

HELEN

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than an inexhaustible
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There are
frequently solar
flares near the
surface of the
sun, which can
create beautiful
polar lights here
on Earth.



New paths

EDITORIAL » The capacity for renewal is essential for people as well as companies. The world around us is constantly changing due to climate change, new technologies, the digital transformation and, most importantly, changes in people's values.

In more than a century of operations, Helen has shed its skin on many occasions. The strong engines of renewal have always been the customer and changes in how energy is used. As the city grows, people's needs and wishes change. Helen's path of growth has seen the company expand from Helsinki's local energy company to a significant national operator that is always looking further ahead. Our basic idea remains the same: we make the opportunities presented by the new era of energy available to everyone.

Our renewal has even extended to the Helen magazine, which welcomes spring with a new look and new content based on the readers' wishes. We are taking a step towards a more global perspective to deliver stories on what is happening here and around the world. In this issue, our theme is the sun. In August, our focus will be on new paths.

I wish you an energetic summer with a recharge from the sun!

"We make the opportunities presented by the new era of energy available to everyone."

Seija Uusitalo Editor-in-chief



Psst! Helen magazine is published in Finnish, Swedish and now also in English. Your copy of the magazine is delivered in the language you have selected for your billing.

A SOURCE OF PRIDE

How it all began

Helen opened the first electric vehicle charging point on Runeberginkatu back in 2009. The batteries of electric cars can now be charged at our nearly 50 public charging points across Helsinki. They are part of the Virta network, which is Finland's most comprehensive EV charging network with over 600 charging points.

Helen has been at the forefront of EV charging solutions since 2009.



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Energy!

Read about current phenomena and news. Pick up tips for smooth daily life.



PHOTO: GETTY IMAGES

#underfloorcooling Chill out! With underfloor cooling, you don't have to suffer from the heat at home. Pipes installed under the floor circulate cooled water that absorbs heat and transports it out of the home. Underfloor cooling is one of Helen's carefree district cooling solutions.

#worksitecyclist This summer, one energetic youngster will change their status to work site cyclist. The cyclist will be riding around Helen's work sites, testing the traffic arrangements and communicating them by text, photos and videos on Twitter: @työmaapyöräilijä

Remember electricity when you're moving to a new home!

- ✓ Notify us of your move using the form provided by Helen and you'll have electricity in a matter of days.
- ✓ Your fixed-term contract will continue at your new address, with the same price, until the end of the contract term.
- ✓ Terminate the contract for your old address on the day your move and move-out cleaning has been completed.
- ✓ If you need an electricity contract right away, Helen's phone line for movers is available 24/7 on 09 617 8020.



PHOTO: JIRINA ALANKO

Allas Sea Pool, an urban oasis with three swimming pools and three saunas in the heart of Helsinki, attracts hundreds of bathers every day. In the summer, the sauna for private events at Allas is heated by Helen's 92-panel solar power plant with an annual output of 20,500 kWh.

HOW IRRESPONSIBLE IS IT...

...to leave the water running while you brush your teeth?

Ouch. Very irresponsible. If the water is running at full pressure, the rate of consumption is 12 litres per minute. Brushing your teeth just for a couple of minutes a day would waste more than 8,700 litres of water per year. Here's what you should do: Get yourself a toothbrushing cup. Fill it half full with water. Dip your toothbrush in the cup. Apply a dollop of fluoride toothpaste on your brush. Brush your teeth carefully. Clean the brush when you rinse the cup.



PHOTO: GETTY IMAGES

#designatedpanel It's so easy to start using renewable energy! Helen will build a solar power plant of more than 1,500 solar panels on the roof of the Messukeskus Centre. Rent a designated panel and become a user of renewable energy: helen.fi/messukeskus

I GIVE IT THE THUMBS UP

Rent, don't buy

Sharing economy enthusiast and founder of the Kuinoma rental service Markku Jussila knows that you don't have to own everything yourself.

Back in the recession years of the 1990s, Markku Jussila saw a Swedish group with the best equipment at the entire ski resort. Jussila and his friends looked on, a little bit jealous. They were astonished to find out that they were rental skis.

"In Finland, rental ski equipment had a bad reputation back then. People thought rental skis were old and low in quality. Looking at the group's premium gear, I thought that's what renting should be like. That would make it a valuable and interesting proposition, even in Finland," Jussila says.

Today, Jussila is in charge of Kuinoma, a service that gives consumers the opportunity to rent high-quality products from each other and from rental businesses. Hiking gear has been the most popular category so far, but tools and sewing machines are also in high demand. Jussila says it makes complete sense to rent when it comes to products that cost hundreds of euros to buy but are only used sporadically. Renting is also an environmentally friendly option.

"We want to promote more sustainable consumption by developing the sharing economy. We hope to find enthusiastic developers of rental solutions to test various new rental business models with us," Jussila adds.

DID YOU KNOW?

The products rented on the Kuinoma service are shipped conveniently through Smartpost parcel lockers.

There are now products available for rent in more than 90 cities and towns.



Hello, I do the vacuuming here!

Robotic vacuum cleaners are new appliances seen in many homes these days.

1

Take part in our reader survey on page 26 for a chance to win a robotic vacuum cleaner and watch a video on styling a robot vacuum from Helen's Facebook pages.

2

“The family pet may be a little hesitant around a robot vacuum at first, but they quickly get used to it and move calmly out of its way. But I wouldn’t leave them at home unsupervised.”

Marja Einesalo Energy Advisor, Helen Ltd

3

Do I need to move rugs and furniture out of the way?

A robot vacuum will have trouble getting around a jungle of chair legs under the dining table. Lifting the chairs out of the way is advisable. If a rug has long fringes, they may get tangled in the robot's wheels. Rugs that are thin and densely piled are no problem for the robot.

4

Can a robot vacuum replace you?

Not exactly, although they have improved a lot in recent years. They still won't do the job when it comes to furniture and bedding, for example. Robot vacuums are at their most effective in sparsely furnished homes. For now, thoroughly cleaning a home still requires a human to wield a vacuum cleaner.

5

How much dust can the robot take?

The dustbin is not very big. The capacity is about half a litre. You should empty it after each use, or at the latest when the dustbin indicator light turns on. The filter needs to be cleaned or replaced according to the manual; for example, it may need to be cleaned after five uses and replaced once every six months.

