LIGHTYEAR

“Something that is not sustainable, will stop.”

- Marc Tarpenning, Founder Tesla Motors.

Our Mission

Clean and affordable mobility for everyone.

We are Lightyear. We are on a mission to provide clean and affordable mobility for everyone. We are going to improve the world by making electric driving available to anyone, anywhere in the world. Every year, all the cars in the world together drive one light-year on fossil fuels. In doing so, they put extraordinary pressure on the environment. It is our goal to have the world drive a light year on solar power by 2035.

Mobility is a need for mankind, and in the last decades, the car has become an essential part of it. We have looked at the trends in the automotive industry and the energy sector.
Electric cars, shared cars and self-driving cars will change existing structures and revenue models. The rise of renewable energy is accelerating, and we can continue to grow in our energy needs. Governments and individuals are increasingly turning to sustainable energy sources, and demand for clean and affordable solutions such as electric cars is on the rise. We must rethink the electricity grid and the set-up of appropriate charging infrastructure, especially in developing areas where demand for cars will increase sharply over the next decade.
The solution can be found in infrastructure-independent cars, for example, solar cars. The key to a successful solar car is to maximize solar yield and minimize energy consumption, which means making the car lighter, reducing aerodynamic drag and improving powertrain efficiency. Rapid developments in mainly battery and solar cell technology ensure that a solar car is possible, and in the years to come will only get better.

Introducing a new automotive brand

The rise of a new automotive brand does not happen every day. Design, technology and vision are the key aspects of a successful introduction.

It all starts with a story, a vision of the future that is the root of our brand. A story is not written overnight. It needs time to develop and broad input from many sides. Sometimes people think innovation comes from lonely inventors, but this is rarely true. True innovation takes time, effort, investments and feedback from a strong team. Shaping the very first sparks, the very first idea, into a story is a long and winding road. The only way to realize the dream is by practice and iteration. Courage is needed to take the stage and challenge people's current views. From 2012 onwards Lex Hoefsloot and Roy Cobbenhagen (founders of Solar Team Eindhoven) have been practicing and preaching their gospel of solar cars. Since then we have been researching the potential of solar cars. We did so from a technological, societal and market point of view. By virtue of a wealth of feedback of consumers, industry experts and trend watchers we have shaped the mission of Lightyear.

Having a technological head start is vital. Our team brings five years of experience in developing solar electric vehicles to the table. Through our experience at Solar Team Eindhoven, we have gained a deep understanding of the challenges faced when performance is key. We believe the Stella solar car family shows the potential of solar technology- a technology we know inside and outside. For 5 years electrical, mechanical, materials and design philosophies were pushed beyond their boundaries. So far this has resulted in 3 successive wins of the cruiser class in the World Solar Challenge, a competition of more than 50 international teams driving through the outback of Australia.
During these years a myriad of problems were analyzed and countless solutions were developed. Our expertise goes to the core of what is needed when developing lightweight electric cars with integrated solar cells. Our head start comes from a team of seasoned experts that has experienced many highs and lows together.
In addition to this core of solar vehicle experts, Lightyear has been able to attract a well balanced mix of great technical talent and seasoned industry professionals that all share the same sustainable mission.

It is often said that a car is emotion. It is the single most expensive product most people will ever buy. A car is an extension of your personality.
A sound story and revolutionary technology alone will not sell cars. With sleek designs coming from companies like i.e. Apple, Google, and BMW, expectations have never been so high. Creating something people desire is key. This has been one of our main goals, right from the very beginning. getting the right spark from the very first sketch on paper, to the final manufactured surfaces. We have partnered with a legendary international design studio to take our design to world class level. This first brochure will show you a glimpse of what to expect in the very near future.

The essence of a solar car

True independence and peace of mind, the Lightyear One belongs to pioneers.

As our team envisioned the ultimate solar car, we found one core trait: independence. No other car gives you more freedom and adaptability than one capable of providing its own energy. We are strong believers that energy independent vehicles will be the endgame of automotive.

Independence means not requiring or relying on something else; showing a desire for freedom. The concept of being independent of charging infrastructure is simple, and the impact is immense. Free from the grid means no more hassle to get a charging-pole in front of your house, it gives you the freedom to go off-route and drive on unpaved roads, it is the potential to go on a road trip with no destination planned.

The Lightyear One is intended for true pioneers. The car is to be fully appreciated when driven into unchartered territory. The capability of charging with sunlight opens up the path destinations. We create a car that inspires you to go explore the world, seek for places that were out of reach and out of range before. To allow for road trips on unpaved roads the Lightyear One will feature 4 in-wheel motors, all directly driven. The car is designed with rough terrain in mind. Weaving through traffic on smooth highways or climbing over rugged mountain roads, the Lightyear One is ready for anything. Go see the world.

