ACCRINGTON ECO STATION

Design for a Better World

HOW DO OUR BUILDINGS AFFECT THE NATURAL ENVIRONMENT?

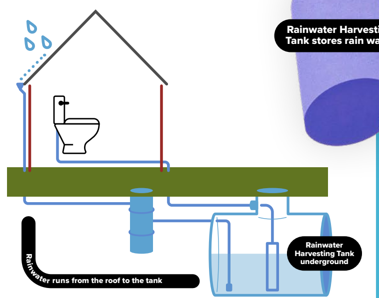
Buildings affect the environment in many ways from the extraction of raw materials such as wood, sand, stone used to build our homes, schools etc to the energy used in heating them or running lots of appliances such as computers, tablets, fridges etc. All of this potentially releases CO2 into the atmosphere which is one of the greenhouse gases leading to climate change.

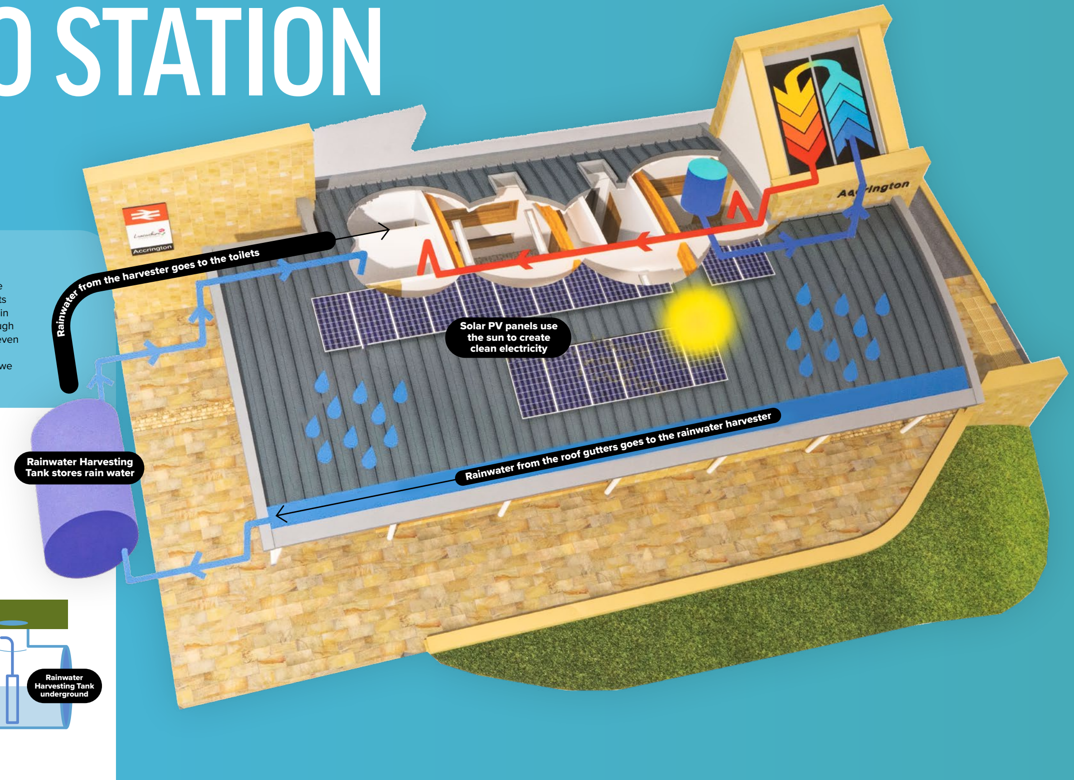
Accrington Eco Station has been designed to have less impact on the environment through for example the use of recycled materials in its construction; the application of high-quality insulation to reduce the need for artificial heating and cooling and the generation of electricity by harnessing the suns energy.

This poster shows some of the ways used in the design, construction and operation of the station building that have helped reduce its environmental impact. Take a look and see if any of these could be used in your school or home.

RAINWATER HARVESTING

What happens to all the rain water that falls onto the station roof? Well, we have great system that collects this and feeds it into a large tank in the 'office' area in the bunker. The tank holds 1500 litres of water enough to flush all the toilets in the building for many days even when we have schools visiting us. Why collect it? It saves the energy needed to create fresh tap water we often use to flush our toilets.





ENERGY SAVING DESIGN

Being eco is not just about PVs and rainwater harvesting etc it is also about the building is designed. At Accrington a lot of insulation has been used to help retain the buildings heat during the winter and keep the building cool during the summer. This means less energy is required to keep the station rooms heated or cooled.

SUSTAINABLE BUILDING MATERIALS

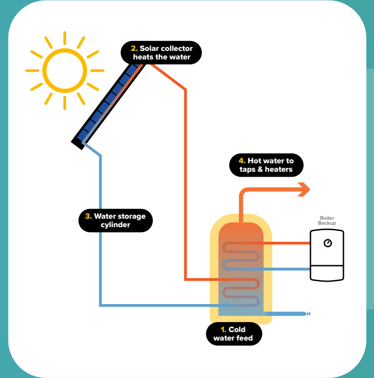
Building materials for the station have been chosen from sustainable sources or have been recycled from other buildings. The goal was to reduce the building's overall carbon footprint.

The roof structure
The main structure for the roof uses glulam beams. These are made from timber that has been sustainably produced and requires less energy to produce than the same amount of steel. Using sustainably sourced timber means that new trees are planted which in turn help soak up CO2 from the atmosphere.

The roof covering
The roof covering to the station is of a coated aluminium sheet. This contains a high percentage of recycled material and can be recycled at the end of its life.

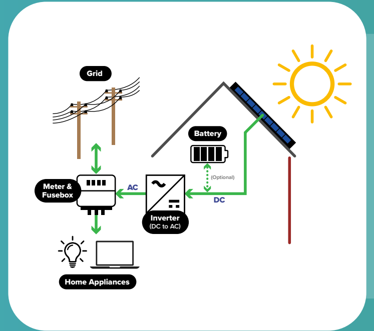
The windows
All the glazing frames to the booking hall and offices are constructed of timber from sustainable sources as an alternative to steel, aluminium or PVC.

The walls
The station's walls are mainly constructed using stone from nearby demolished buildings. This has reduced the amount of energy that would be needed in quarrying and delivering new building stone to the site.



SOLAR HOT WATER

Look up at the tower above the station building and you might see the solar collector panel which is a series of tubes. Again, these use the power of the sun to create hot water for use in the buildings central heating system and to help supply hot water to the kitchen and toilet sinks. The diagram shows how the solar collectors turn sunlight into hot water.



SOLAR POWER

Did you know that the station generates its own electricity? Using solar panels, often called photovoltaic panels or PVs, that are attached to the lighting columns in the car park and on the roof of the station building it can generate enough power on a bright sunny day to work all the electrical items in the building. If there is any spare electricity, then it goes into the National Grid. The diagram shows how the solar panels turn sunlight into clean electricity.

PASSIVE SOLAR BUILDINGS DESIGN

Passive Solar Building Design is a means of building design that uses energy from the sun in winter but not in the summer. The large timber-framed double skin glazing around the booking hall is designed to retain the solar heat in the winter. The large overhanging roof shades the glazing in order to keep the building cool in the summer. In addition to this, natural ventilation is used for the booking hall and offices to cool the spaces and reduce the amount of energy needed to do this task.

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This project has received European Regional Development Funding through INTERREG IV B.
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