

Eco Technology Guide

It is our responsibility to change what we do to help preserve the planet for ourselves, our children and their children.



Doing nothing is not an option.

Introduction

You have already made your first **important step** by considering a property at The Lakes by Yoo. Your future holiday home is built to be **energy and water efficient**, and is constructed from **sustainable materials**.



The problem

Housing in the UK represents approximately 30% of the country's total energy consumption. Indeed, the Department of Trade and Industry reports that older, second hand properties use four times more energy than newly-built homes.

Electricity and gas supplies make our lives more comfortable. But standard production methods are often environmentally unsound, draining non-renewable sources and producing dangerous emissions. The burning of fossil fuels releases carbon dioxide into the atmosphere, contributing to global warming and therefore climate change.



The solution

A home at The Lakes by Yoo is more than twice as energy efficient as an average second-hand UK home. The off site timber construction capitalises on the efficiency of factory precision. This Eco Technology Guide introduces you to a number of systems available as optional extras when you purchase:

- Eco cooling
- Solar gain control
- Biomass heating
- Rainwater harvesting
- Solar water heating



Each technology is designed not only to reduce the consumption of non-renewable resources, but also to help make your home more energy-independent. On top of all this, you stand to make considerable savings on your energy bills when you choose eco technology.

A choice of systems are available for keeping the indoor temperature down on those hot summer's days. Eco cooling is easy on the pocket and the environment.

These systems use a heat pump to transfer heat from water and air. This technology will be no mystery to you, as every house already has a heat pump in the form of a refrigerator.

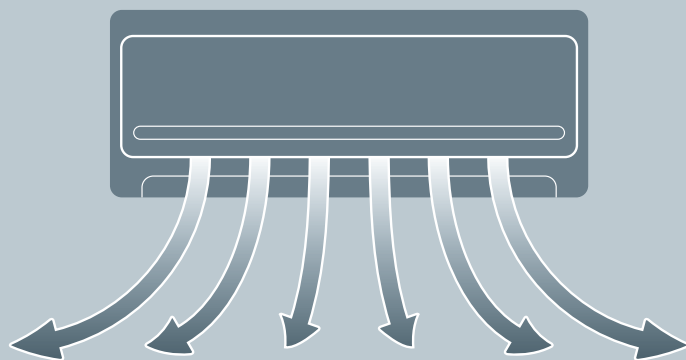
Wall Mounted Air Cooling

This particular system consists of wall mounted indoor units and ground mounted external units, delivering air quickly to every corner of the room. A sweeping air flow eliminates dead zones and improves the cooling and heating effect.

How it works

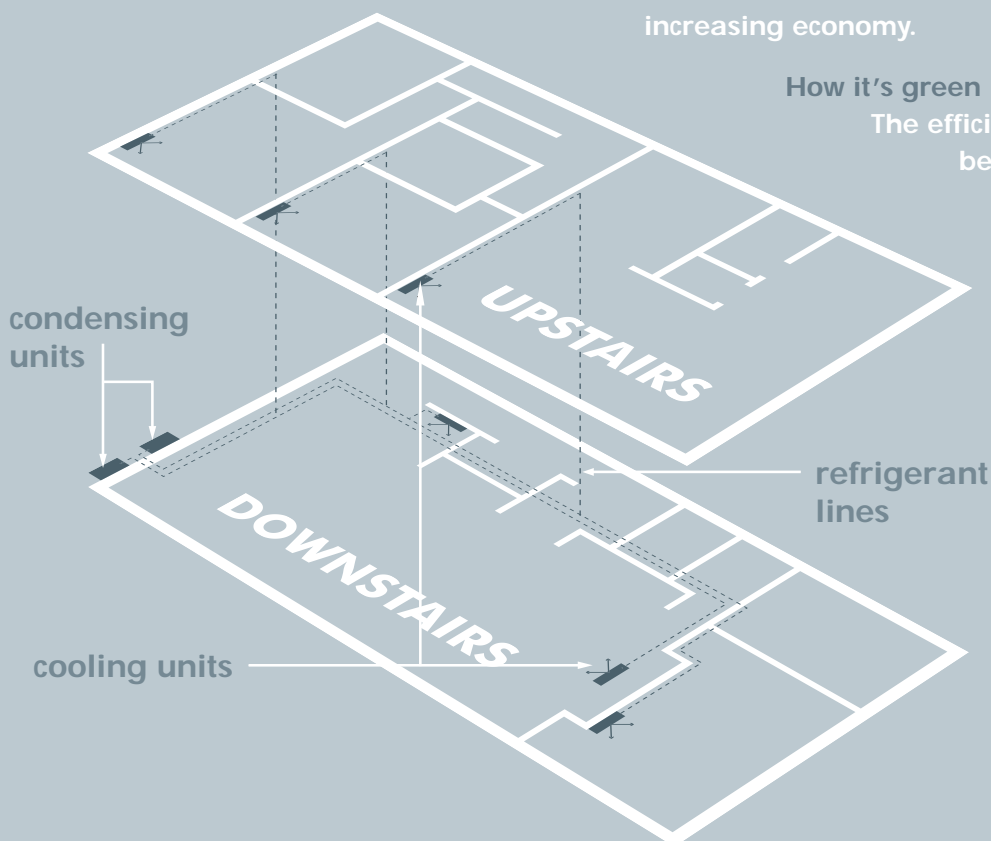
Trapezoidal blades cut the air diagonally to minimise air resistance and the conical blade fan ensures a high airflow. With this diagonal air blow, less friction is caused, which reduces noise and improves efficiency. The unit's advanced design has a wide suction area and graduation-design grill which increases both efficiency and performance.