#my2050 What does the future look like due to climate change? You can get an idea by playing My2050, a free game for mobile devices, which will take you on an adventure to complete activities in Helsinki or Espoo. Helen is a partner of the My2050 game.

Let's find out... about cooling

How to make the indoor conditions pleasant on a hot summer's day?

	What?	Where?	How?
District cooling	An energy-efficient cooling solution. Improves the comfort of living and the resale value of the home. Helps you make use of residual heat.	For both new and old commercial and residential buildings. In old buildings, wise to be installed in conjunction with plumbing renovations.	The rooms are cooled by space-specific equipment - fan coil units, underfloor cooling and panels - that cool water is delivered into.
Air source heat pump	Equipment powered by electricity and independent of other heating and air conditioning systems.	For commercial properties, homes and summer cottages. Cools the areas that air can move into, so doors should be kept open.	The indoor unit cools the indoor air and heat is transferred out through ducts and the outdoor unit.
Portable air conditioner	A device that is powered by electricity and has wheels that make it easy to move around.	For cooling a single room. There are devices with different levels of cooling power for rooms of varying sizes.	Takes in warm air from the room and transfers it outside through an exhaust duct and blows cooled air into the room.
Table fan	An oscillating device that has a propeller inside and is powered by electricity.	Cools the section of the room it is based in.	Creates movement in the air inside the room, removing heat from the skin, but does not lower the room temperature.

The enchanting Birch Girl

Veera Pirilä used spray paint and markers to decorate a power distribution cabinet at Pajalahdentie 27 in Lauttasaari as part of a women's street art project. More than 400 distribution cabinets have already been painted in Helsinki to the delight of local residents.

To request permission to decorate a cabinet of your own, contact Helen at minna.paavola@helen.fi

“In spring and summer, Birch Girl blossoms in various shades of green and enjoys the bright and verdant life. In autumn, she gets ready to sleep. In winter, Birch Girl dreams silky dreams, awaiting the new spring.”

— Veera Pirilä



PHOTO: MIIMIT PEINTTAA

#smartdistrictheatingsubstation Attention all building managers and board chairpersons! How would you like to have consistent temperatures in apartments and as much as 5 per cent in savings in district heating costs? Read more at helen.fi/älykäs-lämmönjakokeskus

Solar energy around the clock

Solar power is clean and local energy. With an electricity storage system and a virtual battery, you can increase your home's self-sufficiency even further by being able to use power produced by your own panels even at night. This gives you savings in your electricity sales bill as well as your electricity distribution bill.

TEXT: MARJUKKA PUOLAKKA, PHOTOS: JIRINA ALANKO AND GETTY IMAGES





Panels in the yard

The Granbergs plan to generate solar power to cover their electricity consumption in summer.

The Granberg home in Sipoo has been generating solar power for four years now. The solar panels have been installed by wide open fields.

“The panels have been angled so that they generate a good amount of electricity in the autumn and spring when the sun is lower,” Anders Granberg says.

The 18 solar panels have a peak power of 5.2 kWp.

The family’s new electricity storage system reduces the need to purchase electricity. The system is the size of a refrigerator and has a capacity of 12.5 kWh. The Granbergs heat their home with wood chips and use a wood-fired sauna.

“The electricity storage system means we can make full use of the solar power we generate. The house is mostly empty during the day. Our electricity consumption is highest in the evenings.”

The electricity storage system was deployed in March, and the sunny spring days meant the system was put to use right away.

“In the past, we started to use electricity from the grid around 5 p.m. Now the electricity storage system keeps us going until 4 a.m. We’ll be fully self-sufficient in our electricity consumption around the clock from May to August if we schedule the use of household appliances during the day,” Granberg adds.

Who?

Anders Granberg is a Sipoo-based entrepreneur in the field of electrical insulation.

Solar power interests Granberg both in terms of the technology and the fact that it is a clean way to generate your own electricity.

The Granbergs are participating in Helen’s Spot control pilot project. The aim is to determine what level of savings can be achieved by controlling the charging and discharging of the electricity storage system based on the spot price of electricity.

8+1 things you should know about **Solar panels**

1 Enter your address in Helen's solar calculator (helen.fi/aurinkolaskuri) to calculate the solar power potential of your roof. Enter an estimate of your annual electricity bill. You will get a recommendation on the number of panels and an estimate of their maximum output and purchase price.

2 Click "Request a quote" to have one of Helen's specialists help you choose the best solution for your home. Our energy advisor will contact you within a few days to request any additional information that might be needed. You can then schedule a survey at your house if necessary.

3 The on-site survey involves evaluating the placement of the panels and the electricity storage system, if applicable. You will receive a recommendation and a quote for a solar power system that suits your home, complete with installation and supplies, as a turnkey delivery.

4 Helen offers a virtual battery free of charge for one year for customers who purchase solar panels or an electricity storage system. A virtual battery is a solution for the full benefit of the power from your own solar panels.

5 Helen will confirm your order and provide you with an estimated schedule for the installation. Helen will notify the local distribution system operator on your behalf of the micro-generation equipment being connected to the network.

6 Helen's technicians will contact you to schedule the installation. The system will be delivered and installed within a few weeks of the order being placed.

7 Provide the technicians with access to your home's switchboard. The installation of the solar panels, inverter, and electricity storage system will take 1-3 days depending on the size of the system. You will be instructed on how to use the system and given a service phone number for any possible questions.

8 Congratulations! You are now a solar power producer! You can monitor your production and consumption online and via mobile devices. Helen continues to provide you with expert support.

+1 You can deduct the cost of the installation work in your taxes. The billing components that are eligible for the tax credit for domestic expenses are itemised on Helen's bill.

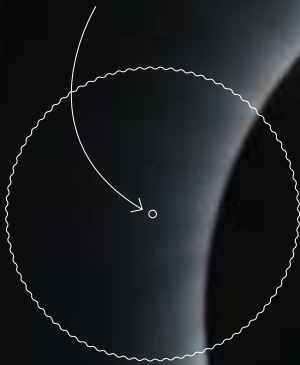
"Helen's turnkey service is an easy way to get solar panels, an electricity storage system and a virtual battery. This enables you to use your own solar power at home even around the clock when the conditions are right."

