Text 1. The pros and cons of alternative energy

Oil and oil products make the world go round, some would say. Just about every piece of equipment or type of machinery uses oil to run. Oil, however, is a «non-replenishable» resource, and when it runs out, how will we run our equipment and machinery? In response to this question, many are trying to develop alternative sources of energy. Hopefully, these alternative sources will make the world less dependent on the limited supply of oil.

There are a number of types of alternative energy sources which have already been developed. They include:

Energy from the sun. Known as solar energy, this powerful and unlimited source of energy would offer us a very efficient alternative to oil, and it is a free resource.

If solar power were properly developed, it could easily become our primary power source. The use of solar power is especially attractive in areas that have long days and not much cloud cover. It is therefore ideal for less developed areas which may be far from the more traditional power sources.

The problem is that capitalizing on this powerful resource is not as simple as it seems. Locations with limited daylight hours or consistently overcast skies do not receive the amount of light required to store the energy. in addition, locations that do not have wide expanses of land available will not be able to tap this resource. since the photocells necessary to collect and store the sunlight require large tracts of land.

Wind. The power of the wind was harnessed hundreds of years ago to run windmills, which directly ran mills on farmlands. The same principle can now be used, with the addition of storage capacity, to supply as much as 20 % of our energy needs. In locations with strong winds, such as along the seashore, or in the mountains, wind can easily be harnessed to run generators to create electricity. This is an energy alternative that is safe and clean: no harmful carbon dioxide or other gases are produced in the creation of electricity through wind power. However, there are many areas that don't receive enough wind to make it a reliable source.

Hydroelectric energy. A powerful surge of water sluicing over a cliff creates a tremendous source of energy. This is the concept behind the construction of the many dams in the world today. Hydroelectric energy is another clean alternative to oil, since it does not produce waste or pollution. Energy produced by a dam is cheap and adaptable, but the cost of building a dam is very high and, without destroying entire potentially habitable areas, it is difficult to find locations for dams. Tidal energy – the power of water can also be harnessed on a smaller scale by the use of tidal flow. This alternative is very limited, however, since not every area has bodies of water with strong tidal flows, and the concern over the effect on fish and birds in the area raise many concerns. It is also not a steady source of energy, since tides move in twice daily movements. For this reason there are only nine workable sites for this type of power and only two being used.

Biomass. Biomass can be considered a nice way of speaking of waste. Animal waste, rotten crops and grains, residues from wood mills and aquatic waste can all be fermented to form an alcohol that is comparable to coal in its energy producing powers. It also produces greenhouse gases, making it one of the less attractive alternative energy sources. In addition to these more «natural» sources of energy production, fusion, fuel cells, nuclear, geothermal and hydrogen energies can be used for our future needs for power. These have negative environmental effects and so are questioned as alternative sources, but doesn't oil have as many, if not more negative effects? (source: www.ecoenerfysc.com)

Переведите предложения:

a) Once the dam is built, the energy is virtually free.
b) No waste or pollution produced.
c) Much more reliable than wind, solar or wave power.
d) Water can be stored above the dam ready to cope with peaks in demand.
e) Hydro– electric power stations can increase to full power very quickly, unlike other power stations.
f) Electricity can be generated constantly.
g) The dams are very expensive to build.
h) However, many dams are also used for flood control or irrigation, so building costs can be shared.
i) Building a large dam will flood a very large area upstream, causing problems for animals that used to live there.
j) Finding a suitable site can be difficult – the impact on residents and the environment may be unacceptable.
k) Water quality and quantity downstream can be affected, which can have an impact on plant life.

