

# SMART HOME, ~~SWEET~~ HOME

## Number 1 Future Street

In the future it will probably be normal to talk to your home and tell it how to work. You'll easily be able to change the way it looks, too.

One day it could be common for homes to be filled with sensors and computer controls that monitor and control everything, from the heating to the colour of the walls and the way the air smells. Even your toilet might get **smart**. It will know when to clean itself but it might also be able to analyse your poop to make sure you are healthy. It could give you some health tips, such as: "I can tell you need some vitamin C. Try eating an orange."

Future homes will be fuelled by sunlight, wind power or even **algae** – the green sludge that grows in ponds. A building in Germany is already being powered by micro-algae inside glass panels on its walls. Micro-algae love sunshine, which makes them grow. They turn into a bubbly goop that generates warmth for the house, and can be used to make **biofuel** or even food (see p13).

Future houses are likely to be built more like Lego™ models, with bricks that slot together and walls that are easily moved around to change the shape of rooms. Homes might even be made from building material inspired by animals. Scientists have worked out how to grow material for bricks by using the same natural chemicals that an ocean animal – the abalone – uses to grow its shell. They're also hoping to make strong lightweight material by copying the tiny fibres inside reindeer antlers, and they've even made super-strong fabrics with the natural chemicals that a spider uses to spin web silk.

Voice command and reply technology will probably be much more common in future homes.

Techno-wallpaper could change pattern and colour on demand.

"I'd like my bedroom to be blue."

Mirrors could analyse your body and provide daily health checks.

Solar panels and mini wind turbines will generate power.

Rainwater can be collected and stored in tanks.

"You have excellent blood pressure today."

Ovens will tell you when your food is cooked.

"Your dinner is ready!"

"Make the house smell like freshly baked cookies."

"Your wish is my command!"

# POWERED DRESSING

## Textiles get technical

Clothes are already becoming smarter. Fabric can now be coated with a super-thin flexible film printed with light circuits called OLEDs (Organic Light-Emitting Diodes) which can light up clothes or change the colour of an outfit. With **voice recognition** controls built in, you'll soon be able to tell your clothes to change colour or glow in the dark!

One day you might be able to charge up a mobile phone with your trousers or watch a screen on your t-shirt. Designers have already found ways to generate battery power from fabric by weaving in sunlight-collecting fibres or tiny devices called **nanogenerators**, which make electricity whenever the fabric moves.

Future clothes will be made from surprising materials and it might be normal to hear someone talking to their outfit.

New eco-friendly fabrics are being invented and will probably become more common. For instance, **bioculture** clothes are made from yeast, fungi or algae, fermented in a vat of liquid to make material that is similar to leather. Leather can also be made from grape skins, mushrooms and even fermented tea. When bioculture clothes wear out they can be put on a compost heap, just like vegetable peelings.



THIS ITEM OF CLOTHING HAS VOICE RECOGNITION TECHNOLOGY.

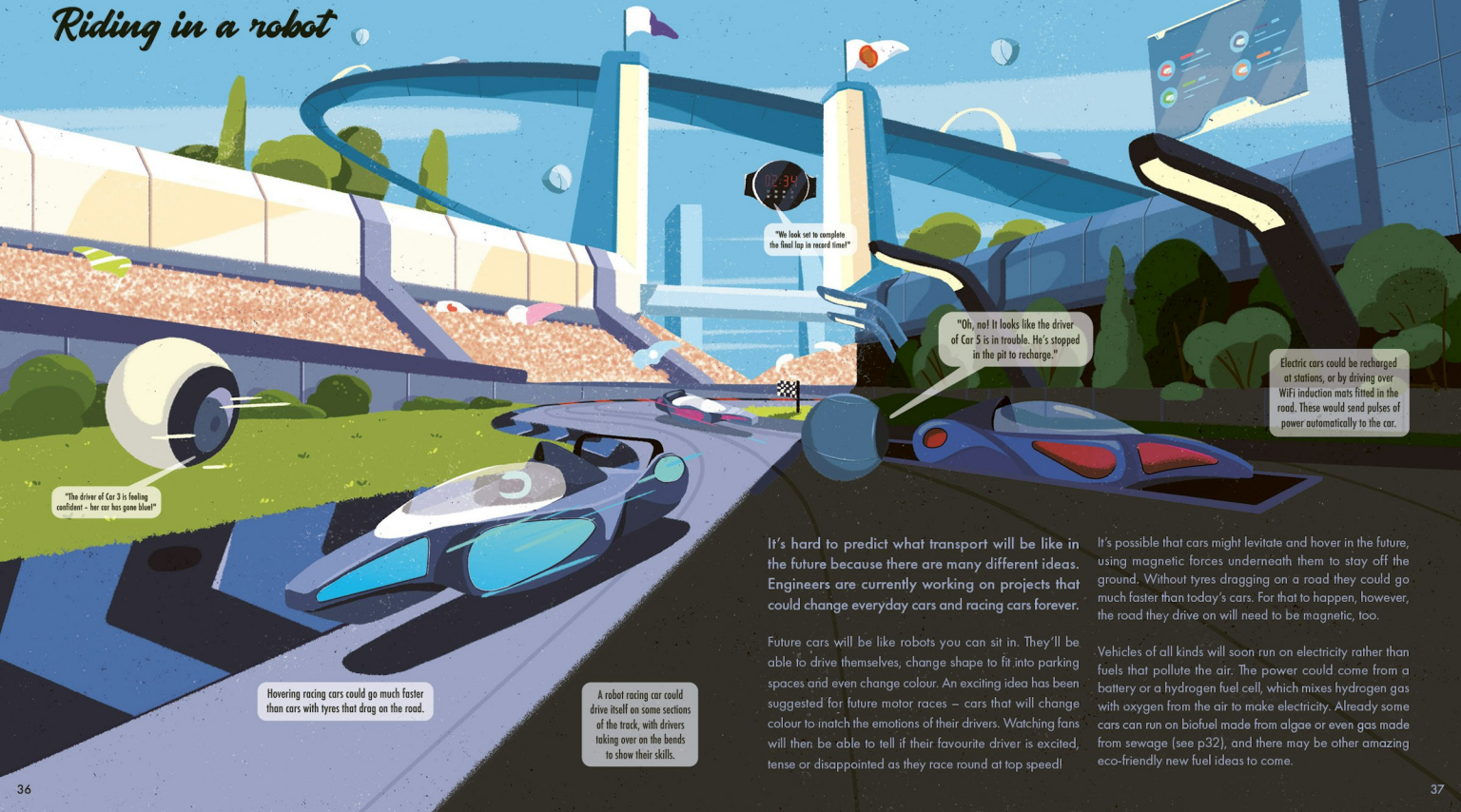
IT MONITORS BODY TEMPERATURE AND CAN KEEP YOU WARM OR COOL.

