Starting up

- Electric vehicles (EVs) are becoming more popular. What are the pros and cons of owning and driving an electric car?

Vocabulary 1 – electric vehicles

Choose the words *in italics* that explain the meaning of the words in bold. Use your dictionary if necessary.

1 **Wireless charging** is convenient because you can refill the battery *with* / *without* an electric cable.
2 Engineers say that **autonomous vehicles** – cars or trucks that don't have a *computer* / *driver* – are safer than conventional vehicles.
3 Sometimes you have to drive in **harsh conditions** such as rain or snow, which makes driving *easy* / *difficult.*
4 Electric vehicles can be charged with **induction pads** rather than wired connections. It's a technology for charging a battery *with* / *without* an electric wire.
5 **Under-road charging** systems will charge car batteries while vehicles are *driving* / *parked in a garage*.
6 When a car drives over a **pressure points** in the road, it will turn on the flow of electricity, like a *switch* / *petrol pump*.
7 Governments are introducing laws to **eliminate CO2 emissions** from cars on the road – that means *completely stop* / *somewhat reduce* pollution from driving.

Reading 1

Which two statements are true, according to the article?

[ ] Volvo is installing Momentum Dynamics charging systems in all of its electric vehicles.
[ ] The car industry is trying to find the cheapest way to charge electric vehicles away from home.
[ ] All of the major car makers are working to develop electric cars to meet environmental targets.
[ ] New rules are being set up to completely cut carbon dioxide from cars by 2050.

Sweden's Volvo invests in wireless vehicle charging company

Volvo has announced an investment in Momentum Dynamics, a high-power wireless charging company, in the latest move by a major auto group for [1]**dominance** in the electric vehicle market.

The Volvo Group Venture Capital AB, a subsidiary of the Volvo Group, said it was investing in the Philadelphia-based company which develops high-power wireless charging systems for trucks, buses and construction equipment, on Tuesday.

It comes during the Detroit auto show and follows high-profile moves by [2]**rival** companies into the electric and autonomous vehicle market in recent weeks. On Monday Volkswagen unveiled an $800m investment to build electric vehicles at its US plant in Chattanooga, Tennessee.

Wireless charging systems mean cars and other vehicles do not need to plug into the electrical grid using wires and cables and are a potential solution to a major [3]**stumbling block** for the electric auto industry — the fact that so many vehicles need to be charged away from home.

Per Adamsson, vice-president at Volvo Group Venture Capital said Momentum was able to transmit electricity safely "through air water and ice" and would "fit the harsh conditions under which our customers operate."

BMW and Daimler are also focusing induction pads, which can be located in conventional garages. Meanwhile Renault has gone further, having tested under-road charging for car batteries on a 100-metre test strip in France.

The system works via pressure points in the road, which detect a vehicle's presence and pass electricity upwards into the car, charging it as it moves.

Volvo's investment comes as the race to develop electric vehicles [4]**hots up** amid stark global environmental targets and increased competition.

On Monday shares in Tesla fell amid a flurry of announcements from industry rivals including General Motors and Volkswagen concerning plans for battery-powered cars at the Detroit auto show.

Volkswagen is also expected to announce a deeper [5]**alliance** with Ford this week, which could see the two companies building electric vehicles together. The carmakers plan to [6]**collaborate** on several [7]**joint** projects and are expected to continue talks on co-operating on the development of self-driving cars and electric vehicles.

The government has to eliminate carbon dioxide emissions from road transport by 2050 under its climate change targets. Carmakers are also currently preparing to release a string of EVs in order to meet new stringent CO2 rules that come into force in 2020.

A new system of "super credits" due to come in alongside the CO2 rules will reward makers of battery-powered cars, in a move designed to catalyse the production and sales of more electric cars.

Vocabulary 2 – competition and cooperation

Choose the correct meaning of the bold words in the article.

