

<http://www.darvill.clara.net/altenerg/>

1. Introduction

Give examples of fossil fuels: ___ coal, oil, gas (thing that have been formed from the organic remains of prehistoric plants and animals ___)

Is it widely used?: ___ yes _____

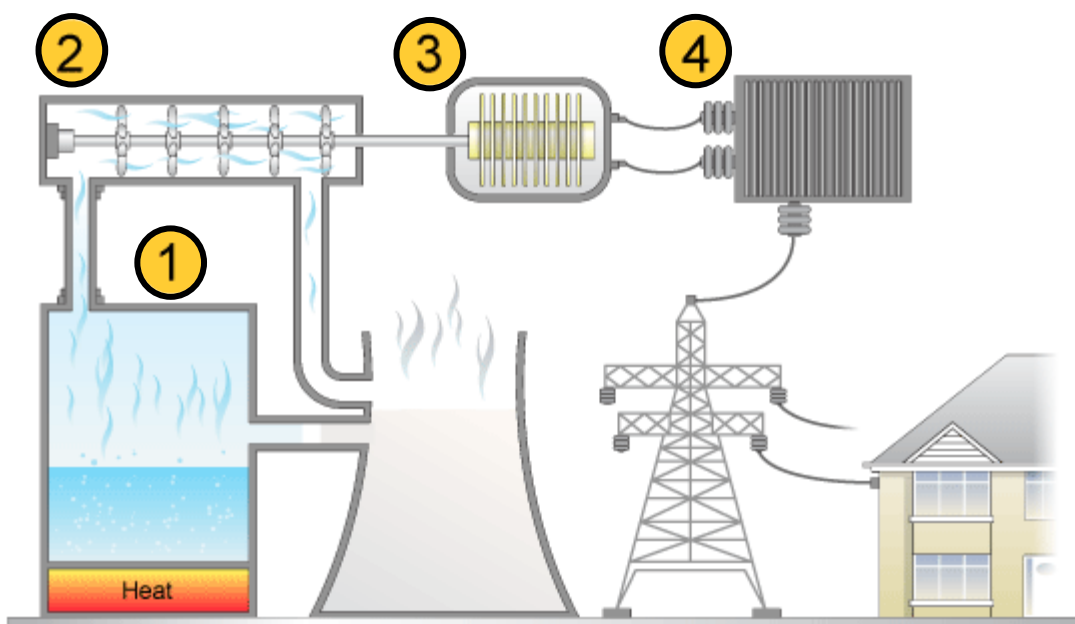
Is it renewable?: ___ it is but not to a human scale _____

1. How it works

The main bit to remember: Burn Fuel → Heat water to make steam → Steam turns turbines → Turbines turn generators → Electrical power

Write in the bubbles the four main stages of the power station.

1. the fuel is burned to boil water to make steam
2. the steam makes a turbine spin
3. the spinning turbine turns a generator which produces electricity
4. the electricity goes to the transformers to produce the correct voltage



2. Types of energy resources

List below the different types of fossil fuels:

coal (charbon)

crude oil (pétrole brut)

natural gas

bituminous sands

On utilise de l'eau chaude pour séparer le bitume du sable. Cette étape, appelée l'extraction, n'est pas requise pour la production de bitume in situ.

Le bitume est ensuite chauffé et mis dans des fûts où l'on retire l'excès de carbone (sous forme de coke de pétrole).

Les vapeurs d'hydrocarbures surchauffées qui proviennent des ballons de coke sont acheminées dans des colonnes de fractionnement qui condensent ces vapeurs pour en faire du naphta, du kérosène et du gazole.

Il en résulte du pétrole synthétique. Ce pétrole est expédié dans des pipelines souterrains vers des raffineries un peu partout en Amérique du Nord qui les transforment en différents produits pétroliers (carburateurs, essence, etc.).

oil shale (Les schistes bitumineux sont des roches sédimentaires qui contiennent de la matière organique : le « kérogène ». Il est transformé par traitement thermique, afin d'obtenir des hydrocarbures - donc du pétrole.)

1. Advantages and disadvantages

Advantages:	Disadvantages:
<ul style="list-style-type: none"> • Very large amounts of electricity can be generated in one place using coal, fairly cheaply. • Transporting oil and gas to the power stations is easy. • Gas-fired power stations are very efficient. • A fossil-fuelled power station can be built almost anywhere, so long as you can get large quantities of fuel to it. Didcot power station, in Oxfordshire, has a dedicated rail link to supply the coal. 	<ul style="list-style-type: none"> • Basically, the main drawback of fossil fuels is pollution. Burning any fossil fuel produces carbon dioxide, which contributes to the "greenhouse effect", warming the Earth. • Burning coal produces more carbon dioxide than burning oil or gas. It also produces sulphur dioxide, a gas that contributes to acid rain. We can reduce this before releasing the waste gases into the atmosphere. • Mining coal can be difficult and dangerous. Strip mining destroys large areas of the landscape. • Coal-fired power stations need huge amounts of fuel, which means train-loads of coal almost constantly. In order to cope with changing demands for power, the station needs reserves. This means covering a large area of countryside next to the power station with piles of coal.

2. Summary

- Coal, Oil and Gas are called "Fossil Fuels"
- They are non-renewable
- We burn them to heat water into steam, which drives turbines, which drive generators
- Burning fossil fuels causes pollution and releases carbon dioxide, contributing to the 'greenhouse effect'.

Quiz:

Coal, **oil** and natural gas (chemical name: **hydrocarbures** are called fossil fuels because they were formed from the remains of plants or **animals** long ago.

We **burn** the fuels in power stations, releasing the stored chemical **energy**.

The heat turns water into **steam**, which drives **turbines**, they drive the **generators**.

Are fossil fuels renewable? (yes/no) **no**

Do they cause pollution? (yes/no) **yes**