Reducing the hassle of charging, the Lightyear One brings you true peace of mind. You can go anywhere without any range anxiety, but we did not stop at this point. The Lightyear One caters seamless user experience, making the car intuitive and effortless to handle. An exclusive product like the Lightyear One allows for rethinking the status quo. We want to bring back the era of simplicity. Driving your Lightyear One should be fun and stupidly simple, allowing your mind to wonder about more important things. Just as charging happens autonomously, we search for other superfluous interactions that we can simplify and make more intuitive.

Lightyear One

Exploring any part of the world with an experienced pathfinder.

We envision the One as an experience of feeling confident to explore any part of the world, you are being backed by a passionate pathfinder that you can trust.
A pathfinder that encourages you to explore uncharted territory while showing you the best spots. All with the certainty that you are in good hands, releasing the anxiety of the unknown but keeping a certain amount of thrill. You will be able to look at familiar places with new eyes, re-discovering them. When entering unexpected grounds and the feeling of insecurity kicks in, the pathfinder will take over to lead you in the right direction. Enabling you to feel calm, resolute, supported and safe.

During your journey, you are free to release your personal boundaries. You have the flexibility to explore on your own whilst being unnoticeably looked after. You are not alone but you do have your own space. Being aware of the vehicle capabilities evokes a secure feeling that challenges and rewards you with new adventures every day.

Meet the Lightyear One.

Effortless Energy

A run of 133 days without any need for external charging. We call this your carefree range.

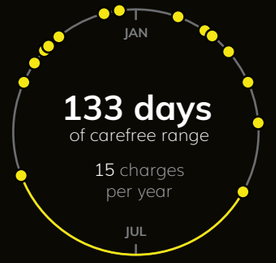
Lightyear One has a roof featuring more than 5 square meters of active solar area. This unique quality allows it to drive for months without external charging. The powerful battery ensures that you can drive anytime, even at night.

We believe the key to success for our solar car is the effortless user experience for every Lightyear One owner. Charging happens without any extra effort, reducing the need for extra charges from the grid. This results in several days without any external charging hassle. We call this your carefree range.

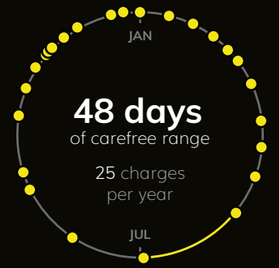
The graph on the right shows the situation of an ordinary father with his wife and 2 kids. Commuting each day to work and driving each year to the south of France, twice. We have calculated the number of external charges needed to drive 20.000 km per year. Since a father wants to be prepared for any emergency situation, we assumed the minimum range of the battery should never go below 300 km.

Yearly amount of charges compared to a Tesla Model S P100D when driving 20.000 km's a year.

