

# You've got the power!

## In this unit you are going to

- discuss the pros and cons of electric cars (*Speaking A2/B1*)
- present a floor plan (*Speaking A2*)
- write an informal e-mail about sustainability (*Writing A2/B1*)
- read an article about electrical wiring (*Reading A2/B1*)
- listen to a conversation about lighting a room (*Listening A2/B1*)
- practise trouble-free grammar: Passive constructions (*Language in use A2/B1*)
- boost your vocabulary: Lightbulbs  
Renewable energy.

## Warm-up

### A room of one's own

- 1 Have a look at the VocabBooster. Label the pictures (1–9) with the appropriate words. Compare your results with a partner.

### VocabBooster

bathroom ■ bedroom ■ living room ■ kitchen ■ hall ■ home office ■ storage room ■ balcony / terrace ■ dining room



1



2



3



4



5



6



7



8



9



- 2 Get into pairs and discuss the following questions.

- 1 What is your favourite room in your house / apartment? Why do you like it so much?
- 2 In which rooms do you work most often? Which installations do you usually perform?
- 3 Are there different aspects you have to consider when working in different rooms (e.g. *installing surface or concealed conduit wiring*)? Give examples.

## Reading

### Don't get your wires crossed

- 1 Have a look at the VocabBooster. Label the pictures (1–6) with the appropriate words/phrases. Compare your results with a partner.

#### VocabBooster

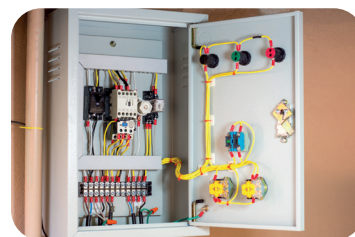
main distribution board ■ rodent ■ to apply plaster ■ PVC tubes ■ wall slot ■ ceiling



1 .....



2 .....



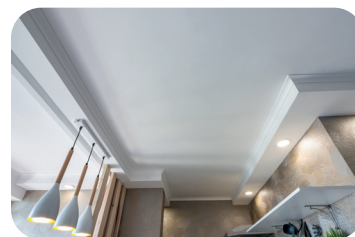
3 .....



4 .....



5 .....



6 .....



- 2 Read the article about electrical wiring. Then have a look at the statements (1–5) on page 54 and tick whether they are true (T) or false (F). Put a cross (x) in the correct box. Provide the correct answer for the wrong statements. The first one (0) has been done for you. Compare your results with a partner.

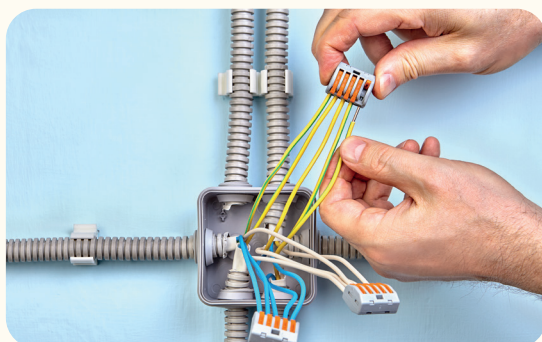


### What is electrical wiring?

- 1 Electrical wiring is the connection of cables and wires, related devices (a fuse, switches, sockets, lights, etc.) and the main distribution board. The main distribution board manages the electricity supply of a building by dividing the power into

different circuits. It also provides protection for these circuits in the form of a fuse or a circuit breaker. Other names for the main distribution board are breaker panel, panel board or electric panel.

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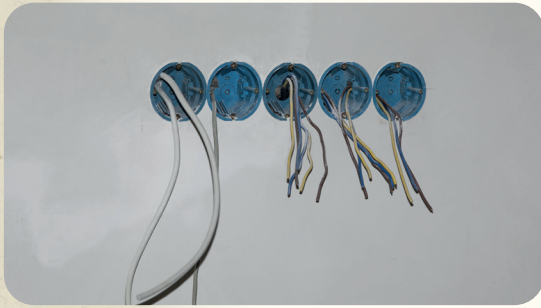


#### Surface conduit wiring

Conduits that are visibly installed are called surface conduit wiring. Surface wiring is not suited for outside installations, but it has its advantages: It can be comfortably added to interior walls without major construction work producing noise or dust. A downside is its visibility that may interfere with the aesthetics

15

# 5 You've got the power!



of a room. To install surface wiring, the wires  
20 – usually concealed in a protective casing made  
of plastic – are run along walls or ceilings,  
connecting a power source to a new location  
(e.g. a lamp).

