



Electric dreams

Build a battery-powered car
from recycled materials

Go to
scouts.org.uk/iet
to download a
template for the
electric car

Eco-friendly?

Electric cars still require energy to run and this isn't always 'clean' energy, but a few solar and wind-powered charging stations are available around the UK. Owners can also use renewable energy to charge their vehicles by having solar panels installed at home, to offset their electricity usage.

Suitable for Scouts

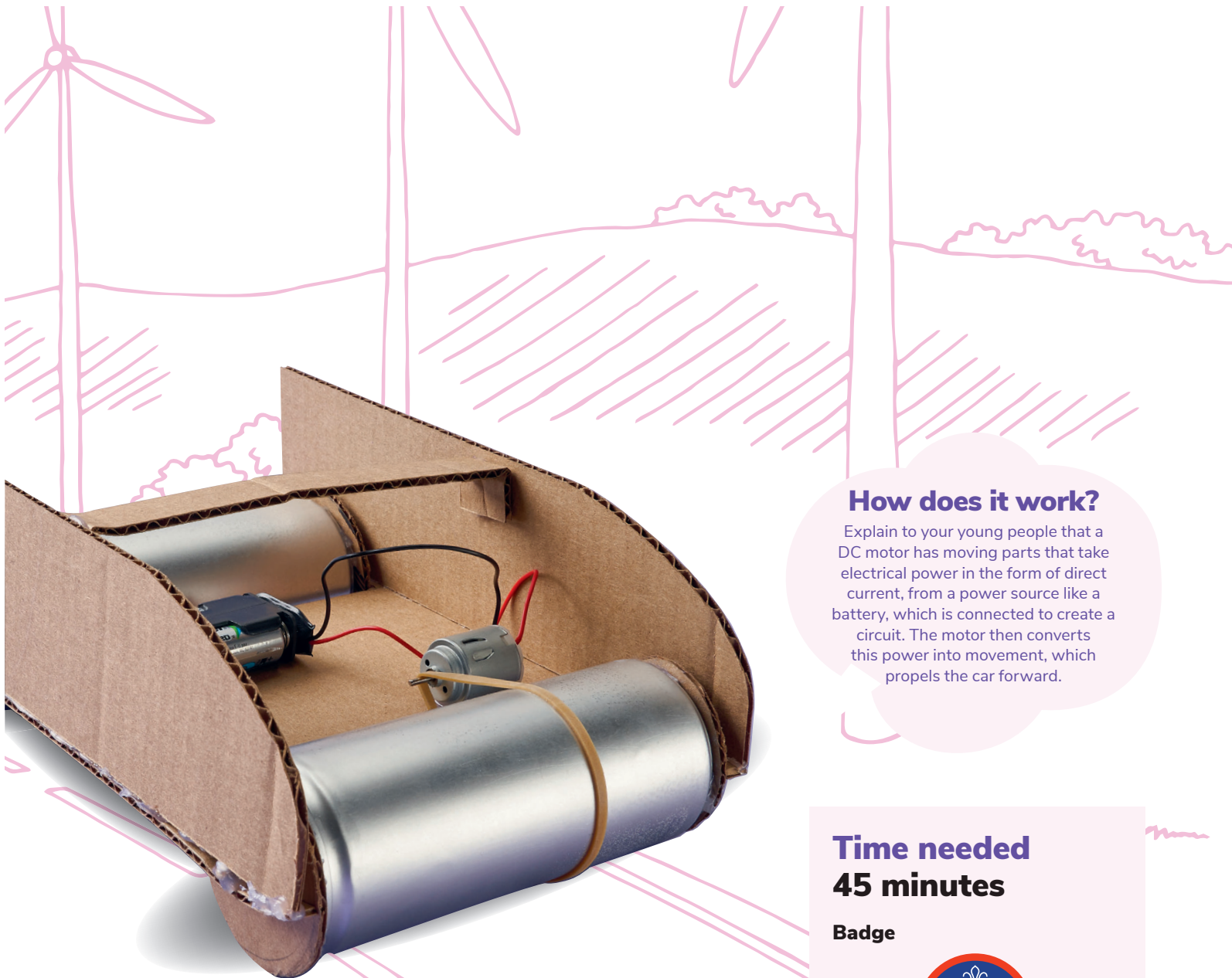
Electric cars are more popular than ever, with ownership increasing by 2,400% in the past six years. The environmental benefits are enormous, as they reduce both air and noise pollution compared to their fossil fuel-guzzling predecessors. They are also lower maintenance. Electric vehicles are not new – the first was built 200 years ago – but there are now one million electric cars in Europe. Engineers are constantly developing them, including new ways to charge them, such as on-the-go charge points in parking spaces and sections of road. Who knows, by the time the young people in your section learn to drive maybe they'll be learning in an electric car?

You will need (per car)

- 2 x empty tall, thin 250ml drink cans
- 2 x long wooden skewers
- flat rubber band
- recycled cardboard, like old boxes
- DC motor (available online or from some hobby shops)
- 2 x AA batteries
- wire
- pencil
- glue gun
- bradawl or small screwdriver
- scissors

Instructions

1 Discuss with your young people the benefits of electric cars on the environment. Have they seen any electric car charging points in their local area? Share the information on this page.



How does it work?

Explain to your young people that a DC motor has moving parts that take electrical power in the form of direct current, from a power source like a battery, which is connected to create a circuit. The motor then converts this power into movement, which propels the car forward.

2 Set up your meeting place for a craft activity by protecting tables, and caution the young people to be careful when using the hot glue and piercing holes in the cans.

3 Ask your young people to use the scissors, pencil and template to cut out the cardboard pieces.

4 Using the bradawl or screwdriver, carefully pierce a small hole in the bottom of a can. Ask the young people to cover both ends with a circle of cardboard, made by tracing around the end of the can. They need to glue this in place and pierce a hole in the middle, then cut a wooden skewer to 160mm and thread through to make the axle. Repeat the process with the second can.

5 Loop the rubber band around the rear can then, using the glue gun, fix the axles in place on the car around the can. The rubber band should move freely around the can, so keep it clear of the glue while it dries.

6 Next, the young people should add the car's sides and roof before carefully gluing the motor and battery inside, onto the base. Make sure the rubber band is taut around the drive shaft of the motor and the rear can, and not restricted by the cardboard base.

7 Lastly, they can connect the motor and battery using the wire. Now it's time to take the electric cars outside for a test drive, to see how fast they can go!

Time needed 45 minutes

Badge



IET partners the Scout Electronics Activity Badge

Partner



Outcomes

This activity will help young people understand the importance of electric cars in reducing pollution and show them the basics of how they work.

More information

For more badge resources, activity packs and information about careers in engineering visit: scouts.org.uk/iet