

Read the passages. Then answer the questions that follow.

## Cars Without Gasoline Are Here

*by Caroline Rialto*

1 People often feel as if the use of a gasoline engine has been integral to the automobile for as long as cars have been on the road. Justifiably, this makes people resist change. They feel that if the gasoline engine disappears, automobiles will never be as fast, safe, or comfortable as they are now, much like people must have felt as the car replaced the horse-drawn carriage.

2 But in fact, the first automobiles were really locomotives modified with tires. They were powered mostly by steam engines. Some early cars ran on strange fuels like gunpowder and coal gas. And some early cars were even powered by simple batteries and electric motors.

3 So the history of the early automobile is a history of changing technology, and of trying things and seeing if they work. Today, technology is changing because political and environmental concerns are forcing manufacturers away from the gasoline engine. The Earth's survival depends on our response to energy issues today. Plus, the price of gas is rising, which means new technologies must be invented to utilize other forms of energy. Because of these factors, we are experiencing a return to that glorious era of experimentation. In the same way as early automobile inventors, we're trying things and seeing if they work.

4 Biodiesel is a chemical very much like the diesel fuel that trucks and some cars use. But instead of being made from crude oil, it is made from renewable sources such as vegetable oil or animal fats. Biodiesel can provide much better fuel efficiency than gasoline. It can be made anywhere. Plus, many cars that now use diesel can be converted to run on biodiesel, so biodiesel could be very cost-effective.

5 Ethanol is another fuel-based alternative to gasoline power. Bioethanol, made from many common crops grown in the United States, could be a main fuel for the future of transportation. Ethanol is already added to fuels to reduce the amount of gasoline our cars consume.

6 Another set of alternative technologies uses natural gas or locally made biogas to power cars. Though natural gas is itself a fossil fuel, it burns very cleanly, so it does not pollute as much as gasoline. Biogas, made from decomposing organic matter, is a more environmentally conscious choice that has the same advantages.

7 Hybrid technology allows another route to gasoline-free driving. A hybrid car uses a small conventional engine, but gets added power through one or more electric motors linked to a set of batteries. The batteries are charged by excess power from the engine and from energy recaptured from braking. The electric motor supplements the conventional engine during peak loads, often providing full power at low speeds. The conventional engine takes over at higher speeds, often around 30 miles per hour. The most successful commercial hybrids today use a gasoline engine, but the technology could easily be used with biodiesel, bioethanol, or biogas to provide a fossil-fuel-free transportation technology.

8 So far we've been looking at vehicles that represent small improvements. But some new technologies are more boldly changing the face of motoring. The fully electric car does away with the conventional motor altogether, using only electric motors and battery packs. However, the limited state of battery technology today means that such vehicles rarely have real-life ranges of more than 100 miles. They can also take many hours to charge up. But there is another option. The plug-in hybrid is very much like normal hybrid

technology, but it adds the capacity to be charged from a wall plug like an electric car. That way, drivers can charge the cars overnight and have them ready in the morning. Such vehicles generally use the electric motor almost exclusively until the battery pack is exhausted. This means that the car may use little fuel or no fuel at all during shorter trips.

9 Batteries are heavy. And, as we've seen, they have short range and long charging times. If we want to avoid pollution completely, there are two revolutionary fuel technologies also being deployed. For short trips inside of cities, vehicles powered off of compressed air could be valuable. Such a vehicle would emit no pollutants. It could be pumped up at stations throughout the city and would provide ample power for urban environments. For longer trips, hydrogen could be used as a fuel. Hydrogen can be safely stored in a compressed tank or incorporated into cutting-edge materials. It can be combined with oxygen from the air to produce energy that can be used to power a car. The only emission from a hydrogen-powered vehicle would be pure water. Plus, hydrogen is the most abundant natural element in the universe, so there is plenty of it around.

10 Future road cars will combine many of these technologies to provide maximum efficiency. But one thing is certain: Cars will surely get better for the consumer.