## Concealed conduit wiring

A professional way to power households is to  
install concealed conduit wiring. This type of 25  
wiring system is popular because it hides the  
cables from view, creating a more aesthetically  
pleasing look. It also has a longer life span as  
the wiring is protected from external damage  
(e.g. rodents). Concealed conduit wiring is 30  
hidden inside wall slots that have been closed  
with plastering. For domestic wiring, PVC  
conduits are installed most often, although  
there are also other plastic or metal pipes in  
use.

35

	T	F	Correct answer
0 The main distribution board manages the flow of electricity in a building.	X		
1 The main distribution board is also called a circuit breaker.			
2 Surface wiring is often installed on roofs or terraces.			
3 Surface wiring is quite easy to install.			
4 Concealed wiring is the preferred solution for households because it is cheaper.			
5 Concealed wiring offers no protection from rodents.			



3 Get into pairs and discuss the following questions.

- 1 What are the pros and cons of surface wiring and concealed wiring?
- 2 In which rooms do you often install surface wiring? Why?
- 3 What are appropriate safety measures when installing wiring? Give examples.

4 Have a look at the VocabBooster. Use the phrases to give instructions for installing concealed wiring. Put the instructions in the correct order and write them down (1–4). The first one (0) has been done for you. Compare your results with a partner.

## VocabBooster

to plaster around the flush-mounted box ■ to pry open a wall with hammer and chisel ■ to drill a hole ■ to mix plaster and water in a bowl ■ to pull in the cables

- 0 Step 1: Pry open the wall with hammer and chisel.
- 1 Step 2: \_\_\_\_\_



2 Step 3: \_\_\_\_\_

3 Step 4: \_\_\_\_\_

4 Step 5: \_\_\_\_\_

## Listening

### Hit the lights

- 1 Have a look at the VocabBooster. Label the pictures (1–9) with the appropriate words. Compare your results with a partner.

#### VocabBooster

LED spotlight ■ halogen spot ■ bulb ■ motion sensor ■ neon lamp ■ LED panel ■ energy saving lamp ■ LED bulb ■ LED strip



1 \_\_\_\_\_



2 \_\_\_\_\_



3 \_\_\_\_\_



4 \_\_\_\_\_



5 \_\_\_\_\_



6 \_\_\_\_\_



7 \_\_\_\_\_



8 \_\_\_\_\_



9 \_\_\_\_\_



Track 11



Listen to the conversation between an electrician and a customer. While listening, choose the correct answers (A, B or C) for the questions (1–4). Compare your results with a partner.

- |   |   |
|---|---|
| <p><b>1</b> The customer is looking for a new lamp because</p> <p><b>A</b> her living room is very dark.</p> <p><b>B</b> the old lamp stopped working.</p> <p><b>C</b> she doesn't like the old lamp anymore.</p> | <p><b>3</b> Which price does the electrician quote for the installation?</p> <p><b>A</b> 200 Euros</p> <p><b>B</b> 200 Euros plus the cost of the lamp</p> <p><b>C</b> 200 Euros plus taxes</p> |
| <p><b>2</b> The electrician recommends</p> <p><b>A</b> one big lamp in the middle of the room.</p> <p><b>B</b> spotlights in the corners of the room.</p> <p><b>C</b> one big lamp and some smaller lights.</p>   | <p><b>4</b> What are the benefits of LEDs?</p> <p><b>A</b> They are energy-efficient.</p> <p><b>B</b> They provide very soft light.</p> <p><b>C</b> They are inexpensive.</p>                   |



Track 11



Listen to the conversation again. While listening, tick the lighting tips the electrician mentions. Compare your results with a partner.

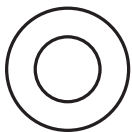
- |  |  |
|--|--|
| <p><input type="checkbox"/> Use LEDs.</p> <p><input type="checkbox"/> Always switch off the light when leaving a room.</p> <p><input type="checkbox"/> Put smaller lights in different locations.</p> <p><input type="checkbox"/> Have an expert assess the situation in the room.</p> | <p><input type="checkbox"/> Always add a dimmer.</p> <p><input type="checkbox"/> Lighting concepts have to fit the room.</p> <p><input type="checkbox"/> One light source per room is enough.</p> <p><input type="checkbox"/> Combine overhead, ambient and accent lights.</p> |
|--|--|

4

Have a look at the VocabBooster. Label the pictures (1–12) with the appropriate words. Compare your results with a partner.