Krista Jaatinen
Product Group Manager, Helen Ltd

The sun

Everything you ever wanted to know about the sun — and more.

The annual amount of energy radiating from the sun to the Earth exceeds the world's total energy consumption by more than 1,200 times.



The Sun is the centre of our solar system and essential for life on Earth. In just 1.5 millionth of a second, it generates more energy than all of mankind consumes each year.

TEXT: KATI KELOLA, PHOTOS: GETTY IMAGES



urinkolahti, Sunset Boulevard, Costa del Sol. *The Sun Also Rises*, *A Thousand Splendid Suns*, *Let the Sunshine In*. The midnight sun, Sunday, sunflower.

It is no exaggeration to say that the nucleus of our solar system, the star called the Sun, is the centre of our lives. It not only dominates the sky, it also

spreads all around us. We name places, books and films after it. We eat sun-dried tomatoes and Sun-Maid raisins. Of course, it also appears in the name of one of the seven days of the week. The word originates from Proto-Germanic.

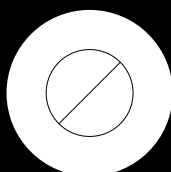
Many people are of the opinion that the nightless night – and the absence of light during *kaamos* – are part of being Finnish.

The unique role of the sun in human culture is understandable. Without the sun's light, energy and heat, there would be no life on Earth. Our star sets the rhythm of our daily lives. We rise when the sun rises. We go to bed after sunset.

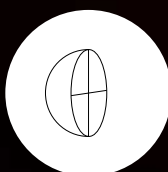
Throughout human history, the great fiery ball in the sky has been an object of wonder, worship and mythology. Of the many sun gods in various cultures, the best-known is Ra, the falcon-headed deity in ancient Egyptian religion. One of the features of the Stonehenge prehistoric monument in Britain is that one of its two entrances points where the sun rises on the day of the northern summer solstice.

The sun is shining

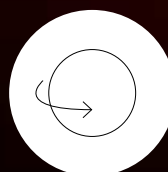
The sun shines best in Yuma, Arizona — more than 4,000 hours per year. The sunniest months of the world's sunniest city are May and June, with over 400 hours of sunshine each. The sunniest city in Africa is Aswan in Egypt. The top spot in Europe goes to Valletta, the capital of Malta.



The Sun's diameter is approximately 1.4 million kilometres.



The Sun is one of the most perfect spheres. The difference between its diameter at the equator and between the poles is only 10 km.



The Sun rotates on its axis in an anticlockwise direction, which is the same direction as the orbit of the planets around it.





There is a dramatic difference in temperature between the solar core and surface. The temperature of the core is estimated to be 15,000,000 degrees, while the surface only reaches about 6,000 degrees.

The sense of wonder remains with us to this day: solar eclipses make headlines and people gather to watch them, sometimes flying long distances for it.

But what exactly is the Sun? What do we know about it? As far as stars go, the Sun could even be called ordinary: most of the stars we see in the sky are similar to our Sun.

When we put our knowledge in numbers, we begin to realise how inconceivable the Sun is on a human scale. The distance from the Earth to the Sun is 150 million kilometres. Its diameter is 109 times that of Earth. The temperature in the core is approximately 15 million degrees. What does 15 million degrees even feel like? The size of the Sun is unfathomable. We just can't picture it in our minds.

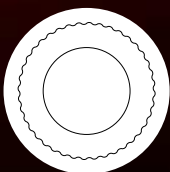
According to our current knowledge, the Sun is 4.5 billion years old. That makes it middle-aged. It is expected to keep shining in its current form for another five billion years or so.

Our scientific knowledge of the Sun began accumulating with the invention of the telescope in the early 17th century. We now know that the Sun is an enormous nuclear power plant. It is a giant ball of gas, mostly hydrogen and helium, that is held together by its own weight. The energy of the Sun is created by nuclear fusion, which is also the reaction behind the explosive power of a hydrogen bomb.

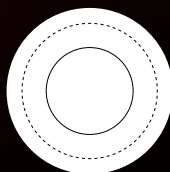
In just 1.5 millionth of a second, the Sun generates more energy than all of mankind consumes each year.

A humming bowl

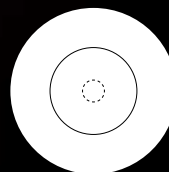
The sound of the Sun was heard for the very first time last year when NASA published a recording. The sound is a deep electric humming that has been compared to a Tibetan meditation bowl by some. The sound is created by the constant ejections, waves and other activity of the Sun.



The Sun generates its energy by nuclear fusion of hydrogen into helium.



About five billion years from now, the Sun will have depleted the hydrogen in its core and it will expand into a red giant.



Finally, when the Sun has also exhausted its helium, it will collapse into a white dwarf about the size of Earth.

The Sun emits electromagnetic radiation to the Earth, with the most important wavelengths being infrared – or heat – radiation, visible light and ultraviolet radiation, which is why we apply sunscreen on our skin.

The Sun is also active in many other ways. Sunspots form on its surface, caused by strong magnetic fields. There are also continuous ejections of hot plasma on the surface, the effects of which can even be felt here on Earth.

They include solar flares and coronal mass ejections, with the latter not only giving rise to beautiful polar lights, but also disrupting satellite communication and potentially even knocking out electricity transmission systems. In 1989, a powerful solar storm caused by a coronal mass ejection blacked out the entire province of Quebec, Canada.

The Sun affects our climate through electromagnetic radiation and the stream of particles known as the solar wind. The Earth's atmosphere and the Sun together create temperatures that are favourable for life on Earth.

“When the bombardment of solar particles increases in intensity, we experience warm, mild and wet winters here in Finland,” says Kalevi Mursula, Professor of Space Physics at the University of Oulu.

The Sun's activity changes in 10–11 year cycles. We are now approaching the lowest ebb of the current cycle.

Into the light

Certain plants follow the Sun. One example is the aptly named sunflower. Young sunflower heads tilt during the day to face the Sun. At night, they turn to face east, ready for the first rays of the new day.

“We have seen a fairly systematic and dramatic decline since the start of the new millennium. People have speculated whether the Sun's cyclicity will cease entirely for a period of time, like in the 17th century, when the solar cycle stopped for several decades,” Mursula explains.

Will this happen? And why? We don't have the answers.