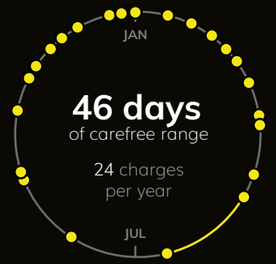
Lisbon, Portugal
13.200km per year



Amsterdam, Netherlands
7.900km per year



Paris, France
8.800km per year

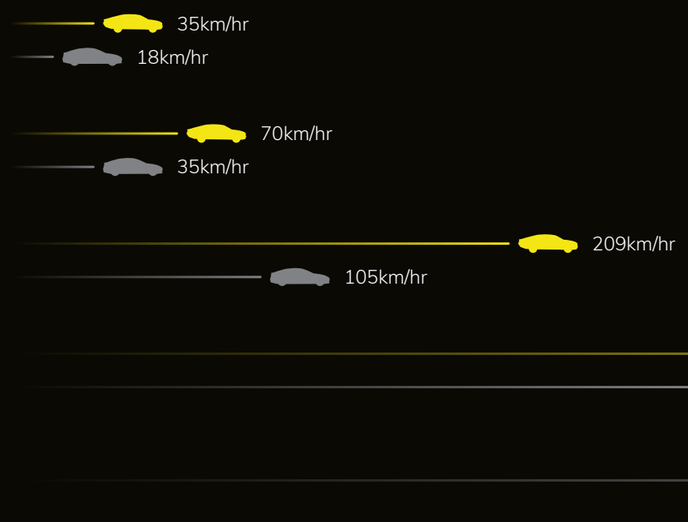


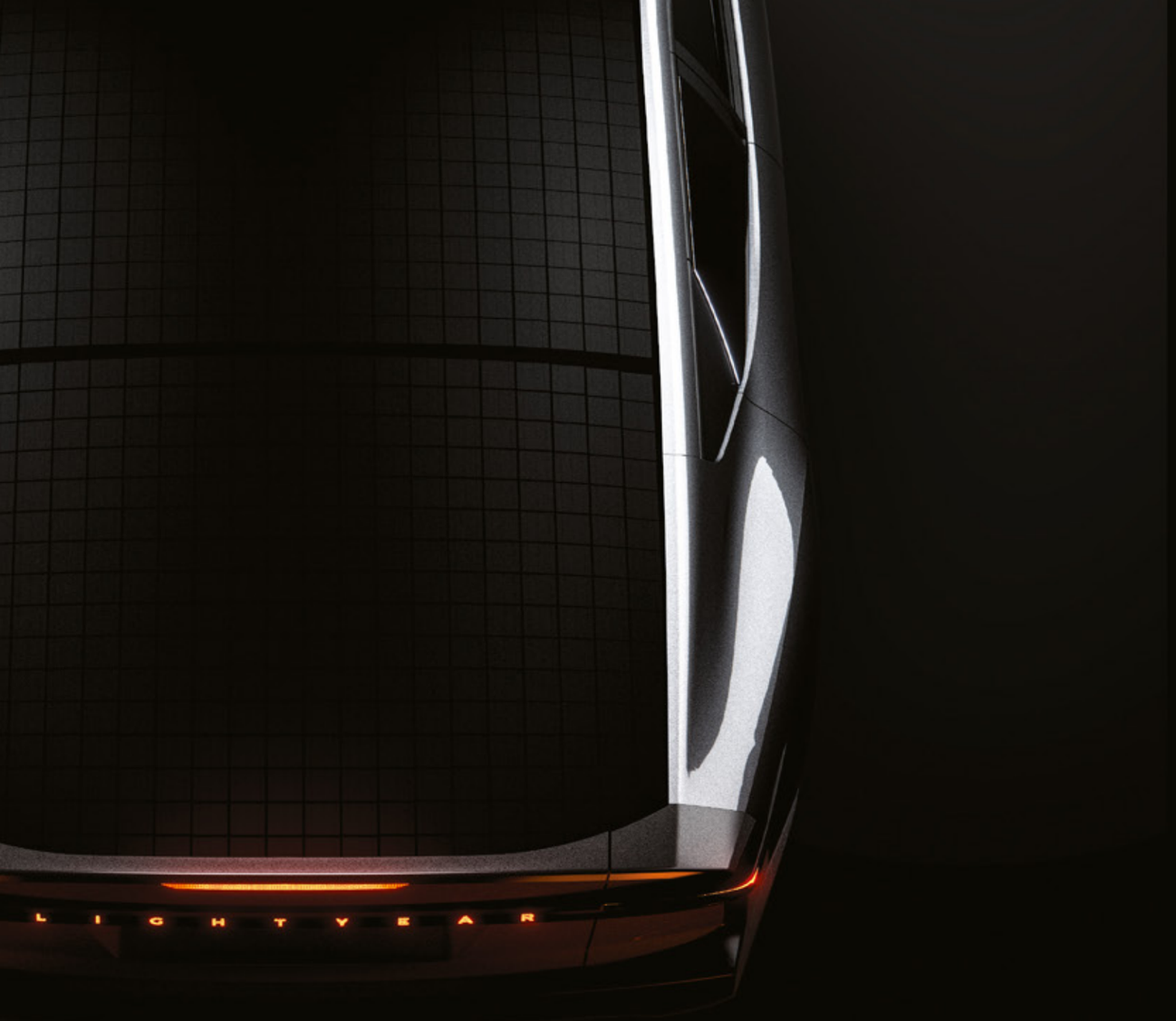
Tesla Model S P100D

Comparing charging speeds to Tesla Model S P100D.

Charging speed in km's per charging hour

Solar charging will add 15 km an hour





Superior Range

We put tremendous effort into reducing energy consumption, which will favor your range and charging speeds.

The Lightyear One will be offered in a base or extended form. We provide an accurate estimation of different driving conditions for the extended version in the graph below. For normal driving behavior, the WLTP* drive cycle calculation is used which include auxiliaries like cooling and heating. A conservative driving style including slower acceleration, proper regenerative braking and limited top speed will provide an even longer range.

Due to improved energy efficiency of the powertrain compared to other electric vehicles, less energy is needed for the same range. This improves charging time by almost a factor three. With power outlets available worldwide, the Lightyear One can be charged 440 km overnight (12 hours), anywhere.

** WLTP, acknowledged as the standard by the industry in 2017, replaced the older NEDC which was incapable of providing realistic figures). It describes a drive cycle to OEMs to standardize communicated estimates to consumers.*

Range for different driving styles in the Lightyear One with extended form.