### VocabBooster

push button ■ intermediate switch ■ arial socket ■ switched lamp ■ lamp ■ double pole switch ■ double switch ■ two-way switch ■ single pole switch ■ dimmer ■ double socket outlet ■ earth socket outlet



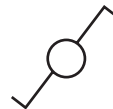
1



2



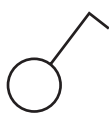
3



4



5



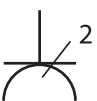
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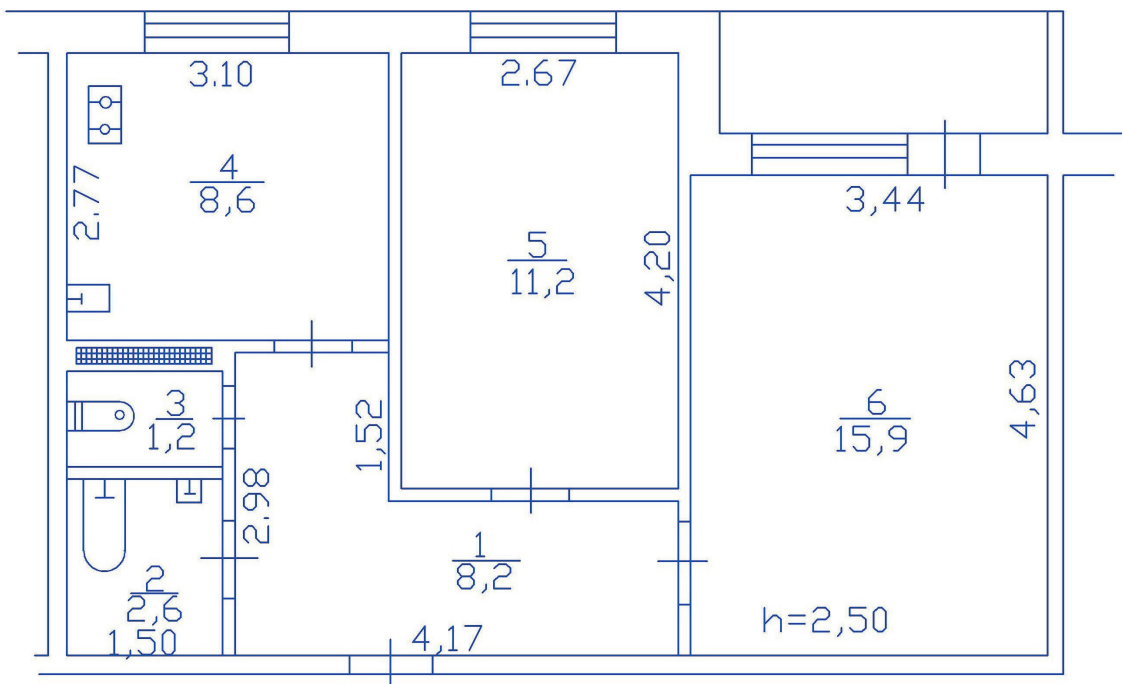


11



12

- 5 Step 1:** Have a look at the floor plan. Mark the appropriate spaces for lights, switches, etc. Use the symbols from activity 4.



**Step 2:** Get into pairs. Present your floor plan. In your presentation you should

- provide information about the placement of switches, sockets, lights, etc.
- explain why you placed the components this way
- give your opinion on the importance of the correct placement of electrical elements.

Use the phrases from the LanguageBox. Speak for about three minutes. Take turns.

### LanguageBox

In the kitchen/living room/bedroom ... I placed one socket/two sockets next to/on the right/on the left of the door/the window ... because ...

I would install a switch/a socket/a light opposite/next to/on the bottom/in the top left-hand corner/right-hand corner because ...

I think that ... is a great place for ... as it is quite practical/useful ...

According to building regulations, you can/cannot install an outlet/a socket ... next to/in the vicinity of ..., so I chose ... (*location*) instead.

There is also ... (*type of electrical element*) in/at/next to ... because ...

When installing sockets and switches, it is essential to consider ...

It is also important to make sure ...

What's more, you should always think of ...

All in all, making sure that the electrical elements are placed correctly is an important part of an electrician's work.

## Language in use

Electricity is produced by friction.

### Trouble-free grammar: Passive constructions

We use the **passive voice** to focus on an action instead of the person who carried out the action. Sometimes we may not even know who carried out the action. We form the passive voice with forms of the verb **to be** and the **past participle** (3<sup>rd</sup> form of the verb).