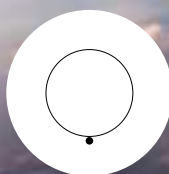
Flying over Datong in northern China, you might spot something quite unexpected down on the ground: giant pandas waving at you. They're not real, of course. Datong is home to a solar farm whose panels are arranged in the shape of waving pandas.

There's a solar power construction boom happening around the world. Some have even called it a solar rush. China is the world's biggest producer of solar power and the largest manufacturer of solar panel technology. Enormous solar farms are being built in India. For example, the Pavagada solar park in Karnataka, India, is expected to power 700,000 households when completed. In Japan, floating solar power plants have been built on the sea.

“New players are constantly entering the solar industry. At the same time, major corporations whose core business is in other industries – such as Huawei and LG – are entering the market,” says Krista Jaatinen, Product Group Manager at Helen.



You could fit 960,000 Earths inside the Sun.



The Sun weighs about 330,000 times as much as Earth.



It takes 8 minutes and 20 seconds for sunlight to travel from the Sun to the Earth.

Solar power is also growing in popularity in Finland. Krista Jaatinen says that over the past few years, the amount of new solar capacity has grown twofold from one year to the next. This high rate of growth looks likely to continue.

“The growing awareness of climate change has increased interest in solar power. People are looking for alternatives. The prices of solar power systems have also decreased in recent years,” Jaatinen explains.

Criticism of solar power in Finland has been based on our northern location. We don’t get much sunshine from November to February, which is when our need for energy is the highest. Covered in snow in winter, photovoltaic panels do not generate electricity. In spite of these doubts, the intensity of solar radiation is high enough in Finland.

“In terms of solar radiation, the production conditions here are comparable to Germany and Denmark. During the summer, panels in Finland actually outperform southern Europe thanks to our long summer days and cool climate,” Jaatinen adds.

Solar power currently represents 0.2% of Finland’s total energy consumption. Today’s major technology trends in solar power are related to cloud services. As a company at the leading edge of this development, Helen offers a virtual battery service for its customers. It allows customers to store the solar energy they produce as euros in the cloud

One of many

The Sun is the closest star to Earth, but it’s not the only star in our galaxy. The number of stars in the Milky Way could be as high as 200 billion. We see a tiny proportion of them twinkling in the night sky.

during times when their production exceeds their consumption and have it deducted from their electricity bill.

On the 12th of August last year, Kennedy Space Center launched the Parker Solar Probe towards the Sun’s orbit. The probe is set to get closer to the Sun than any man-made device has ever been.

The hope is that it will provide new clues as to what accelerates solar winds and why their speeds are so high. At the same time, it can transmit new data about the corona, which is less known to us than the surface. The probe will also study solar storms. It is intended to collect data for seven years before it is melted and destroyed.

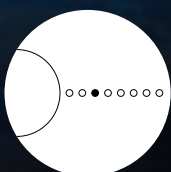
“What I would like to know most is the nature of the magnetic environments where different types of solar winds originate, especially slow solar winds,” Mursula says.

Solving the mysteries of this blazing hot star is like an endless puzzle that has to be approached one small piece at a time.

“You could say that we won’t know what’s important until we have the benefit of hindsight. And that’s fine. If we already knew everything there is to know, we wouldn’t have to take any more measurements,” Mursula concludes.

SOURCES: NASA, FINNISH METEOROLOGICAL INSTITUTE, NATIONAL GEOGRAPHIC, BBC

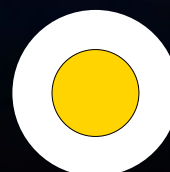
The Earth’s atmosphere and the Sun together create temperatures that are favourable for life on Earth.



The mass of the Sun accounts for 99.86% of the mass of our entire solar system.



The Sun orbits the black hole at the centre of the Milky Way at a speed of about 220 km/s. It takes 225–250 million years to complete one orbit.



In astronomy, the Sun is classified as a yellow dwarf star.

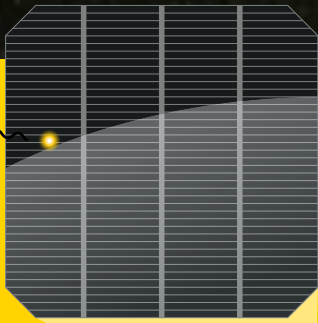
Watts from the sky

A solar power system consists of solar panels and an inverter. A solar panel is comprised of dozens of solar cells that convert sunlight into electricity. An electricity storage system and virtual battery make it possible for owners of solar power systems to make full use of what they produce.

INFOGRAPHICS: TERO JUUTI, BACKGROUND PHOTO: GETTY IMAGES

ELECTRICAL GRID
• Delivers electricity to homes.





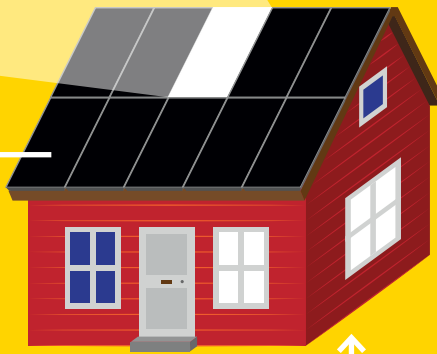
SOLAR CELL

- Converts sunlight into electricity.
- A particle of light, known as a photon, is absorbed by a silicon atom in the solar cell and releases its energy to the electron of the atom.
- The electron is knocked off the atom. The movement of the electron generates an electric charge.
- The most commonly used material is silicon, a cost-effective semiconductor that is abundant in the Earth's crust.



A SOLAR PANEL

- Consists of dozens of solar cells connected in series.
- Generates solar power during the sunlight hours.
- Optimal output is achieved by having the panels face south.
- The direct current electricity produced by the panels flows through a cable into an inverter.



INVERTER

- Converts the direct current produced by the panels into the alternating current used by household appliances.



SWITCHBOARD

- Also known as a fuse box.
- Distributes electricity generated by the solar power system and electricity purchased from the grid to household appliances.

VIRTUAL BATTERY

- Calculates and compensates for the surplus electricity produced by a solar power system.
- Makes it possible to achieve the full economic benefit of solar panels.

ELECTRICITY METER

- Measures electricity consumption and the production fed into the network on an hourly basis.
- Is read remotely once a day.

