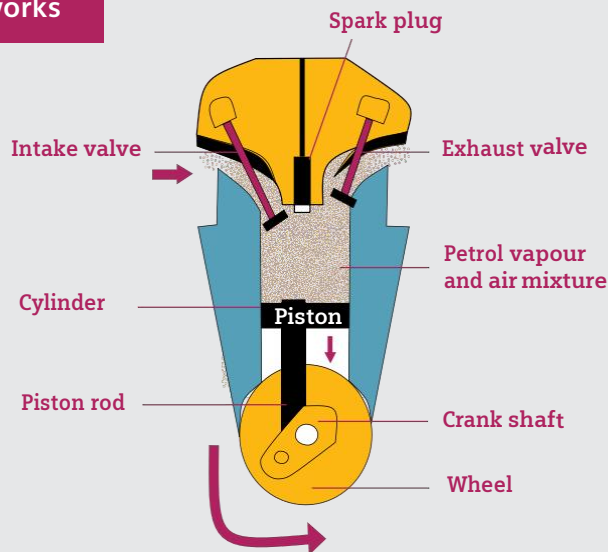


## 2A Petrol generator

## How a petrol engine works



Petrol generators come in a wide range of sizes, depending upon the amount of electricity to be generated. Small ones are highly portable and all of them are reliable.

Portable petrol generators consist of two main components. Firstly there is a petrol engine; this is a type of internal combustion engine in which petrol vapour is mixed with air and ignited inside a cylinder. The rapid combustion forces the piston down the cylinder, turning the crankshaft. The energy has been transferred from the fuel to the crankshaft which is now spinning.

## Portable petrol generator



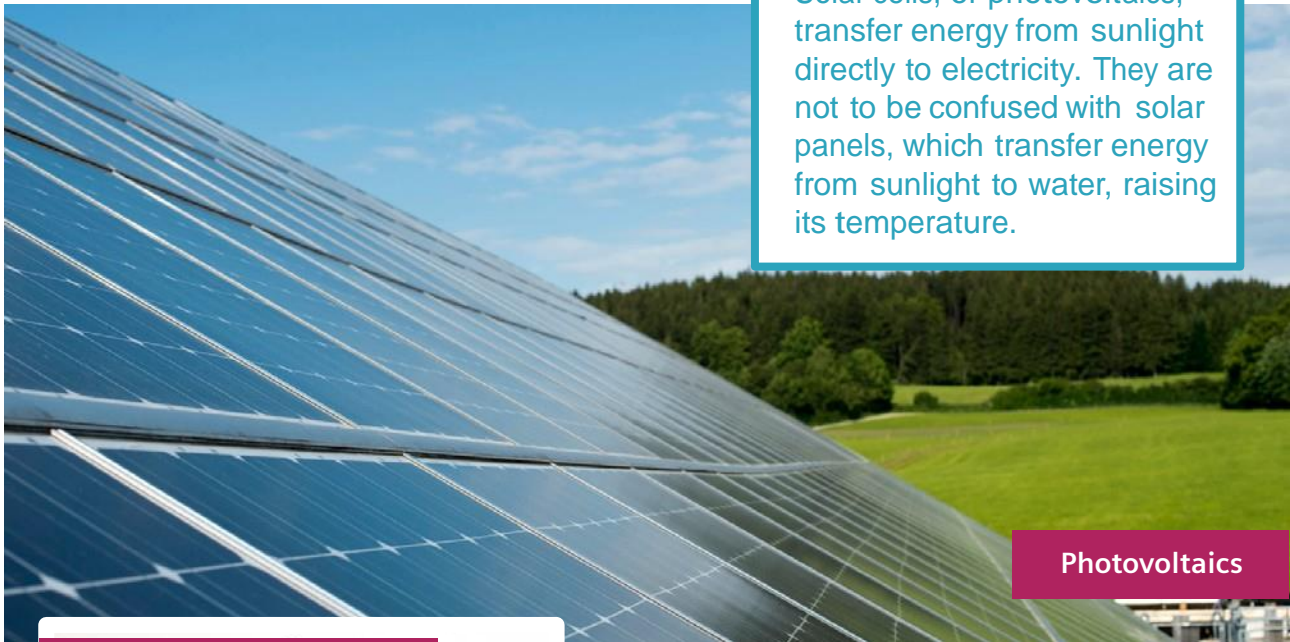
Secondly there is a generator. This is driven by the crankshaft and consists of magnets and coils of wire. When turned it produces electricity.

They can be started up and shut down quickly so they can respond rapidly to needs.

However they produce a range of pollutants such as carbon dioxide, sulphur dioxide and nitrous oxides.

## 2B Solar cells

Solar cells, or photovoltaics, transfer energy from sunlight directly to electricity. They are not to be confused with solar panels, which transfer energy from sunlight to water, raising its temperature.



Photovoltaics

## Solar powered calculator



Solar cells have the obvious advantage that they eliminate the need for fuel to be purchased. They have long been used for applications in which low weight and portability are important, such as pocket calculators or in isolated locations.

However, more recently, price reductions mean that they can compete in larger scale applications. In some parts of the world, such as Hawaii, it is already cheaper to use photovoltaics to produce electricity than competing technologies, such as petrol generators.

They do, however, need a large area to produce significant amounts of electricity and are obviously dependent upon the amount of sunlight.