Drive Anywhere

The solar roof inspires you to go off the beaten track. The 4x4 in-wheel motors and adjustable suspension enable you to do it.

Since you do not need special charging points, the Lightyear One will take you anywhere. Charge using the sun, or any normal power plug.
The Lightyear One has four independent driven wheels. Combined with adjustable suspension that can increase your ride height, you are prepared for any surprises on the road ahead. Start planning your next big trip.

A yearly range is only an indication of the overall performance of a solar car. Local climate and day to day weather affect the nett harvested energy. The long sunny days of summer will allow for the generation of much more energy than cloudy winter days. The difference between the highs and lows during a year depend on the climate of your country.

Important to note is the accuracy of with which solar range can be predicted. We expect people to use Lightyear One like any regular car. This will result in situations where the solar roof is covered by shade. To anticipate this, we include a shadow factor of 30% that compensates for these losses in all our communicated solar ranges.

Apart from the solar roof, the Lightyear One offers charging capabilities like any regular electric car. The Lightyear One does not require special charging infrastructure. This is especially interesting when traveling abroad. Using a regular power outlet, a range of 300 km can be charged within 8 hours. Please read below which charging interfaces are supported by the One.

The Perfect Road Trip

What is it like to drive a Lightyear One?

At Lightyear, we envision the One to be the ultimate road-trip vehicle. Either with your family, traveling to Southern France, or driving with friends along the coast of Portugal. With its superior range, fast charging of over 600 km per hour, and the ability to charge around 440 km per night (12 hours) on any basic power outlet, this encourages to go on a long trip.

Bringing your luggage won't stop you from taking the Lightyear One. Reaching places others can't, while bringing sensational opportunities with energy generated by the sun. The trunk features over 900 liters of space, and with the rear seats folded this increases to a minimum of 1400 liters. This is more than most SUVs on the market. Golf bags, mountain bikes, large suitcases for a family of 5, and your inflatable boat will all perfectly fit.

And while you're all the way from home, in the middle of your adventure Lightyear One will take care of you. We have packaged a 230V outlet socket that is reachable from the in- and outside of the car. Think of a sunset near the beach, bringing your own grill, music installation, or fridge. The perfect power source in the middle of nowhere.

A two-week surfing trip along Portugal's Costa Vicentina in which you don't ever have to worry about charging your Lightyear One, it effortlessly takes you from Porto down to Faro and back to Porto.

1154
kilometers totaldistance

0
grams CO_2 emitted

0
charging stops

9
surf spots

Lightyear Platform

The key enabler for a solar car such as the Lightyear One is a holistic approach to architecture.

The car as a whole has been redesigned for optimal comfort and performance. The challenges in architecture are encountered when subsystems interact with each other. Think of headroom versus aerodynamics, or comfort versus range. With the prototypes built by Solar Team Eindhoven, we learned architecture and topology is key for reducing energy usage.