ELECTRICITY STORAGE SYSTEM

- Household systems have a capacity of 5-15 kWh.
- Stores surplus solar power for later use.
- When the storage system is at maximum capacity, surplus electricity can be sold to the grid.
- If the electricity storage system is bought at the same time as the solar panels, the storage system's inverter also serves as the inverter for the solar panels, meaning that it has a hybrid inverter.

A single panel...



...generates 230 kWh of electricity per year.



...is enough to do 300 loads of laundry.



...is enough to brew 1,200 pots of coffee.



...is enough to power an electric car for 1,500 kilometres.



...can keep a 5W spot LED light illuminated for 46,000 hours.

Let it shine

Professional beach volleyball player Taru Lahti-Liukkonen enjoys the sun as long as she is adequately protected.

"I started playing volleyball when I was four. I tried beach volley for the first time a decade later and loved it. Playing casually out in the sun was a lot of fun. I made the switch to beach volley full time when I was about 20 years old and turned professional two years later.

I enjoy the sun and being able to play outdoors. Beach volleyball players definitely don't need vitamin D supplements! There are really good indoor beach volleyball facilities in Finland, but they obviously lack the elements of wind and the sun. That's why I travel in search of the sun during the winter season. Last year, I spent 161 days on the road.

A bikini is a perfect outfit for playing on a beach. You don't have to deal with sweaty and sticky clothes. I usually wear a visor and I couldn't play without sunglasses. When I was younger, I might have skimped on sunscreen, but these days I use at least SPF 50 on my face and SPF 30 on my body.

Playing in the heat is challenging. You have to be mindful of hydration even before you start playing. You have to take in a lot of fluids when you're out in the

sun. In addition to water, I need electrolytes from sports drinks. Even though ice-cold water sounds great in hot weather, it's actually better to have tepid water to avoid having cold water use up any energy from your body. During timeouts I cool down my neck and head with ice packs.

The hottest tournaments I've played in were Antalya in Turkey in 2016 and Tokyo in Japan in 2018, but they were also successful events for me. In Turkey, I finished as runner-up in a World Tour event with Riikka Lehtonen. In Tokyo, I made it to the final with Anniina Parkkinen.

Hot weather suits us just fine!"

"Playing casually out in the sun was a lot of fun, so I made the switch when I was 20 years old," Taru says.

Taru's tips for cooling down

How to avoid exhaustion and overexposure to the sun:



Rest in the shade.



Use an ice pack to cool down.



Drink room-temperature fluids.



Take a dip in a swimming pool.

1.

What is the actual colour of the sun?

- A. Yellow
- B. Red
- C. White

Did you know this about the sun?

Find out how familiar you are with our brightest star.

2.

Sit in the shade to avoid sunburn. Does it really help?

- A. Yes, your UV exposure in the shade is reduced by more than half.
- B. No, the effect of the sun is the same no matter where you are outdoors.

3.

Around Midsummer, we get several hours of non-stop sunshine even in Southern Finland. How many hours of sunlight do we get in the south?

- A. 19 hours
- B. 16 hours
- C. 22 hours per day

4.

What is the sunniest place on Earth?

- A. Yuma, Arizona
- B. Abu Dhabi, UAE
- C. Aswan, Egypt

5.

The world's tallest sunflower was...

- A. 5 metres
- B. 2 metres
- C. 8 metres tall

6.

The moon affects the tides, but does the Sun also pull water on Earth towards it?

- A. Yes
- B. No



7.

Taking a one-week vacation in a sunny destination during the winter helps your body produce more vitamin D. But for how long?

- A. 2 days
- B. 7 days
- C. 6 weeks

8.

How many solar panels are there on the roof of the SuviLahti solar power plant?

- A. 1,194
- B. 925
- C. 2,992

9.

Where is the sun's UV index the highest?

- A. At the equator
- B. In the Mediterranean countries
- C. On glaciers





THE BIG PICTURE

The driest place on Earth

The Atacama Desert in northern Chile is the world's best location for a solar power plant. There are four reasons for this.

1. Atacama is located close to the equator, where the amount of solar energy received is highest.
2. It is also an extremely dry place, so rain clouds don't get in the way of sunlight. Atacama only gets rain once in 5-20 years. Even then, it only gets a millimetre at a time.
3. Atacama is at an elevation of more than 2,000 metres, which means that less of the sun's rays are absorbed by the atmosphere than at sea level.
4. The desert air in Atacama also doesn't have aerosols from human activity to get in the way of the sun's rays.



PHOTO: GETTY IMAGES

Electric cars through the years

Did you know the first electric cars were developed back in the 1800s?

TIMELINE



1884

The first electric car was developed by Englishman **Thomas Parker** in Wolverhampton in 1884. The speed limit in England at the time was 3 km/h in towns and 6 km/h on main roads. Going around by car required three men: two driving the vehicle and one walking in front of it waving a red flag.

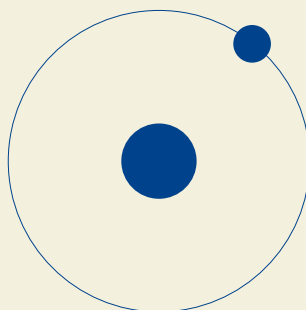


1889

La Jamais Contente, a torpedo-shaped electric vehicle, was the first road vehicle to go over 100 km/h. The Belgian driver **Camille Jenatton** drove it at a speed of approximately 106 km/h in Achères near Paris in 1899. La Jamais Contente is French for 'The Never Satisfied'.



2025



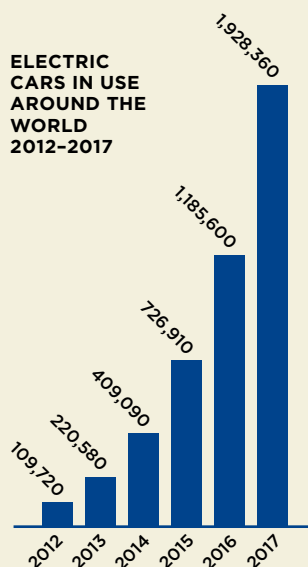
Finland's national target is that 50% of new cars and vans should be **powered by an alternative fuel** in 2025. In 2018, they accounted for 5.7% of newly registered cars.

