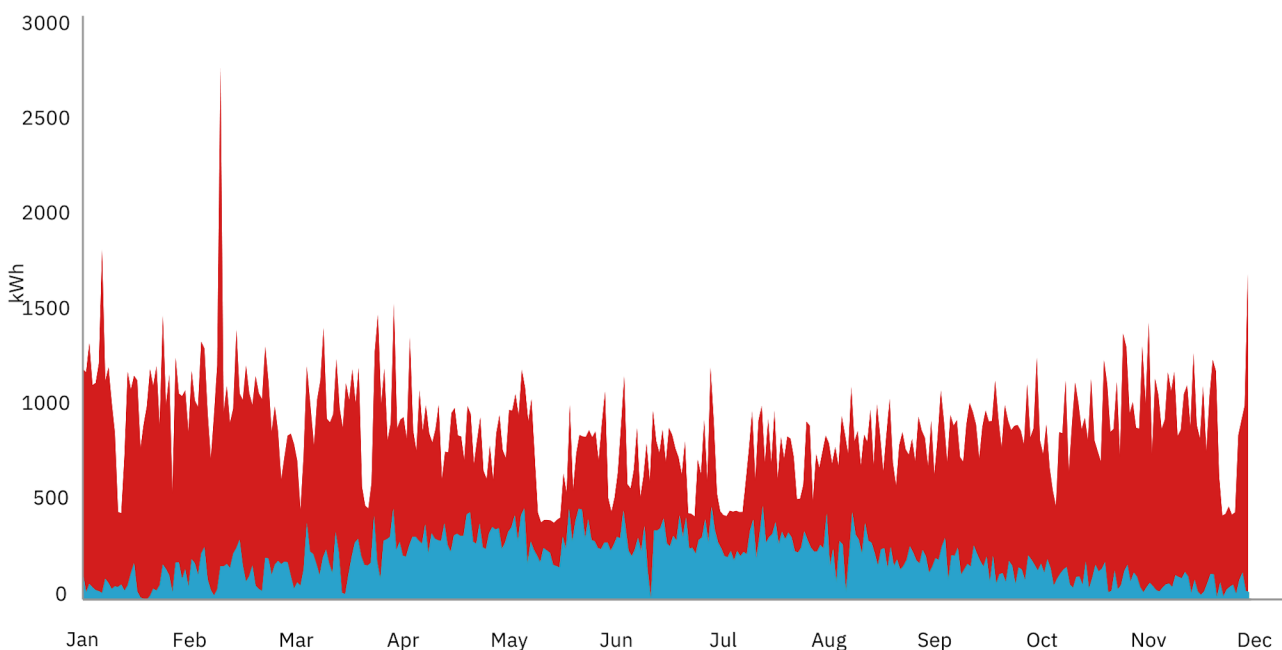
In addition to the MCS calculation of system output we have run a more detailed model of your system to estimate how much of the electricity generated by the system you are likely to use yourself and how much will go to the grid.

## Smart Export Guarantee (SEG) information

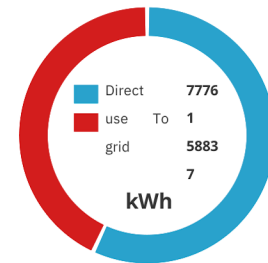
The Smart Export Guarantee (SEG) enables Generators to receive payments from electricity suppliers for the electricity they export back to the National Grid, providing specific criteria are met. Your installation will be MCS accredited, which means that you should be able to apply for SEG payments from your electricity supplier. Further details on the SEG and its eligibility requirements, including how to apply, can be found online at [ofgem.gov.uk](http://ofgem.gov.uk)

## Where your electricity will come from in a typical year

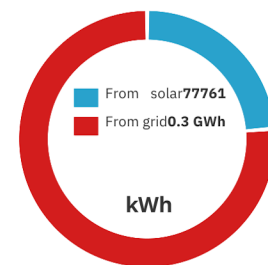
Based on an electricity usage of 326,693 kWh per year, the graph below shows how much electricity used in the property is expected to come directly from the solar panels (blue) and how much is expected to be imported from the grid (red).



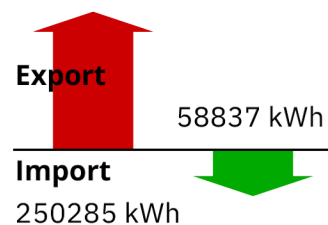
## Annual Generation



## Annual Consumption



## Annual Import/Export



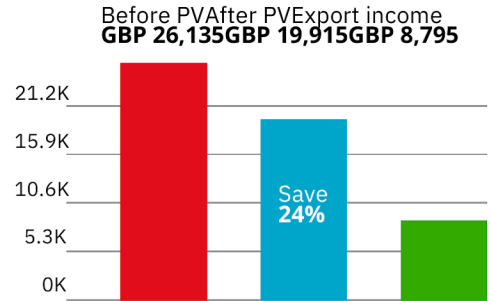


# Financial Benefits

Based on our model we expect you to self consume 77,762 kWh of the 136,542 kWh of electricity the system should generate - providing 24% of the annual electricity consumption of 326,693 kWh in the property.