Соответствуют ли данные предложения содержанию текста?
Отметьте "true" или "false":

1) The use of solar power is especially attractive in areas with limited daylight hours or consistently overcast skies.
2) The power of the wind has been developed recently.
3) Carbon dioxide or other gases can be produced in the creation of electricity through wind power.
4) Almost every piece of equipment or type of machinery uses gas to run.
1) There are few types of alternative energy sources which have already been developed.
2) Solar energy is a powerful and unlimited source of energy and it is a free resource.
3) Hydroelectric energy doesn't generate waste or pollution.
4) Energy produced by a dam is expensive and adaptable, but the cost of dam construction is very cheap.
5) There are only nine workable sites for tidal power and only two are in use.
6) Because of greenhouse gases, biomass is one of the less attractive alternative energy sources.

Energy Resources: Nuclear power

How it works

Nuclear power stations work in pretty much the same way as fossil fuel– burning stations, except that a "chain reaction" inside a nuclear reactor makes the heat instead.

The reactor uses Uranium rods as fuel, and the heat is generated by nuclear fission: neutrons smash into the nucleus of the uranium atoms, which split roughly in half and release energy in the form of heat.

Carbon dioxide gas or water is pumped through the reactor to take the heat away, this then heats water to make steam.

The steam drives turbines which drive generators.

Modern nuclear power stations use the same type of turbines and generators as conventional power stations.

In Britain, nuclear power stations are often built on the coast, and use sea water for cooling the steam ready to be pumped round again. This means that they don't have the huge "cooling towers" seen at other power stations.

The reactor is controlled with "control rods", made of boron, which absorb neutrons. When the rods are lowered into the reactor, they absorb more neutrons and the fission process slows down. To generate more power, the rods are raised and more neutrons can crash into uranium atoms.

More

Natural uranium is only 0.7% "uranium – 235", which is the type of uranium that undergoes fission in this type of reactor.

The rest is U – 238, which just sits there getting in the way. Modern reactors use "enriched" uranium fuel, which has a higher proportion of U – 235.

The fuel arrives encased in metal tubes, which are lowered into the reactor whilst it's running, using a special crane sealed onto the top of the reactor.

With an AGR or Magnox station, carbon dioxide gas is blown through the reactor to carry the heat away. Carbon dioxide is chosen because it is a very good coolant, able to carry a great deal of heat energy. It also helps to reduce any fire risk in the reactor (it's around 600 degrees Celsius in there) and it doesn't turn into anything nasty (well, nothing long-lived and nasty) when it's bombarded with neutrons.

You have to be very careful about the materials you use to build reactors – some materials will turn into horrible things in that environment. If a piece of metal in the reactor pressure vessel turns brittle and snaps, you're probably in trouble – once the reactor has been built and started you can't go in there to fix anything.

Uranium itself isn't particularly radioactive, so when the fuel rods arrive at the power station they can be handled using thin plastic gloves. A rod can last for several years before it needs replacing.

It's when the "spent" fuel rods are taken out of the reactor that you need the full remote- control robot arms and Homer Simpson equipment.

Should I worry about nuclear power?

Nuclear power stations are not atomic bombs waiting to go off, and are not prone to "meltdowns".

There is a lot of U – 238 in there slowing things down – you need a high concentration of U – 235 to make a bomb.

If the reactor gets too hot, the control rods are lowered in and it cools down.

If that doesn't work, there are sets of emergency control rods that automatically drop in and shut the reactor down completely.

With reactors in the UK, the computers will shut the reactor down automatically if things get out of hand (unless engineers intervene within a set time). At Chernobyl, in Ukraine, they did not have such a sophisticated system, indeed they over-rode the automatic systems they did have. When they got it wrong, the reactor

Electrical Engineering

Put the necessary words.

1. The _____ of electric power is concerned with the _____ and operation of systems for _____ , transmitting and distributing electric _____ .
2. One of these is ability to _____ power at extremely high _____ in both the direct current and _____ current modes, reducing power _____ proportionately.
3. A significant _____ in the engine erring of electric machinery has been the introduction of electronic _____ that enable AC motors to run at variable _____ by adjusting the frequency of the _____ fed into them.

(advance, current, generating, power, controls, controls, transmits, speeds, field, voltages, losses, alternating design.)