PHOTOS: GETTY IMAGES AND FOTOLIA

2019

The number of electric cars around the world has increased in recent years as improved batteries have enabled longer ranges and more charging points have been introduced.

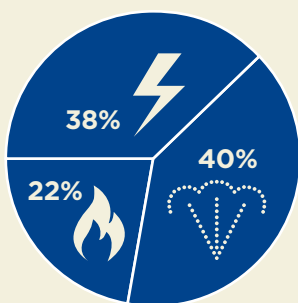
ELECTRIC CARS IN USE AROUND THE WORLD 2012-2017





1900

In 1900, **electricity powered 38%** of all cars in the U.S., while steam accounted for 40% and internal combustion engines for 22%. Electric cars were easy to start, unlike cars with internal combustion engines that had to be hand cranked. Compared to cars powered by gas and steam, electric cars were silent and did not cause foul-smelling emissions. Their popularity increased rapidly.



1909

Finland's first electric vehicle was bought from Germany in 1909 by the Helsinki fire department, which used it until 1921. The maximum speed was 35 km/h and its range on a single charge was 25 kilometres. It often had to be pulled by horses on its return from putting out fires.



1935

By 1935, electric vehicles had practically disappeared for several reasons: Mass production made the **Ford Model T** significantly more affordable. Discoveries of crude oil in Texas kept fuel prices low until the 1970s. Roads were improved and driving distances grew to exceed the range offered by the batteries of electric cars.



2006

Silicon Valley startup **Tesla Motors** announced in 2006 that it would start to produce a luxury electric sports car boasting a range of more than 300 kilometres on a single charge. This made other auto-makers stand up and take notice.



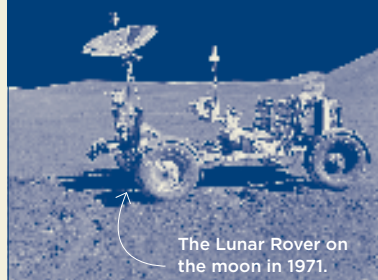
2000



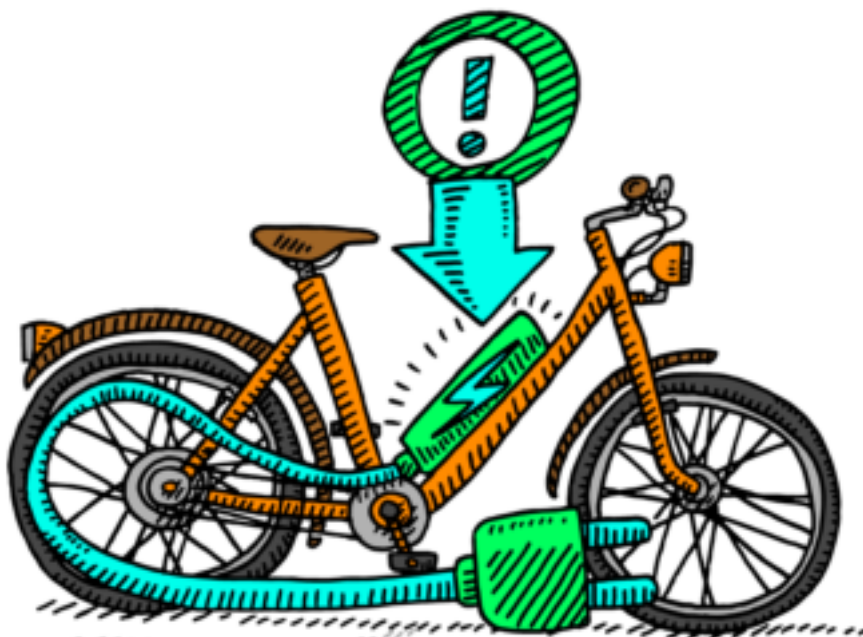
Helen's electric vehicle Töpsy cruised around Finland on electricity sales and promotional duties in the early 2000s. The vehicle is currently used by the Aalto University Guild of Civil Engineers.

1973

The oil crisis in 1973 led to a dramatic increase in oil prices and reinvigorated interest in electric vehicles. Their profile was boosted by NASA's electrically powered Lunar Rover traversing the surface of the moon on television around the world. In the end, the interest quickly waned as oil prices came back down.



Motor-assisted cycling is significantly less strenuous than riding a traditional bike, but it still serves as exercise.



Can you charge an e-bike in your bedroom?

Your choice of a new e-bike should be based largely on the same criteria as you would apply to choosing a traditional bike. Charging is simple and e-bikes make it easy to cover long distances.

TEXT: JANI SAVOLAINEN, PHOTOS: GETTY IMAGES

How can I charge my e-bike if I live in an apartment building? Do I have to haul the bike up to my apartment to charge it?

Almost all e-bikes have a removable battery pack that you can unlock with a key and charge separately. You can do this at home or at your workplace. The battery can also be charged in your apartment building's bike room if the rules of the housing company allow it.

Are e-bikes expensive? How much do they cost to maintain?

An e-bike is basically an ordinary bicycle that has been equipped with a battery, motor and motor control device. The additional costs compared to an ordinary bike are related to the maintenance of these components. How much maintenance is needed depends largely on the quality of the components. A high-quality electric motor is usually quite maintenance-free.

The prices of e-bikes start from roughly €1,000. You can find cheaper ones, but the price-quality

ratio may not be worth it. A good battery alone can cost more than €500.

Won't I have to pedal anymore? Will I get any exercise by riding an e-bike?

Motor-assisted cycling is significantly less strenuous than riding a traditional bike, but it still serves as exercise. Studies show that e-cyclists rack up many more kilometres than people who ride ordinary bikes. As a result, the average total amount of exercise they get is not lower compared to traditional bicycle riders.

Do e-bike tyres get worn down faster than the tyres of a traditional bike? What about the other parts?