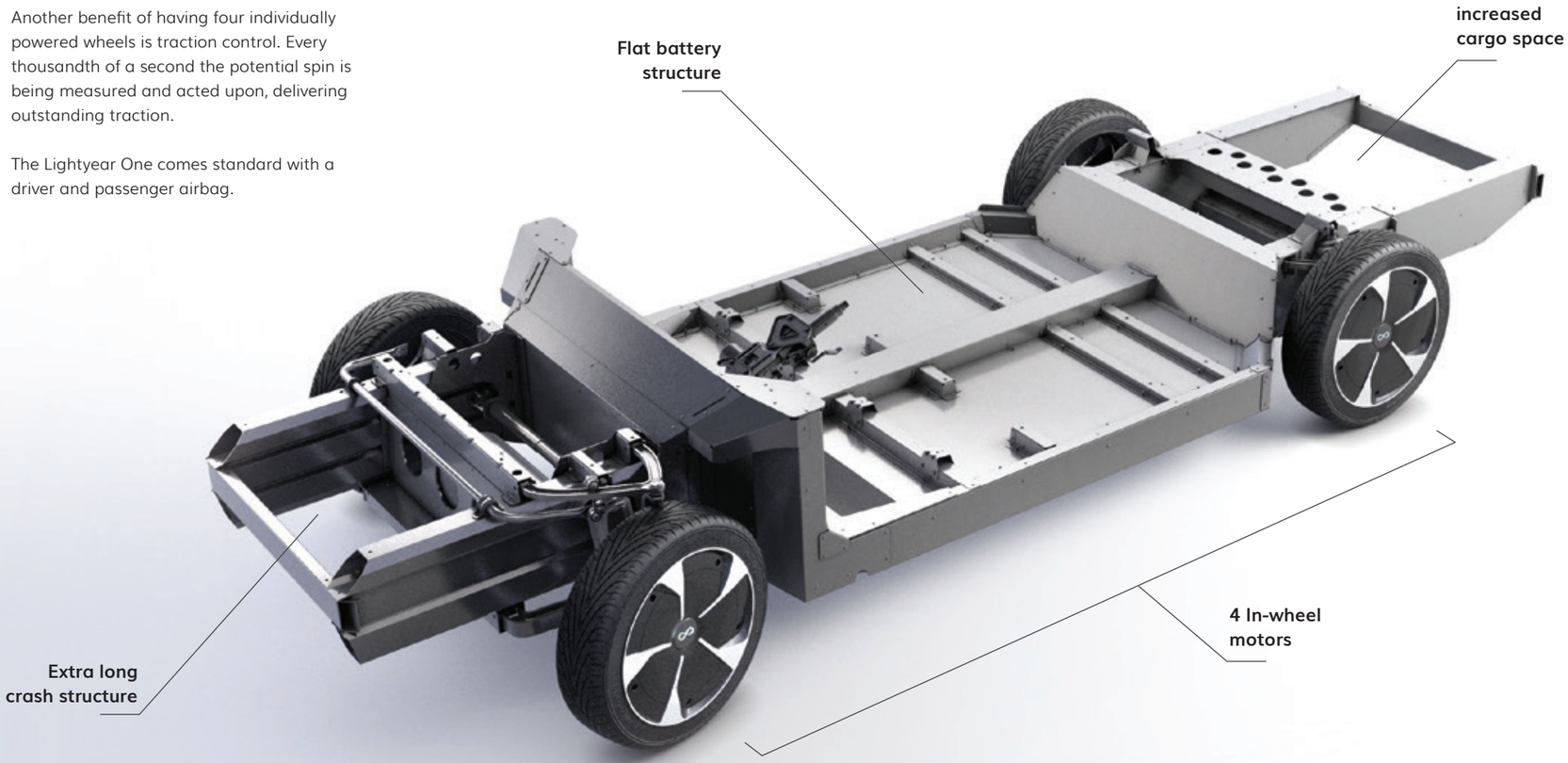
The Lightyear Platform uses a combination of aluminum and carbon fiber to construct a safe occupant space. Passive safety includes crash structures that are both strong and able to absorb kinetic energy. As Formula One cars demonstrate lightweight materials like carbon fiber and aluminum can deliver exceptionally safe constructions, even in the most dramatic crashes.

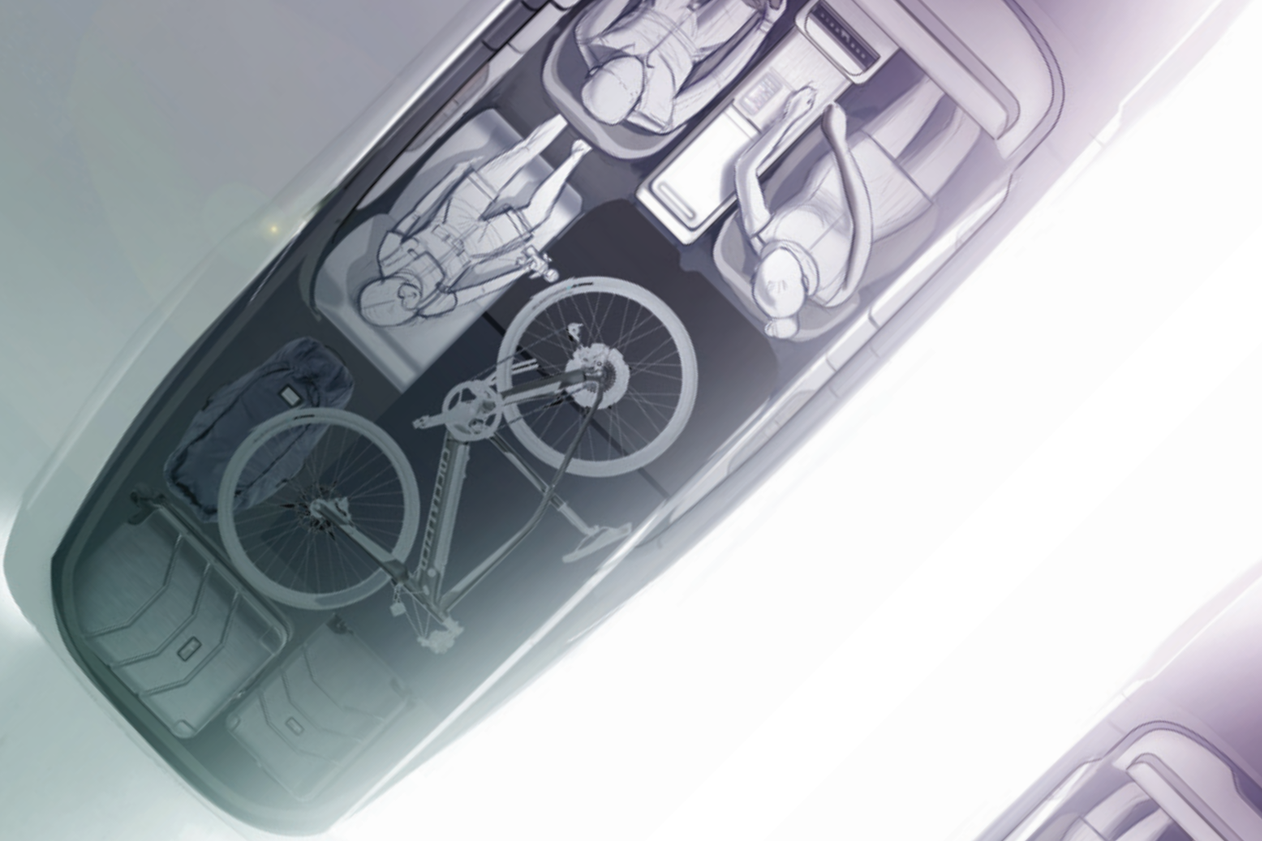
One of the advantages of our architecture is there is no engine at the front of the car.