1 a) top position b) entry
2 a) cooperating b) competing
3 a) expense b) problem
4 a) becomes more competitive b) becomes more cooperative
5 a) competition b) cooperation
6 a) work together b) compete
7 a) shared, cooperative b) competing

Reading 2

Choose the best word or phrase to complete each sentence.

1 Volvo has ….. Momentnum Dynamics.
a) become a customer of c) bought shares in
b) taken over

2 One of the biggest challenges the electric car industry faces is the need for ….. .
a) car charging away from home c) factories to build electric vehicles
b) investment

3 ….. system can charge vehicles while they're driving.
a) BMW and Daimler's c) Momentum Dynamics'
b) Renault's

4 Shares in Tesla, another electric carmaker, have fallen because of increased ….. .
a) manufacturing costs c) environmental regulations
b) competition

5 Volkswagen and Ford are working together on ….. .
a) battery systems c) vehicles
b) charging systems

6 Carmakers are following new rules to reduce ….. and fight climate change.
a) air pollution c) production costs
b) the number of cars on the road

Grammar – modals in the passive voice

Match each sentence (1–8) with the correct meaning (a–h) of the words in bold.

1 Electric vehicles often **need to be charged** away from home.
2 Under-road charging systems **might be installed** in some roads in the next few years.
3 According to new government targets, CO2 emission **have to be reduced** by 2020.
4 Electric vehicles **can be driven** by anyone who is able to drive a conventional car.
5 New regulations state that CO2 emissions **mustn't be produced** by road transport after 2050.
6 Conventional petrol cars **don't have to be taken** off the road now.
7 EVs **ought to be considered** by anyone buying a new car in the near future.
8 Petrol cars **can continue to be produced**, but it soon won't make good business sense, even if it's allowed.

a) possibility
b) ability
c) necessity
d) recommendation
e) obligation
f) lack of obligation
g) permission
h) prohibition

Further discussion

The government has to eliminate carbon dioxide emissions from road transport by 2050.
Even if the cars don't produce emissions as they are driven, in what ways will the environment still be affected by cars?

Group work

Work together to answer these questions.

1 Governments are starting to set rules for CO2 emissions. Do you think they're doing enough to address our current climate problems? Should more be done? Or could less be done?
2 Tesla's share price fell when industry rivals announced plans for more battery-powered cars. Do you think Tesla will be hurt by the competition, or could it help? Explain your answer.
3 Wireless charging and under-road charging will be very convenient for customers. What other conveniences – whether they seem possible or not – should be provided in new cars?

ANSWER KEY

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Possible answers:
Pros less environmental pollution, latest design and engineering, they're quiet and quick, you can charge them at home, cheaper to operate than a conventional car
Cons not a lot of consumer choice at the moment, relatively expensive, limited range, may be difficult to charge away from home

Vocabulary 1
1 without
2 driver
3 difficult
4 without
5 driving
6 switch
7 completely stop

Reading 1
All of the major car makers are working to develop electric cars to meet environmental targets.
New rules are being set up to completely cut carbon dioxide from cars by 2050.

Vocabulary 2
1 a
2 b
3 b
4 a
5 b
6 a
7 a

Reading 2
1 c
2 a
3 b
4 b
5 c
6 a

Grammar
1 c
2 a
3 e
4 b
5 h
6 f
7 d
8 g

Further discussion (possible answers)
The production of electricity may produce CO_2, if oil or coal is used. Nuclear power doesn't produce CO_2, but it does produce waste that can cause environmental problems. Even if electricity to power cars is produced by solar or wind energy, the production of metal and plastic parts for cars will still create some pollution. However, it is likely to be a lot less damaging than current CO_2 road emissions.

Group work (possible answers)
1 Students' own answers
2 It could be bad if Tesla is unable to compete in the market and produce cars that people want to buy. However, it could be good if it makes electric cars a more usual choice, and competition generally tends to be good for consumers, and to drive prices down. It can also drive innovation and improvement in product design.
3 Students' own answers