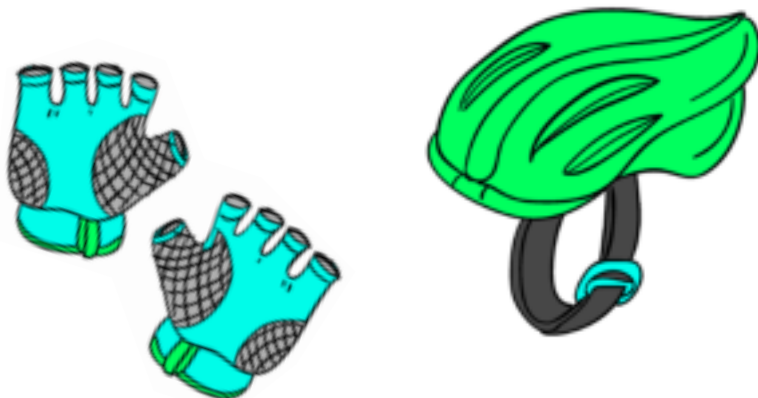
Tyre wear is not significantly faster than with regular bikes, and bicycle tyres are not expensive anyway. The drivetrain components, namely the chain and gears, may get worn down faster if the e-bike is powered by a mid-drive motor.

How far can you ride on one charge?

The distance you can cover on a single charge depends on the capacity of the battery and the level of assistance you choose to use. The level of assistance can be adjusted while driving on almost all e-bikes. Some people only use assistance when going uphill, while others like full assistance. The batteries of e-bikes usually have a specific advertised range, but keep in mind that the indicated figure can only be achieved when using a very low level of assistance.

Will the battery perform poorly in sub-zero temperatures? Will it overheat on a hot day?

Sub-zero temperatures generally reduce the range of batteries. The battery does not get hot during use, but it does heat up when it is charged. A cold battery that was just brought in from freezing temperatures, for example, must not be plugged in right away. It needs to reach room temperature first.



Do batteries need to be replaced often?

Battery life expectancy is usually about 600-1,000 full charge cycles. In normal daily use, this translates to a service life of 3-5 years. The estimated battery replacement period can be calculated based on the battery's indicated charge cycle count and your patterns of use.

What does charging an e-bike actually look like? You just plug it in?

That's right. Charging an e-bike battery is like charging the battery of any consumer device. You plug in the charger and connect it to the device.

What kind of e-bike should I get for my commute?

Your choice of a e-bike can be based largely on the same criteria

as you would apply to choosing a traditional bike. You should choose a bike that is the right size for you and offers a comfortable riding position. Since e-bikes have the benefit of assisting you, you can choose to include features that you might not want in a traditional bike

because they make pedalling more strenuous, such as wider tyres.

An e-bike is basically an ordinary bicycle that has been equipped with a battery, motor and motor control device.

What's the best thing about electric cycling?

The best is that it makes riding a bicycle a viable option for daily journeys for many people who otherwise would not have that possibility. If your commute is too long or hilly for a traditional bicycle, you might be able to do it on an e-bike.

Expert: Antti Kosonen, Board Member at the Finnish Cyclists' Federation and an active e-cyclist



TERMS OF CONTRACT TO BE REVISED ON 1 JULY 2019

Helen Ltd and Helen Electricity Network Ltd will adopt the revised industry-wide terms of contract recommended by Finnish Energy: Terms of Electricity Supply (STE2019) for Helen Ltd and Terms of Network Service (VPE2019) and Terms of Network Connection (LE2019) for Helen Electricity Network Ltd. The new terms of contract will enter into effect on 1 July 2019. The new terms related to customer contracts and a more detailed description of the changes are provided on the companies' websites. We can also send them to customers by mail upon request. Updating the terms of contract requires no action on our customers' behalf.

The reasons for the revised terms of contract include significant changes in circumstances, the renewal of outdated contract or pricing arrangements and the implementation of measures necessary for saving energy.

The Terms of Network Service and Terms of Network Connection have been revised structurally. This means that the separate terms of contract governing production (TLE and TVPE) are abolished and the relevant content is included in the new terms of contract. The terms also take into account the entry into force in 2019 of technical requirements under European network codes. The terms have also been amended to make them more specific and to reflect changes required by the authorities. The Terms of Electricity Supply have been amended in a manner corresponding to the revised Terms of Network Service, with the difference being that the Terms of Electricity Supply do not apply to electricity production.

Consumers have the right to terminate their electricity supply contract within 30 days of receiving notice of the amendments to the Terms of Electricity Supply. For non-consumer customers, the corresponding period is 15 days. The right to give notice does not apply to customers on a fixed-term contract. For customers on a fixed-term contract, the new terms of contract will apply at the end of the current contract term.

DISTRICT HEATING ENERGY PRICES REDUCED

The district heating energy price will be reduced for the summer season 1 May-30 September 2019. The price for the summer season, 3.70 c/kWh, is 1.5% lower than the price in summer 2018. The decrease in energy prices is due to the lower prices of the fuels used in heating production.

SUDOKU

	1	8	7					4
				3	9			
5						1	3	
	4	6						9
			2	8	4			
2						4	1	
	2	5						8
			8	9				
8					2	5	4	



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Sudoku solution: helen.fi/sudoku

	2				1			8
		4				5		
3			9				1	
	7				3			2
		3				1		
6			5				3	
	3				8			5
		8				3		
1			3				9	



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5	6							
2					5	3	8	
			4				9	
		6	9				1	
				5				
	1				8	4		
	9				2			
	2	7	3					1
							2	6



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		4	8				1	6
		3						2
				9				
5					2			
	1						4	
			5					8
				6				
7							8	
9	4				3	7		



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READER SURVEY

Send us your feedback and win a prize!

Which of the stories in this issue was the most interesting to you? You can also let us know what you would like to read about in Helen magazine.

Submit your answers by 5 June 2019 online at helen.fi/lukijakilpailu or send a postcard to Helen, Helen magazine, 00090 HELEN. Don't forget to write your contact details and customer number on the card.



One lucky survey respondent will win a robotic vacuum cleaner.

iRobot Roomba 605

Roomba 605 is an easy-to-use robotic vacuum cleaner. Simply press the CLEAN button and the advanced iAdapt navigation system will guide the Roomba around the room. Roomba 605 uses a patented three-stage cleaning process.

1

Sport break

Our kids are now aged 1 and 4, so daily life gets quite hectic. My partner and I take turns to give each other time to exercise. If there's no sports on my calendar, things get on my nerves more easily.

2

Netflix and chill

I relax with my partner after the kids have gone to bed. Lately we've been watching True Detective. I also have a large DVD collection including all of the Rocky films and TV shows like MacGyver and The Simpsons. I tend to revisit them about once a year.