The wide suction area increases the air intake which enables the unit to adjust the room temperature quickly. A washable carbon and anti-bacteria air purifying filter ensures that the micro dust, pollen particles and odours that can collect on filters can be easily removed. The filters can be washed and reused up to 20 times, further increasing economy.



How it's green

The efficiency of air cooling systems can be measured by comparing their Coefficient of Performance (CoP). This particular wall-mounted system boasts a CoP rating of 3, meaning that for one unit of electricity used, three units of cooling power are produced. This equates to 300%, and is three times as efficient as standard air conditioning units which commonly have a CoP of only 1.



Eco Cooling

Radiant Cooling

A Thermasail consists of a flat rigid aluminium sheet suspended from the ceiling. The visible bottom surface is flat and smooth, and a copper pipe coil is fixed to the upper surface.

How it works

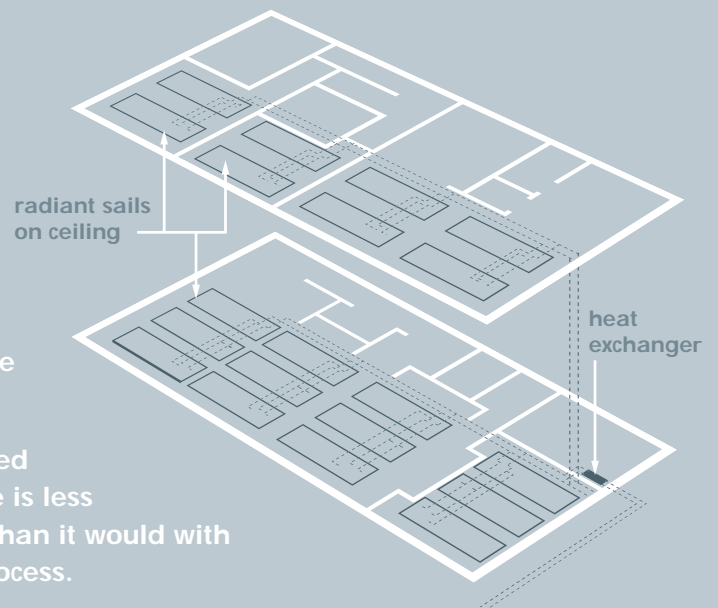
Cool water is passed through the coil, which in turn cools the Sail. As a result the air above and below the sail is cooled, which provides cooling output and gentle convected air movement.

In addition the cool lower surface absorbs heat radiated from other surfaces in the room. This means that there is less radiated heat in the room, and the room feels cooler than it would with conventional air conditioning, saving energy in the process.

There are no fans or forced air movement, which means that the sails operate silently, and the only maintenance required is the occasional cleaning with a soft damp cloth.

How it's green

The Thermasails are controlled so that the surface temperatures do not drop below the level where condensation could occur. This means that the water temperature required to cool the sails is roughly the same as the temperature of the water in the lake. This radiant cooling system has a CoP rating of 4, meaning it is four times as efficient as standard air conditioning units, saving on both carbon dioxide emissions and electricity costs.