**Present tense:** am/are/is + 3<sup>rd</sup> form of the verb      am / are / is **inspected**

**Future tense:** will be + 3<sup>rd</sup> form of the verb      it will be **repaired**

**Past tense:** was/were + 3<sup>rd</sup> form of the verb      they were **produced**

#### active voice

Ben **inspects** the wiring.

I **repaired** the dishwasher.

Next week we **will install** the light fixtures.

#### passive voice

→ The wiring **is inspected** (by Ben).

→ The dishwasher **was repaired** (by me).

→ Next week the light fixtures **will be installed** (by us).

- 1 Use the passive voice to form meaningful sentences. Mind the tenses. The first one (0) has been done for you. Compare your results with a partner.

- 0 Renewable energy **is produced** (produce) from sources that cannot be exhausted or that can grow again.
- 1 Renewable energy \_\_\_\_\_ (know) to be better for the environment.
- 2 With renewable energy, less greenhouse gases \_\_\_\_\_ (emit).
- 3 Renewable energy sources that \_\_\_\_\_ often \_\_\_\_\_ (mention) are wind, water and biomass as well as solar and geothermal power.
- 4 Fossil fuels like oil and gas \_\_\_\_\_ (consider) non-renewable sources.
- 5 That means that one day, all the available oil, coal and gas \_\_\_\_\_ (use up) and these sources of energy will not exist anymore.
- 6 A lot of negative effects on the environment, for example pollution and climate change, \_\_\_\_\_ (cause) by fossil fuels.
- 7 To turn sunlight into electricity, sunlight \_\_\_\_\_ (capture) using technologies like solar panels and photovoltaic cells.
- 8 Geothermal energy \_\_\_\_\_ (generate) from the Earth's internal heat.
- 9 Apart from producing electricity, water can \_\_\_\_\_ (heat) and \_\_\_\_\_ (cool) with geothermal energy.
- 10 Hydropower \_\_\_\_\_ (derive from) running or falling water.
- 11 To produce wind energy, air motion \_\_\_\_\_ (convert) into electricity by a turbine and an electromagnetic generator.

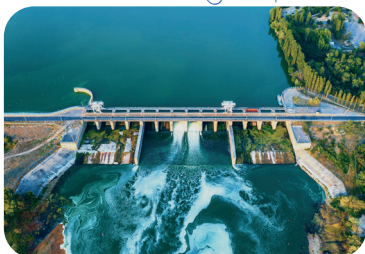


2

Get into groups of three. Each of you chooses one of the fact sheets (*hydropower*, *wind power*, *solar energy*). Read the fact sheet. Write down the phrases from your fact sheet using the passive voice. Then present the type of renewable energy you chose to your partners by reading the phrases in the passive voice out loud.



## Fact sheet: Hydropower



- **How does it work?**  
The energy of flowing water turns into electricity.
- **Why is it renewable?**  
The sun continuously renews the water cycle.
- **When was it first used?**  
For hundreds of years, mills used hydropower to grind grains.
- **How is it used today?**  
Modern hydro plants produce electricity with turbines and generators. Through movement, the turbines create mechanical energy. An electro-magnetic generator converts mechanical energy into electric energy.

## Fact sheet: Wind power



- **How does it work?**  
The energy of natural wind turns into electricity.
- **Why is it renewable?**  
Differences in air pressure naturally create wind.
- **When was it first used?**  
For hundreds of years, windmills used wind power to grind grains.
- **How is it used today?**  
Modern wind farms produce electricity with turbines and generators. Through movement, the turbine makes mechanical energy. An electro-magnetic generator transforms mechanical energy into electric energy.

## Fact sheet: Solar energy



- **How does it work?**  
The energy of the sun turns into electricity.
- **Why is it renewable?**  
The sun provides free and sustainable energy.
- **When was it first used?**  
Charles Fritts installed the first photovoltaic solar array on a roof in New York City in 1884.
- **How is it used today?**  
We use two types of solar energy. Solar photovoltaic technology converts sunlight into electricity. Solar thermal technology utilises the heat from the sun for heating or for electricity production.

..... (type of renewable energy)

.....

.....

.....

.....

.....

.....



3

Get into pairs and discuss the following questions. Do some online research if you need help.