MADE WITH 100% ELECTRONIC FIBRES THAT CAN CHANGE SHAPE AND COLOUR DEPENDING ON DESIRED OUTFIT.



# ROAD TO THE FUTURE

## *Riding in a robot*



"The driver of Car 3 is feeling confident - her car has gone blue!"

Hovering racing cars could go much faster than cars with tyres that drag on the road.

A robot racing car could drive itself on some sections of the track, with drivers taking over on the bends to show their skills.

"We look set to complete the final lap in record time!"

"Oh, no! It looks like the driver of Car 5 is in trouble. He's stopped in the pit to recharge."

Electric cars could be recharged at stations, or by driving over WiFi induction mats fitted in the road. These would send pulses of power automatically to the car.

It's hard to predict what transport will be like in the future because there are many different ideas. Engineers are currently working on projects that could change everyday cars and racing cars forever.

Future cars will be like robots you can sit in. They'll be able to drive themselves, change shape to fit into parking spaces and even change colour. An exciting idea has been suggested for future motor races - cars that will change colour to match the emotions of their drivers. Watching fans will then be able to tell if their favourite driver is excited, tense or disappointed as they race round at top speed!

It's possible that cars might levitate and hover in the future, using magnetic forces underneath them to stay off the ground. Without tyres dragging on a road they could go much faster than today's cars. For that to happen, however, the road they drive on will need to be magnetic, too.

Vehicles of all kinds will soon run on electricity rather than fuels that pollute the air. The power could come from a battery or a hydrogen fuel cell, which mixes hydrogen gas with oxygen from the air to make electricity. Already some cars can run on biofuel made from algae or even gas made from sewage (see p32), and there may be other amazing eco-friendly new fuel ideas to come.

# COME TO MARS

*Colony 1 needs you... but you must be brave*

By the year 2150, humans could be setting up the first colony on Mars. It's the nearest planet to Earth and it could be a useful base for asteroid mining. But life there won't be easy...

It will take months to get to Mars, so visitors will have to be prepared for a long trip and take everything they might need with them. When they arrive, they'll face many dangers. The atmosphere on Mars is deadly to humans: it's bone-chillingly cold and huge dust storms rage for months. No one will be able to go outside without breathing equipment and a protective spacesuit.

Workers could use mini spacecraft to travel between Mars and a base on one of its moons.

Spaceships for going home could be built on Mars, using parts delivered from Earth.

There might be less risk from radiation and meteor strikes on a base set up on one of Mars's two moons.



Perhaps visitors will holiday on Mars one day! It won't look like Earth, but it will be an amazing place to stargaze and there are huge canyons, volcanoes, caves and craters to explore.

Dust storms would be common.

Robots could do most of the outdoor work, such as cleaning the solar panels used to power the base.

Modules would house leisure areas and indoor farms for growing food.

Martian spacesuits are already being tested out on Earth. They will need to be super-tough and protective.

Buildings will probably have sections called modules, with tunnels between them. Inside there will be rooms to sleep and work, and greenhouses for growing plants under lights. The buildings will need to be covered in shields to protect the humans inside them from high levels of radiation and meteor strikes (Mars gets 200 times more meteor strikes than we do on Earth).