At an electricity tariff of £0.08/kWh, that's a saving of £6,221 on your electricity bill - down from £26,135 at present! Your new bill could be just £19,915 per year.

58,634 kWh of excess solar energy will be exported to the grid. If you are paid by your supplier at £0.15 per kWh, you will receive an additional £8,795 in income from them.



**Overall, your savings and benefits are expected to be around £15,016 in the first year after the system is installed.**

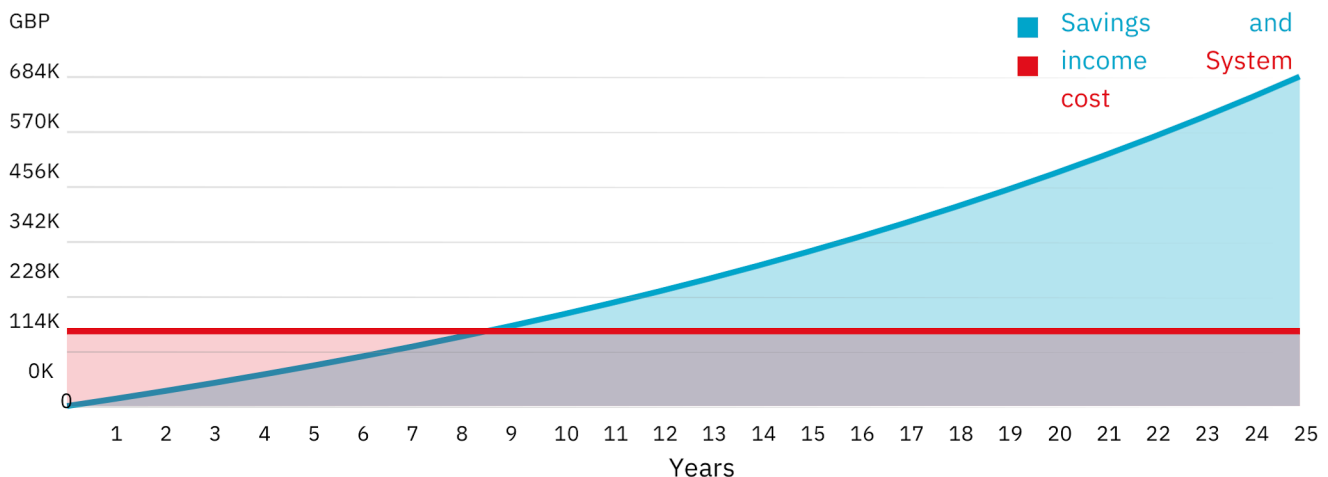
## Payback

Using a more detailed model that also takes account of longer term factors such as inflation, gradual degradation in panel output over time and financial discount rates<sup>1</sup>, we expect the system to pay for itself in 8 years.

Over a projected 25 year lifetime, we expect the system to have a **Net Present Value of £534,274**. A positive net present value is a good indication that an investment is financially worthwhile.

Disclaimer: Nothing in life is certain. Cloudy periods, growing trees, and even pigeon droppings can affect the output of your array. No-one really knows how electricity tariffs will change in the future, or what inflation will be in 10 years time. We have based our calculations on an inflation rate of 5%, electricity price that rises with inflation, a discount rate<sup>1</sup> of 0%, an import electricity tariff of 8.0p/kWh, and export payments of 15p/kWh. Returns are not guaranteed.

<sup>1</sup> Financial discounting is a method used to calculate the worth of future money in today's terms.





# Environmental Benefits

Your new PV system will supply your property with clean, green electricity - and in sunny periods some will also be exported back to the grid.

Overall you'll be making a big contribution to reducing CO2 not just by lowering the carbon intensity of your own electricity, but by putting low-carbon electricity back in the grid for others to use too.

Your current electricity supply produces

**69,367** kg CO  
each year

24% will be supplied by solar, saving

**16,511** kg CO  
each year

58,781 kWh will be exported, saving

**12,481** kg CO  
each year

Total savings

**28,992** kg CO  
each year

Your yearly CO2  
reduction of 28,992  
kg is equal to...



a car ride of 103,543  
miles



absCoOr2bed  
by 1,330 trees

Disclaimer: We calculate and compare the likely annual CO2 emissions for your home based on your generation and usage with the solar PV system detailed in this document versus estimates for a property like yours using energy from the grid. Your actual CO2 emissions will depend on lots of factors, like how much energy your solar panels generate, how much of this energy you use directly and how much energy you continue to use from the grid. To calculate what these savings equate to in miles driven, we base this on the CO2 emissions of an average sized diesel car as outlined in the UK government's 'Greenhouse gas reporting: conversion factors 2022' (<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022>). To calculate what these savings equate to as the average amount of CO2 absorbed by trees, we base this on a rate of 25kg per tree per year. Trees absorb anywhere between 10 and 40kg of CO2 per year on average, depending on a whole host of factors including the species, location, planting density, and age.