# Are “Green” Cars Really All That Green?

by Nathan Filton

1 Today, alternative energy is the buzzword of the nation. Millions of dollars of research money are going into so-called “green” technologies that are supposed to be more environmentally friendly. Although it is nice to think that we can save the planet by driving “green” cars, that simply isn’t true. We cannot get something for nothing.

2 As prices of gasoline have risen higher and higher in recent years, companies and consumers have begun to take interest in alternative fuel technologies, and although some of these technologies have many advantages, they are not positive across the board. Companies are always going to sell their products as the next big technological advance. It is important that people know the problems and risks of these changes.

3 Three main techniques can be used to make cars more “green.” The first is to use renewable fuels. The second is to simply produce the energy elsewhere and store it in batteries. The third is to use hydrogen, which appears to be completely non-polluting. While all of these sound great, none of them are perfect.

4 Gasoline is a fossil fuel, the product of thousands of years of decaying vegetation. We drill it up from the ground in its crude form, refine it, and sell it. But fossil fuels aren’t being replenished<sup>1</sup> as quickly as we use them. Instead, we can use biofuels, which are fuels we have created out of renewable resources. But biofuels are not quite as good as they sound. Although they can replace fossil fuels in our cars, they still pollute similarly. Although biofuels may be able to save us from dependence on foreign oil, they won’t keep our cities smog-free.

5 The production of biofuels presents its own challenges. Take the example of ethanol, much of which in use today comes from corn. This doesn’t seem like a bad thing because there is a lot of corn grown in this country, and corn is certainly renewable. But the more corn is used to make biofuels, the less there is to eat. And because of all of the industry uses of corn, many farms that used to grow wheat or other food products have switched to growing corn for ethanol, which has caused price increases on many foodstuffs. As if that weren’t enough, corn is also a needy crop, and growing it consumes many natural resources. A lot of research is going into making bioethanol and biodiesel from waste products, such as corn husks, or other, friendlier crops such as sugar beets. Some companies are even investigating using algae to create such fuels. But as it stands, biofuels are compromised.

6 Another “green” strategy, producing the energy elsewhere and storing it in batteries to be used later, misses the major issue. An electric car doesn’t directly use any fossil fuels, but that energy has to come from somewhere. Often, it comes from coal, itself a fossil fuel. Though “clean” coal plants are on the rise, coal-based electricity plants still produce much pollution of their own. True, it’s easier to reduce the emissions and increase the efficiency of one large power plant than thousands of cars. But until a majority of our power plants are made to pollute less, electric cars simply shift the energy generation from one damaging source to another.

7 An additional, and often overlooked, problem with electric and hybrid cars is with the batteries themselves. The mining operations that provide the metals for many of these batteries are some of the most polluting mines in the world. And when the batteries eventually die, disposing of them is a challenge. They are too hazardous to be disposed of in landfills, but the nickel they’re made from is not easily recycled. Plus, even if they could be safely thrown away, landfills are already bursting to overflowing with trash from homes and businesses.

<sup>1</sup> **replenished:** replaced

8 This leaves one last option: truly clean fuel. Hydrogen, reacting with oxygen, produces only water vapor and electricity. It sounds perfect, but the problems are with production and distribution. Although it is often said that hydrogen is “abundant” because it is the most common element in the universe, that isn’t true on Earth. There is very little pure hydrogen on Earth; it is mostly tied up in other chemical compounds. Creating hydrogen separated from these compounds is not economically practical, or even scientifically possible in some cases. This means that much of the hydrogen used today for fuel is extracted from fossil fuels, the stuff we’re trying to avoid in the first place. This doesn’t really address the real issue of a limited supply of such resources. Hydrogen is also difficult to transport, and would require a whole new system of filling stations that is unlikely to ever be built.