During a crash situation, more energy will be dissipated by the chassis, leaving the occupant space safe and intact.

Another benefit of having four individually powered wheels is traction control. Every thousandth of a second the potential spin is being measured and acted upon, delivering outstanding traction.

The Lightyear One comes standard with a driver and passenger airbag.





Interior

Safe, comfortable and intuitive. At Lightyear we believe we should bring the interior back to the essence.

Over the past decades, the various new features introduced by car manufacturers meant to fulfill market demand for new value have resulted in a maze of complexity for the driver himself. The average number of buttons easily exceeds one hundred in a midsize sedan. With all these new elements fighting for your attention, the car has been distracting you from the essence of its purpose: exploring the world. We believe it is time to go back to the real essence of mobility.
At Lightyear, we put focus on clear design, futuristic technology and intuitive interaction. The controls of the Lightyear One are self-explanatory and essential, taking driving back to the pleasant experience it is supposed to be.

Starting with a blank canvas brings certain advantages to crafting the perfect layout. Combustion engine cars needed room for a large engine, drive shaft and gearbox. A solar car presents the driver with this space, allowing for unprecedented opportunities. A great example is the amount of storage space inside the occupant space.
When it comes to comfort, seats, dashboard and controls have all been optimized for minimum weight, maximum safety and durability. All of this without compromising on leg room.

The Lightyear One will be equipped with heating, ventilation and air conditioning systems (HVAC). Due to excessive power availability when placed in the sun, you will no longer experience enormous heat after parking your car in full sunlight on a long hot day. Your air conditioning will power on automatically and prepare a comfortable interior. This feature can also be requested via the companion app.

The Lightyear Experience

Encourage people to experience more with less impact.

At Lightyear we want to show the world the future is now. Solar power is already a reliable alternative. On all levels within Lightyear, we are busy defining the future of mobility. What is it like to drive purely on solar power?

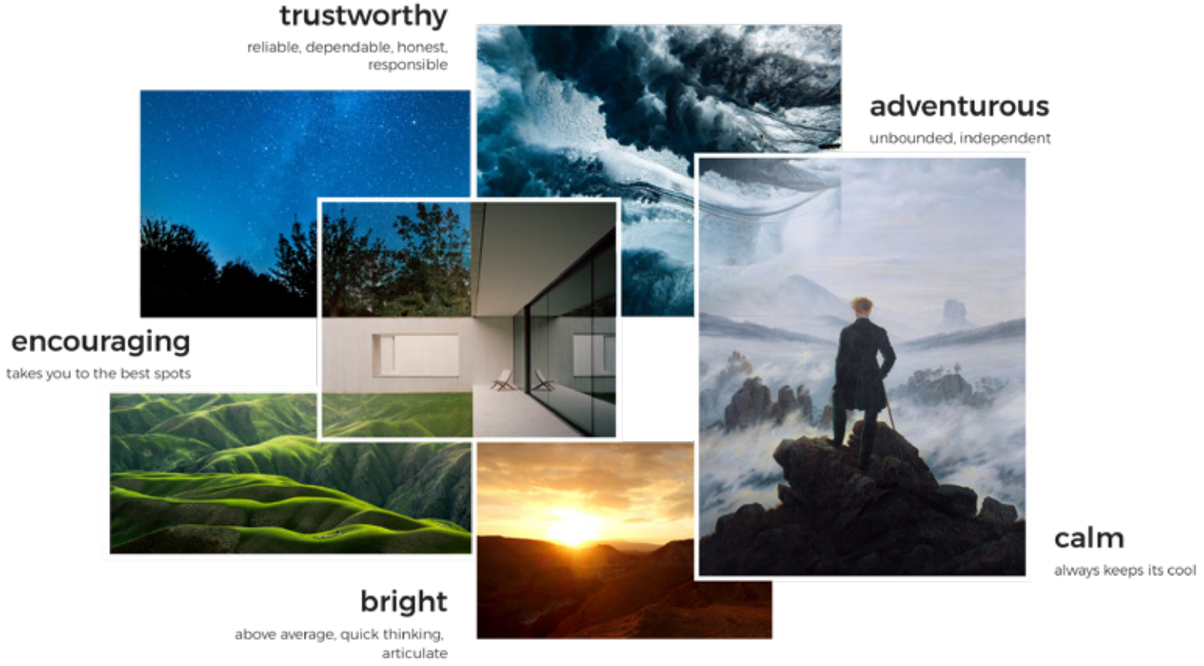
Out of hundreds of small insights we gathered by connecting with experienced EV drivers, we are crafting the Lightyear driving experience. Looking at what the world offers right now, the available information, the current tools, the current driving experience, we have indicated where our main efforts will focus.