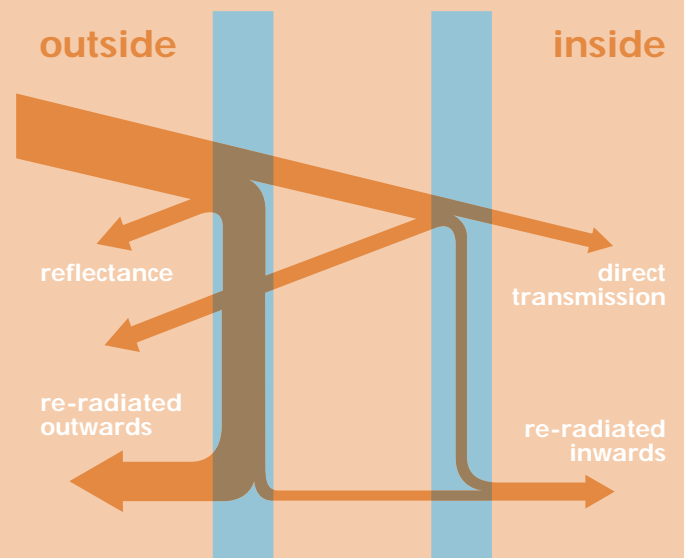
Solar Gain Control

The windows of your new home can feature **two different systems** of sunlight protection, reducing the need for energy use to **keep rooms cool** on a hot summer's day.

In winter, the fact that glass allows the sun's heat as well as light into a building can be beneficial. But in summer months, without solar control it can become uncomfortably hot. Glass controls solar radiation by reflectance, transmittance and absorption. At Yoo, we offer two methods of solar control to minimise solar heat gain and glare on a hot day, and to balance solar control with high levels of natural light on a temperate day.

Solar Control Glass

Improves light by removing virtually all its destructive ultraviolet rays, the rays most responsible for causing fading and sun damage.



Solar Gain Control

Window Film

The primary benefit of this system is the reduction of the sun's heat by up to 78% through reflectivity. In addition, window film can help reduce winter heat loss by 35%, simply by reflecting indoor heat back into the room. Additionally, the films we offer can reduce glare by up to 93%.

On top of all this, you can also rely on your window film to protect against up to 99% of the sun's ultraviolet rays, so you won't have to live with fading fabrics, wood or wallpaper. This massive fade reduction means you won't have to keep pulling your shades and drapes to keep your new home looking beautiful.



Biomass Heating

We offer you the chance to heat your new home in a **totally eco-friendly** way. Biomass heating takes the concept of wood-burning to an **advanced** level.

There is nothing new about burning wood to generate heat - it's one of the oldest forms of energy known to man. Open fires, however can be very inefficient, with 70-80% of heat lost - meaning wasted money and wasted energy. At Yoo, we offer an advanced biomass heating system in the form of an automatic pellet and chip system. So not only is the system eco and pocket-friendly, it's also hassle-free.

How it works

This well designed compact stove unit burns wood cleanly and operates with efficiencies of 80-90%. The system comes with an automatic hopper and delivery system capable of running the stove for ten continuous days without refuelling. Different types of fuel for the system include logs and woodchip from forest residues, and pellets made from sawdust and recycled untreated wood waste. Typically, a cleaner only needs to be cleaned after a year's consistent use.



Biomass Heating

How it's green

Controlled air supply to the stove is the key to efficiency - this is where traditional open fires are surpassed by this system. In addition, the system boasts very low net CO2 emissions. In fact, when burnt, the wood only releases the carbon absorbed during growth. This means that if the wood comes from sustainably managed forestry, there are no net carbon emissions whatsoever. On top of all this, there is the opportunity to use untreated wood to fuel the system - thus turning a waste product into a resource.

The unit's control system can be linked to a standard thermostatic control system to either supply hot water direct to radiator system or via a thermostat and integrating with other hot water sources. For complete peace of mind the system is supplied with a water based burn back fire extinguisher system.

Wood Pellets

- Homogenous fuel with predictable combustion characteristics
- Efficient combustion with simple boiler controls
- Combustion efficiencies up to 90%
- Consistent size for even burning and consistent heat output
- Simple fuel handling
- Pellet fuel offers highest calorific value
- Delivery by fuel lorry
- Compact storage requirements compared to other wood fuels
- Non-abrasive so reduced wear on mechanical parts of boiler
- Waste is potash that can be spread as fertiliser



Rainwater Harvesting

Rainwater in the UK provides an **infinite source** of water for a **wide variety** of non-potable uses. Why pay for your water when it arrives **on your roof** for free?

Despite the fact that England and Wales appear to have plenty of rain, our growing population and the potential changes in climate mean that our water resources are under pressure. The large number of new houses to be built over the next few years will increase the competition for available water between the environment and people, especially in the south-east of England, which has low water resource availability.

Reducing demand for mains water can help to reconcile these competing needs. One way of reducing demand is to use a rainwater harvesting system to provide water for domestic uses.