- 1 Which types of locations are especially suitable for power plants producing wind power / solar power / hydropower?
- 2 Do you know any power plants in Austria that produce wind power / solar power / hydropower? Where are they located?
- 3 What are some advantages of wind power / solar power / hydropower? Give examples.
- 4 What are some disadvantages of wind power / solar power / hydropower? Give examples.



## Speaking

### Driving an electric car



1

Get into pairs and discuss the following questions.

- 1 Have you ever ridden in an electric car? How was it? Which brand was it?
- 2 What are electric cars generally known for? Explain.
- 3 Do you know any car brands that manufacture electric cars? Name them.



2

Get into pairs. One of you reads part A of the article about electric cars, the other one reads part B. Each of you should read the introduction first.

**Step 1:** Underline the most important information and take notes in the mind map on page 61.



#### Introduction

The way electric cars function is simple—they contain electric battery packs that provide power to run all of the vehicle's onboard electronics, including its electronic motor. They are charged by specialty charging stations or through the use of a normal outlet. There are also hybrid vehicles, which contain the gas-powered engine, fuel tank, and transmission of a traditional gas-powered vehicle and the battery pack and electric motor of an electric car.



#### Part A:

##### 1 What are the pros of electric cars?

**Lower ongoing costs:** Recharging an electric car is more affordable than refueling a gas-fueled car, especially when taking into account the fact that you can recharge your car at home.

**Reduce your carbon footprint:** Electric cars emit exactly zero carbon dioxide, making them much more environmentally friendly.

**Low maintenance needs:** Mechanical engines have a lot of moving parts that often require repair and replacement. Since electric cars don't have these components, they require less maintenance.

**High-quality performance:** Electric cars are known for operating smoothly and quietly. Electric motors also tend to react quicker than mechanical engines and operate more efficiently in stop-and-go driving situations.

**More convenient:** A lot of people mistakenly think that electric cars are inconvenient since you have to find a charging station, which isn't as easy to find as a gas station. However, you could argue that an electric vehicle is actually more convenient since it can be charged at home using a standard outlet.

#### Part B:

##### 1 What are the cons of electric cars?

**Initial costs are expensive:** Although the cost of an electric car can be offset by fuel cost savings and tax reductions, the upfront cost of most electric cars is quite high.

**Battery packs can be expensive to replace:** Although little maintenance is needed, don't be

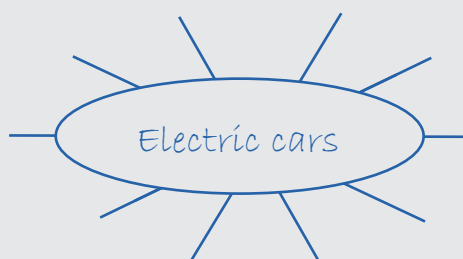
surprised if you need to replace your electric car's battery pack at least once during its lifetime, which can be quite expensive as well.

**The driving range is limited:** The driving range of a gas-powered car is longer than that of an electric car. This can be problematic if you're planning a long-distance trip.

**15 Finding charging stations can be challenging:**

Even though you can charge an electric vehicle at home, finding a charging station in rural areas on a long-distance trip can be hard. It's important to note that more areas have started to include EV chargers in their parking lots.

**Charging can take a while:** Whereas adding gas to a fuel tank doesn't take longer than five minutes, recharging an electric car can take up to eight hours with a normal outlet. The fastest charging stations take 30 minutes to get to 80 percent capacity.



**Step 2:** Give your partner a summary of the part of the text (A or B) you have read.



Get into pairs with a classmate who has read the other part of the text. One of you is fascinated by electric cars and wants to buy one, the other one is quite sceptical about electric cars.

In your conversation you should

- discuss the advantages and disadvantages of electric cars
- speculate why electric cars have become popular in the last few years
- point out whether you would consider buying an electric car yourself.

Use your notes from the mind map in activity 2. Make up a 3-minute conversation. Use the questions and phrases from the LanguageBox.

### LanguageBox

#### In favour of electric cars

I think buying an electric car is a great idea because ...

You should consider the environment when ...

There are a lot of benefits to electric cars, such as ...

I considered ..., but I still think the advantages outweigh the disadvantages because ...

Another argument for an electric car is ...

I agree / disagree with you here, but I want to point out ...

#### Sceptical about electric cars

Don't you think ... can be a problem? / Have you thought about ...?

There might also be a problem with ...

What's more, ... is a disadvantage that should be considered.

Furthermore, it is said that electric cars ...

I agree / disagree with you on this point, as ...

All in all, it is an important decision where all aspects should be considered, such as ...