Being trustworthy connects with everything the One stands for. Inspired by the sun, one of the most trusted elements of life, being reliable is what we believe. Honest information about how far you can reach is important to trust a new electric car. A responsible way of presenting data, so information overload is far less likely to happen.

You will notice all the bright ideas we have carefully developed, always looking to get the most out of any situation. On the road the cars helps you with a quick analysis of range, trying to eliminate any possible anxieties. We strive for the best when it comes to performance, to make sure anyone driving a Lightyear One can enjoy every bit of sun.

But we also want to encourage you to share our statement, and to make it yours. We encourage you to enjoy the freedom and independence that comes with driving a Lightyear One. Use it as a getaway car to escape on a road trip with friends or family. Drive on unpaved roads or stay for a night camping in the rear of the car, it will offer you plenty of space and even night comfort mode to keep you warm.

Lightyear One encourages you to be a pioneer.



Performance

The most aerodynamic production car combined with the most efficient powertrain.

The main focus of the engineering team is the performance of the car. At Lightyear, we put all our efforts in an efficient architecture that delivers the most value to our customers. We have been able to increase the efficiency of the whole powertrain, making the Lightyear One the most efficient production car. The in-wheel motors eliminate the need for a driveshaft and gearbox. This is not merely more efficient since there are less moving parts the chance of a malfunction is also diminished.

Intelligent electronic torque factoring on four different wheels brings perfect grip in tough situations. Each wheel gets the same amount of power, even if one is off the ground or perhaps stuck. This enables the car to drive on unorthodox terrain.

One of the biggest achievements of the Lightyear One is the low aerodynamic drag value. Current simulations show that the Lightyear One will become the most aerodynamic production car on the market. The latest tests show that our drag coefficient (Cw) value, a measure of air resistance, will be below 0.20. This is significantly lower than the best currently on the market, the ten best Cw values are now between 0.24 and 0.26.
Good aerodynamic performance ensures that energy consumption can be reduced. This is particularly advantageous when used frequently on motorways, especially when driving long distances or high speeds. Due to the lower energy consumption, the car has a greater range.

One of the key contributors to this achievement is the elimination of physical side mirrors. Side mirrors produce a lot of aerodynamic drag, which consumes battery power. To push the range of the car the mirrors will be replaced with a camera system. Another benefit of this innovation will be that different drivers can use the same car without needing to adjust the mirrors manually. Two subtle small displays provide a clear view on both sides of the car. The central console shows what is behind the car while parking.

Service & Maintenance

With predictive maintenance, over the air updates and skilled service engineers you are in good hands.

All Lightyear cars will be made with special care, but the very first will receive extra attention. Being an exclusive car, most of the work is done by skilled craftsmen. This gives every car a unique character. We want to assure the best service possible to show the world the potential of solar power. At Lightyear, we are organizing different scales of service we will provide to our clients.