Rainwater Harvesting

How it works

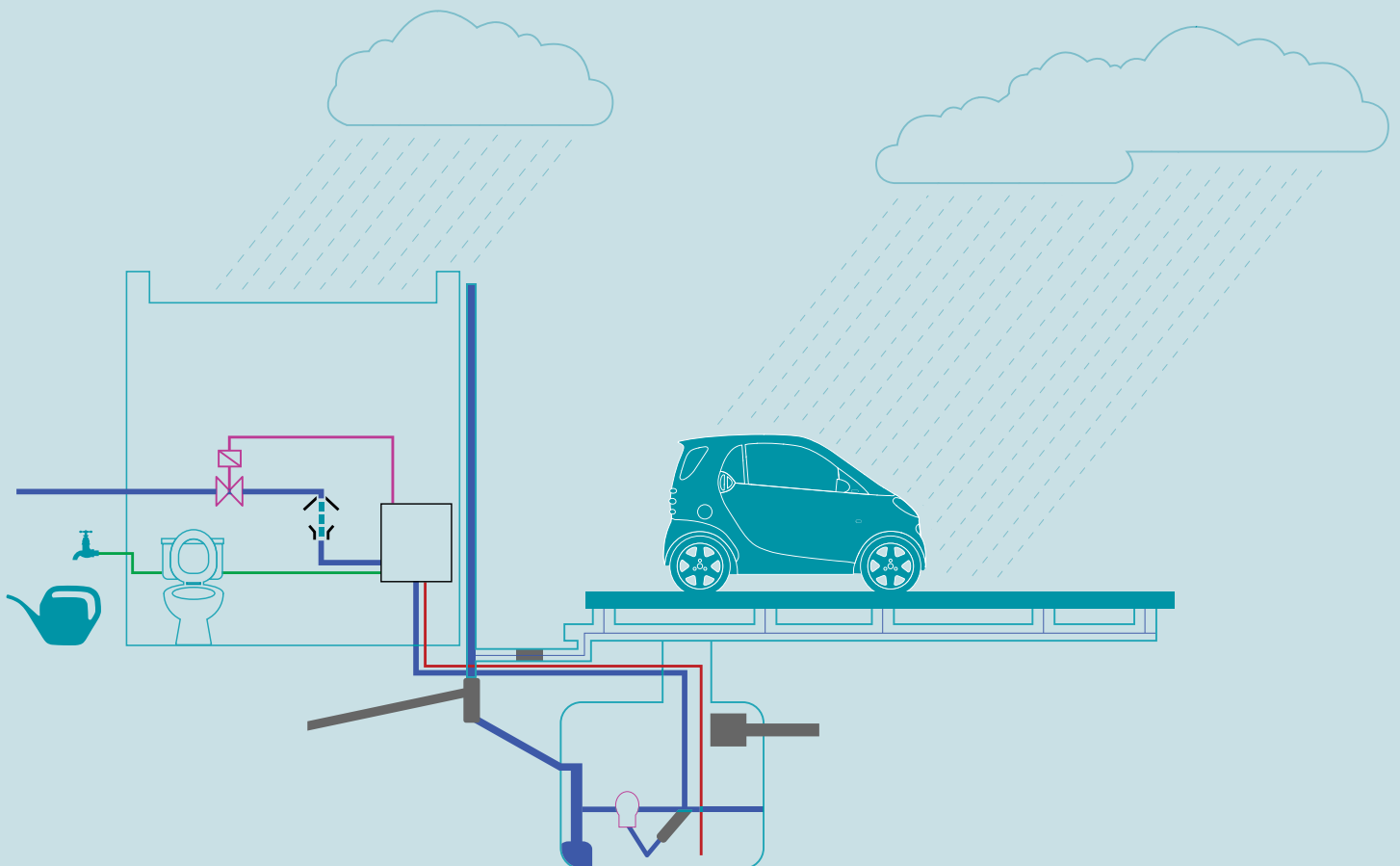
Rainwater is collected from the roof area of the building. This is channelled through a filter before the tank to remove large debris, leaves etc. Rainwater then enters the storage tank through an inlet calmer, which prevents the rainwater from disturbing sediment that settles on the base of the tank. Excess rainwater can flow out of an overflow to the storm drain or to our soakaway or attenuation system.

Inside the tank are a number of control sensors and a submersible pump, which takes water through a suction filter. On demand, rainwater is pumped to the processor unit incorporating the automatic backwashing filtration. From here the water is stored in a WRAS compliant header tank and gravity fed to points of use. This tank acts as a failsafe measure if there is an interruption to the pump or power supply.

In periods of low rainfall a mains water back up in the header tank activates, providing a continuous water supply. A monitoring unit can be fitted in the entrance hall of the building to demonstrate daily water savings.