9 If all this weren’t bad enough, there’s one more complication to the gasoline-free car: Modern automobiles contain more and more plastic than ever before. And from where does that plastic come? Primarily it comes from crude oil, the same place we get gasoline. The second major source is corn, and we’ve seen its problems already. If we intend to really produce green vehicles, we have to start thinking about using green materials as well as responsible fuels.

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**13**

Read this sentence from “Cars Without Gasoline Are Here.”

They feel that if the gasoline engine disappears, automobiles will never be as fast, safe, and comfortable as they are now, much like people must have felt as the car replaced the horse-drawn carriage.

What is the impact of the comparison made in this sentence?

- A** By comparing a gasoline engine with a living horse, the author shows that we need a better alternative.
- B** By comparing the gasoline automobile with the horse-drawn carriage, the author shows that change is not necessary.
- C** By comparing today’s cars with the horse-drawn carriage, the author shows that fears of change are familiar but unnecessary.
- D** By comparing gasoline with horses, the author shows that we need to consider more possible sources of power.

**Go On**

**14**

Which meaning of the word “hybrid” **best** defines the use of the word in “Cars Without Gasoline Are Here”?

- A** the offspring of two different biological beings
- B** a word that contains elements of two or more languages
- C** a custom born out of the interaction of two or more cultures
- D** something that draws on multiple sources of power

**15**

Which of the following sentences from “Cars Without Gasoline Are Here” suggests that the development of “green” technology is being influenced by forces outside the auto industry?

- A** “So the history of the early automobile is a history of changing technology, and of trying things and seeing if they work.”
- B** “Today, technology is changing because political and environmental concerns are forcing manufacturers away from the gasoline engine.”
- C** “Ethanol is already added to fuels to reduce the amount of gasoline our cars consume.”
- D** “Future road cars will combine many of these technologies to provide maximum efficiency.”

**16**

Study the graphic organizer below that classifies some of the information in “Cars Without Gasoline Are Here.”

Technology	Environment	Uses/ Drawbacks	Solutions
ELECTRIC Electric motors and battery packs	Clean	Short-range (about 100 miles); long charge-up time	Develop plug-in hybrid
COMPRESSED AIR Compressed air system	Clean	Best for short trips and city driving	Pumping stations in urban areas
HYDROGEN Hydrogen fuel	Clean; emits only water; abundant	Storing and providing is a challenge	Compressed tanks or combine with cutting-edge materials

Which statement about the passage is supported by the graphic organizer?

- A** The writer focuses on how the technologies are different and avoids discussing potential problems.
- B** The writer omits a great deal of information so that no reasonable comparisons can be made.
- C** The writer provides adequate information about each technology for the reader to begin evaluating the options.
- D** The writer compares the technologies in terms of their problems but does not give enough information about their benefits.

**17**

The author of “Cars Without Gasoline Are Here” claims that new technologies are changing the way modern automobiles are fueled. Which detail is **not** relevant to the claim?

- A** Some early cars ran on gunpowder and coal gas.
- B** Biogas powers cars and does not pollute as much as gasoline.
- C** The fully electric car is powered only by electric motors and battery packs.
- D** Hydrogen can be combined with oxygen from the air to power a car.

**Go On**

**18**

One of the author's main claims in "Cars Without Gasoline Are Here" is that the limited range of the electric car can be overcome. Which statement from the passage **best** supports this statement?

- A** "The Earth's survival depends on our response to energy issues today."
- B** "The fully electric car does away with the conventional motor altogether, using only electric motors and battery packs."
- C** "The plug-in hybrid is very much like normal hybrid technology, but it adds the capacity to be charged from a wall plug like an electric car."
- D** "Such a vehicle would emit no pollutants."

**19**

Re-read paragraph 5 of "Are 'Green' Cars Really All That Green?" How is the first sentence supported by those that follow?

- A** The following sentences provide examples of how the production of biofuels currently poses many problems.
- B** The following sentences offer the author's solutions to the problems associated with biofuel production.
- C** The following sentences argue that the production of biofuels will lead to widespread hunger.
- D** The following sentences present alternatives to biofuels that are less dangerous and less expensive.