Electrical and Electronics Engineering.

Electrical and electronics engineering is the largest and most diverse field of engineering. It is concerned with the development and design, application, and manufacture of systems and devices that use electric power and signals. Among the most important subjects in the field are electric power and machinery, electronic circuits, control systems, computer design, superconductors, solid-state electronics, medical imaging systems robotics, lasers, radar, consumer electronics, and fibre optics.

Despite its diversity, electrical engineering can be divided into four main branches: electric power and machinery, electronics, communications and control, computers.

Answer these questions and expand your reasons.

1. Is electrical and electronics engineering the largest or the smallest field of engineering?
2. What is Electrical and Electronics Engineering concerned with?
3. What are the subjects in the field of Electronical Engineering?

Put the syllables in the correct order to get the words.

1. ti. li. app.on.ca.
2. ment. de. lop. ve.
3. ver. si. di. ty.
4. ne. chi. ma. ry.
5. mi. ti. com. ni. ca. ons.

Electronics.

Find ten words in the square.

i	a	s	t	c	r	e	a	p	c
n	n	a	v	a	k	i	t	e	a
c	o	d	a	p	s	d	e	r	r
l	e	v	i	a	e	f	g	f	r
u	h	a	k	e	p	i	m	o	y
d	o	n	p	i	a	r	u	r	\
e	w	c	x	t	r	t	y	m	/
a	b	e	e	o	a	u	i	f	N
s	i	d	o	r	t	b	p	o	r
s	e	m	b	l	e	e	s	y	n

Переносить; показание; выполнять; раздельный; трубка; конденсатор (радио); монтировать; продвинутый; включать (в себя); создавать.

Find the translations of the English words in the right column.

1. application	a) получать
2. to transmit	b) связывать
3. to receive	c) задача
4. to store	d) сложный
5. task	e) применение
6. digital	f) волна
7. wave	g) состоять
8. to consist	h) передавать
9. to connect	i) цифровой
10. complex	j) хранить

- чрезмерное нагревание
- меры по технике безопасности

b) Техника безопасности: Переведите текст

Ни в коем случае нельзя одновременно дотрагиваться до бытовых приборов и заземленных предметов (водопроводные трубы, батарей центрального отопления и т. п.). Вполне возможно, что на корпусе бытового прибора пробивает электричество. В последнее время все больше и больше приборов имеют заземление. Это делается для обеспечения безопасности потребителей. Такие бытовые приборы имеют трехжильный шнур и вилку с тремя контактами.

IV. Fill in the blanks with the articles *a, an, the* and prepositions, where necessary:

When Mary was to open a meeting ... the first time ... her life, her voice shook ... excitement. The young scientist shook hands ... his friends who had come ... the airport to see him... I wonder why Bob is such an ill-natured boy. It's a pity he takes ... his mother only ... appearance' Ask Kate to join ... our party. She looks serious, but I know she is very gay ... nature and is fond of ... singing and dancing.

V. Put the verbs in brackets into the correct voice and tense-forms:

1. Don't let the boy stay out so long. He (to run about) for three hours, and may catch cold. 2. That young singer has had very good training. He (to sing) for half an hour and never (to stop) for a moment's rest. 3. It is unfair of you to be so cross with the man. He (to be) away for two weeks and you can't blame him for few mistakes that (to make) during his absence. 4. Our reply (to send) to you as soon as all the dates (to fix) finally. At the moment some of them (to consider) still.

VI. Fill in the blanks with prepositions and adverbial particles where necessary:

1. Instead ... buying something ... everyday wear, as she had first intended, Mary bought a sleeveless dress ... better wear. 2. I don't advise you to buy this pair ... shoes. I am afraid they'll soon wear.... 3.I wonder why the water has set the table ... two persons instead ... three.

4. Speaking at the production meeting, the director ... the factory pointed ... that each ... the workers and engineers was responsible ... carrying ... the plan. 5. She said that the new film was