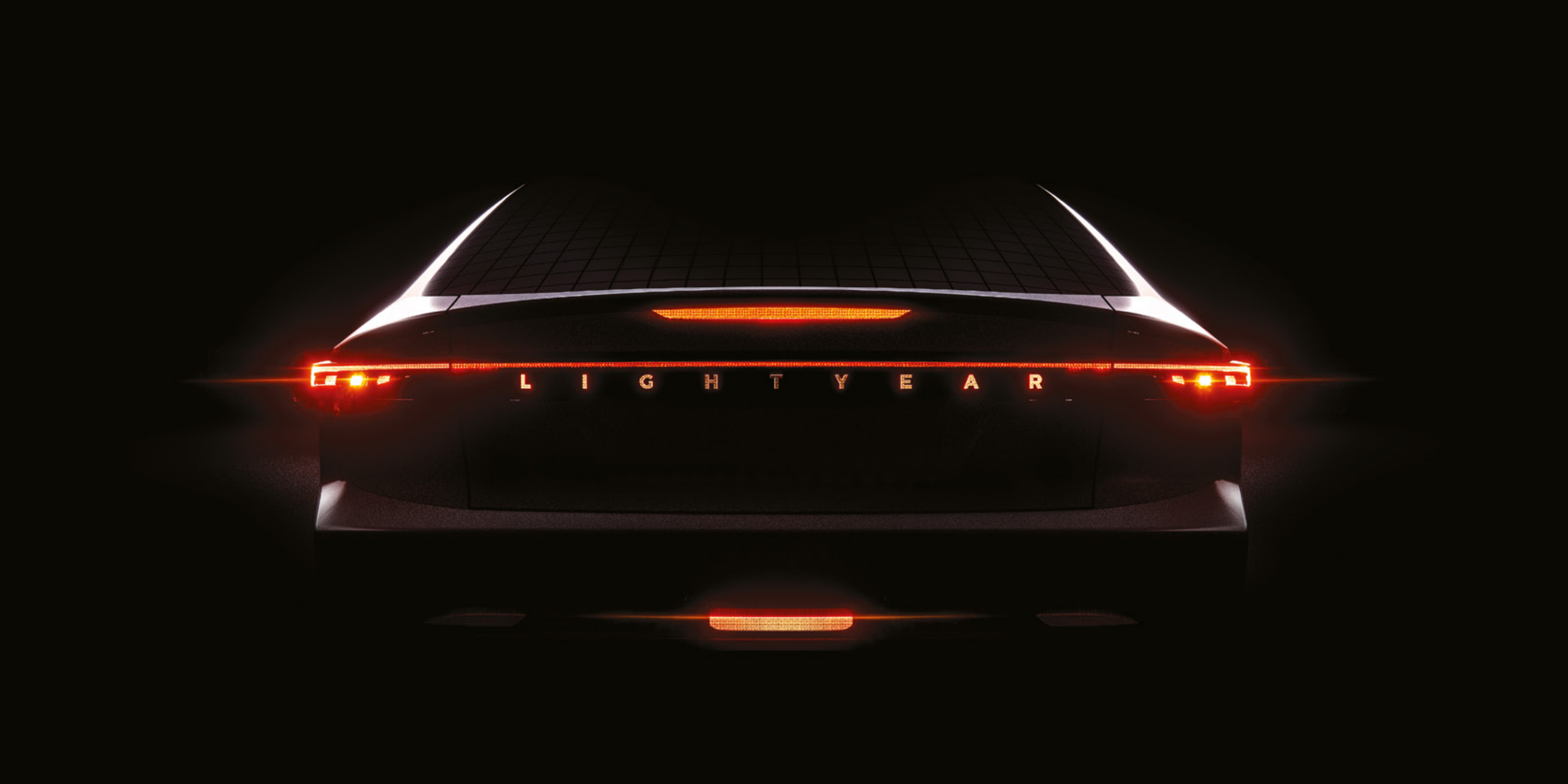
Performance of the Lightyear One is monitored by our engineers. Insights into possible defects or suboptimal performance trigger a flag by our service engineers. Algorithms will compare such characteristics with historical data. When a failure seems imminent a service employee will offer appropriate maintenance.

System performance of the Lightyear One is constantly gathered and analyzed. This allows Lightyear to make updates to the software and push these improvements to cars on the roads. Besides improvements to the vehicle performance, new features and functionality can be added after the launch of the car. This way Lightyear can respond to early learnings and feedback from users to improve functionality.

As with any car, the Lightyear One needs a certain amount of servicing from year to year. However, due to less moving parts, the Lightyear One should be more reliable than a typical combustion car.
Every 50.000 km the power steering fluid, HVAC system, brake pads and all suspension components need to be inspected. This can be done by any specialized garage.

Our engineering, validation and quality department work integrated to cover all expected situations, but unfortunately, nothing is unbreakable. So, when worse comes to worst, and something does breaks, we are there to help. Depending on the failure there will be multiple options. For small fixes, a service shop could be consulted. For more challenging issues a team of skilled Lightyear service engineers will be ready to support you.

Every Lightyear will come with a helpdesk that is 24/7 available. We will provide alternative transport within 24 hours if needed.


L I G H T Y E A R

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