How it's green

By collecting and filtering rainwater for non-potable use, you completely bypass the need for external water filtration facilities. A large percentage of UK homes use drinking water for every purpose - washing machine, bath / shower, dishwasher, even watering the garden. This renders much of the water filtration process essentially pointless. Rainwater harvesting draws a distinction between water types that not only reduces filtration to the bare minimum, but saves you money along the way.



Solar Water Heating

The sun has **supplied the earth** with energy for the last **5 billion years** and will do so for another 5 billion years. **What could be easier than using this solar energy?**

As little as 30 minutes of solar radiation on the earth's surface is equivalent to the energy used in one year worldwide. A solar system is an emissions-free energy source that helps to protect fossil fuels resources and relieves the burden on our environment. In this way, everyone can make an active contribution to protecting the environment which is also visible in the design of the building.

The image of solar technology is constantly growing, and solar systems can now increase the selling potential of the building. There is also a sense of personal satisfaction associated with using solar heated water in the home.

How It Works

A solar system with a standard design can cover approx. 50% - 60% of the annual domestic hot water requirements for a typical family home. In the summer months the sun supplies almost all the energy requirements. Almost 100% domestic hot water requirements can be covered during the summer, and approximately 50-60% on average throughout the year.

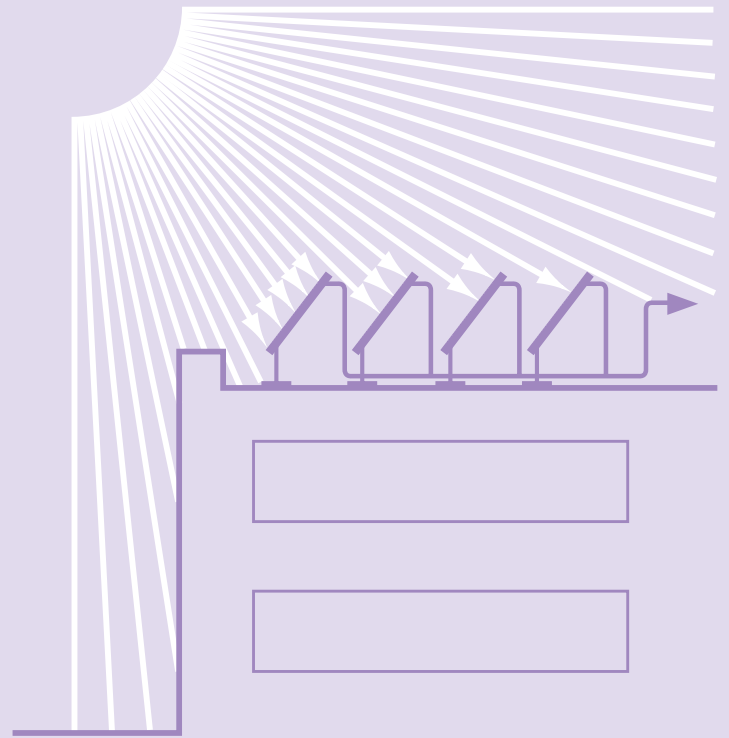


Solar Water Heating

The aim of the solar system design is to provide domestic hot water as much as possible without the boiler to improve efficiency. Another benefit of complete coverage by the solar system in summer is the efficient control, as the solar heat can be experienced "close up". A solar system reduces the carbon dioxide emissions in the atmosphere by reducing the amount used in a traditional heating system.

How It's Green

A solar heating system is a clear investment in a carbon-free future. Not only does the technology boast a huge reduction in carbon emissions, it also presents the user with a heating system that is unreliaint on valuable fossil fuel resources. Of course, this also means a solar heating system offers consistent, clearly calculable costs that are unaffected by increases in fuel price - thus increasing the independence of the home.



Standard Packages

Below is a list of the **eco-technology packages** available in your new Yoo home. Please refer to the individual technologies' pages for **detailed information** on each.



Option One **£43,400**

Radiant sails cooling with solar film to glass and energy efficient downlights



Option Two **£44,800**

Radiant sails cooling with solar glass and energy efficient downlights



Option Three **£32,725**

Wall mounted cooling with solar film to glass and energy efficient downlights



Option Four **£34,125**

Wall mounted cooling with solar glass and energy efficient downlights

Individual Options

- Solar film to windows £9,100
- Solar glass to windows £10,500
- Rainwater harvesting £8,190
- Biomass boiler £8,743

In order to maintain a consistent stance on environmental issues, Yoo has locked printing from this PDF file. If you require a physical copy of the document, please contact us.