3

Detectives

I don't get a lot of time to read but when we were shooting Survivor: Finland, I read eight books in one month. They were mostly detective novels.

Juuso Mäkilähde



4

Sleep

The best way to cope is to try to stick to the same circadian rhythm as your children. On holidays, I might get up in the middle of the night, surprised that I had slept as much as 5–6 hours straight!

Who

Juuso Mäkilähde, 34, is the host of the reality TV show Survivor: Finland.

On weekdays, he is the host of the Juuso and Tinni Show on Radio Suomipop. He will also be part of the Suomipop festival on 11–13 July.

5a

Iskender Kebab

It's like a little demon on my shoulder! After a long day of shooting, I often dream of rewarding myself with a kebab. I wouldn't exactly say it makes you feel energetic but sometimes you just can't stop yourself!

5b

Veggie food

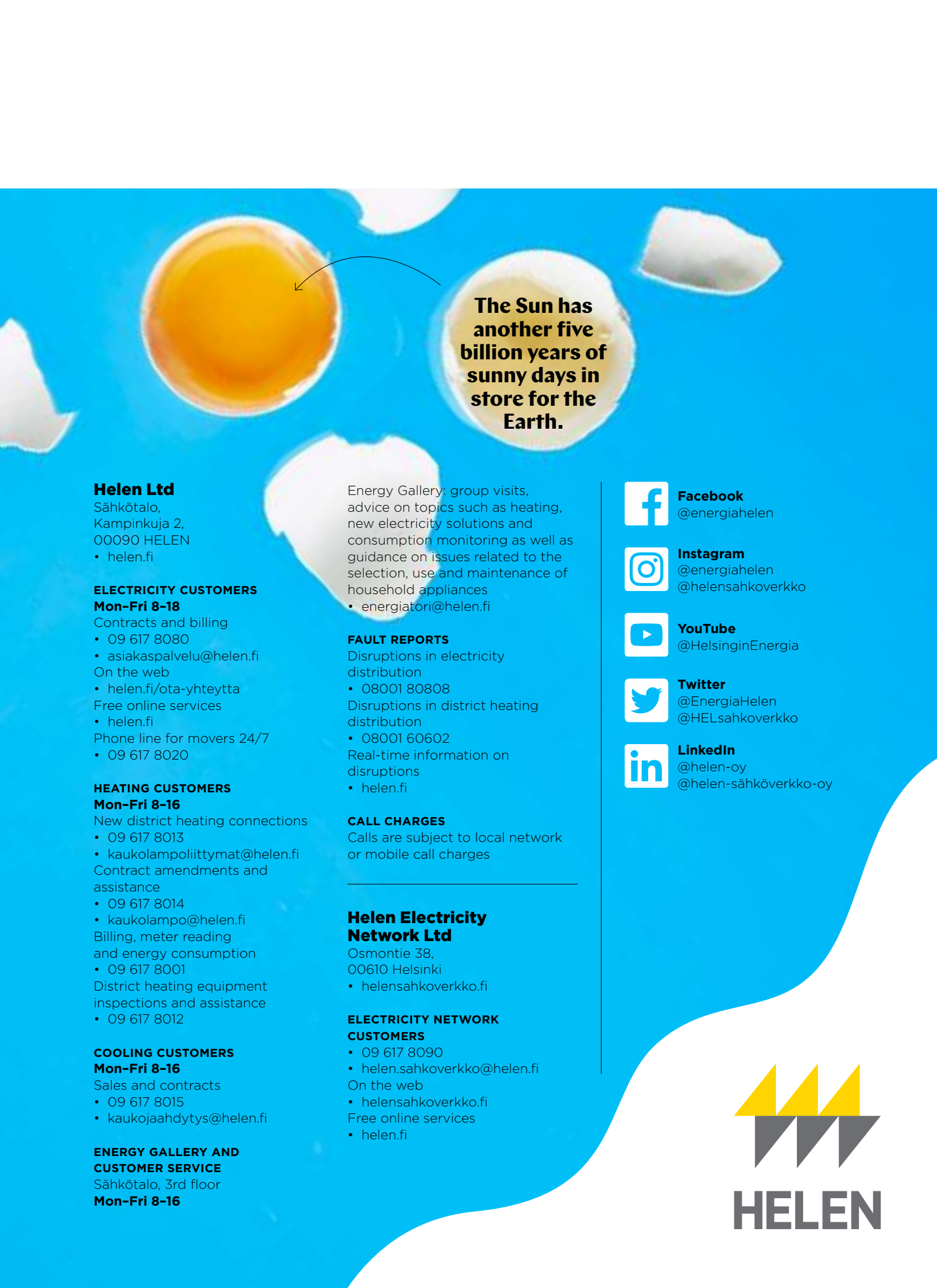
Now that I have kids, I've had to start thinking more about the climate. I've tried a vegetarian diet and I have to say it keeps me energetic all through the day.

6

Family

The kids occasionally drive me crazy, but they are also what happiness is all about. When a child has an interesting thought everything suddenly makes sense again. Happiness comes from ordinary things and moments.





**The Sun has
another five
billion years of
sunny days in
store for the
Earth.**

Helen Ltd

Sähkötalo,
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• helen.fi

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• asiakaspalvelu@helen.fi
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HEATING CUSTOMERS Mon-Fri 8-16

New district heating connections
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• kaukolampoliittymat@helen.fi
Contract amendments and assistance
• 09 617 8014
• kaukolampo@helen.fi
Billing, meter reading and energy consumption
• 09 617 8001
District heating equipment inspections and assistance
• 09 617 8012

COOLING CUSTOMERS Mon-Fri 8-16

Sales and contracts
• 09 617 8015
• kaukojaahdytys@helen.fi

ENERGY GALLERY AND CUSTOMER SERVICE Sähkötalo, 3rd floor Mon-Fri 8-16

Energy Gallery: group visits, advice on topics such as heating, new electricity solutions and consumption monitoring as well as guidance on issues related to the selection, use and maintenance of household appliances
• energiatori@helen.fi

FAULT REPORTS

Disruptions in electricity distribution
• 08001 80808
Disruptions in district heating distribution
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Real-time information on disruptions
• helen.fi

CALL CHARGES

Calls are subject to local network or mobile call charges

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