**20**

In paragraphs 6 and 7 of "Are 'Green' Cars Really All That Green?" the writer discusses problems related to electric cars. Which of the following facts from these paragraphs is **least** relevant to the writer's argument?

- A** Landfills are overfilled with waste from people's homes and businesses.
- B** An electric car doesn't use fossil fuels directly, but it does use them indirectly.
- C** The mining operations that provide the metals used in batteries are major polluters.
- D** The chemicals in batteries are too dangerous to be disposed of in landfills.

**21**

Read these sentences from paragraph 8 of "Are 'Green' Cars Really All That Green?"

Creating hydrogen separated from these compounds is not economically practical, or even scientifically possible in some cases. This means that much of the hydrogen used today for fuel is extracted from fossil fuels, the stuff we're trying to avoid in the first place.

The word "extracted" has a similar meaning to the word "separated." What does "extracted" mean?

- A** created from
- B** given to
- C** created for
- D** taken out of

**22**

How does the writer of "Are 'Green' Cars Really All That Green?" dispute the argument that the biological origin of biofuels make them a suitable replacement for fossil fuels?

- A** by noting that biofuels come from vegetables such as corn and sugar beets
- B** by pointing out that biofuels still pollute like fossil fuels
- C** by proving that biofuels are not really made from biological material
- D** by explaining that biofuels are dangerous and expensive

**23**

Which of the following **best** describes how the writer of "Are 'Green' Cars Really All That Green?" responds to information that might conflict with his point of view?

- A** The writer ignores any points that might conflict with his or her viewpoint.
- B** The writer addresses these conflicts and provides factual information, but with some critical comments about the opposing ideas.
- C** The writer comments negatively on the people who support ideas that conflict with his or hers, suggesting they are not informed.
- D** The writer considers conflicting comments and is often forced to change his or her viewpoint in the middle of a paragraph.

**Go On**



**24**

The author of "Are 'Green' Cars Really All That Green?" is doubtful about alternative technologies and points out ways in which they are not working. Which sentence from the passage **best** supports this statement?

- A** "Companies are always going to sell their products as the next big technological advance."
- B** "Gasoline is a fossil fuel, the product of thousands of years of decaying vegetation."
- C** "Hydrogen, reacting with oxygen, produces only water vapor and electricity."
- D** "This doesn't really address the real issue of a limited supply of such resources."

**25**

Consider the main point of "Are 'Green' Cars Really All That Green?" Which of the following describes the writer's evidence to support this main point?

- A** The author provides many examples of alternative-energy cars that won't work to prove that there will never be a better energy source than gasoline.
- B** The author provides glowing praise for people investigating alternative cars but is not hopeful about the results.
- C** The author clearly lays out the negatives of alternative cars and points out that the environmental issues go deeper than energy sources.
- D** The author is unsure about the techniques used to make green cars and therefore feels plastic cars would be a better choice.

26

Both writers discuss the hydrogen automobile. Look at the list below, which names several of the points the writers raise about using hydrogen in cars.

1. Hydrogen is readily abundant and easy to use.
2. Hydrogen is difficult to transport.
3. Hydrogen can be safely stored in tanks.
4. Hydrogen is completely clean and emits water.
5. Hydrogen filling stations are unlikely to ever be built.

On which of these points do the two writers agree?

- A point 4
- B points 1, 2, and 5
- C points 3 and 4
- D all of the points

27

With which statement from “Are ‘Green’ Cars Really All That Green?” would the writer of “Cars Without Gasoline Are Here” **most strongly** disagree?

- A “Today, alternative energy is the buzzword of the nation.”
- B “Although it is nice to think that we can save the planet by driving ‘green’ cars, that simply isn’t true.”
- C “Gasoline is a fossil fuel, the product of thousands of years of decaying vegetation.”
- D “An electric car doesn’t directly use any fossil fuels, but that energy has to come from somewhere.”

**Go On**