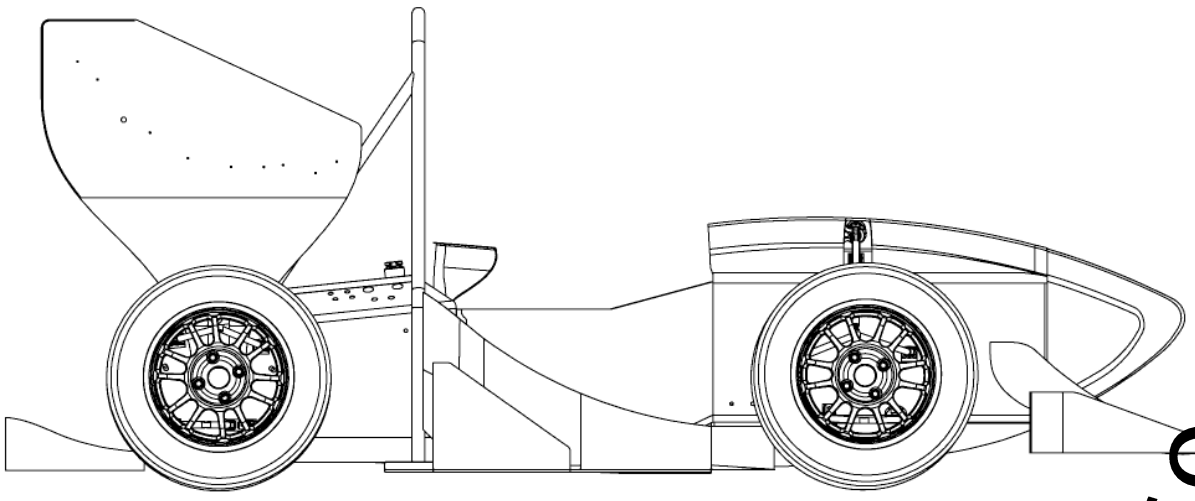


Aristurtle Co.

Introducing the real formula electric racing experience

Aristotle University Racing Team Electric – Aristurtle

Business Plan 2019

Car No.: 121

CONTENTS

EXECUTIVE SUMMARY

Aristurtle is an automotive industry that manufactures single-seat electric racing cars. The company enters the market with long-term aim to expand its presence worldwide and stand competitive against the existent market players. Nowadays, people are valuing experiences over assets and are inclined to step out of their comfort zones and explore their limits. Hobbies that provoke rises in adrenaline levels are becoming more and more popular, and racing has always been an all-time classic stimulant. Aristurtle envisions the opening of access to formula racing to everyone and now is the best moment for the company to emerge in the culture of the sharing economy.

Another great goal of Aristurtle is the effective contribution to climate change and a sustainable development. The company stands by e-mobility to win the race against internal combustion vehicles and aims to play a key role into portraying many of great features electric vehicles have. It wholeheartedly chooses this source of power to bring motorsport to a new greener era. The future is electric, and so is racing.

The company's main target group are motorsport clubs and circuits, where Aristurtle will provide its racecars for hobbyists, ambitious drivers and professionals to use. Key connection to the end consumer is a user-friendly racecar sharing app, which shows available units in tracks nearby. In this new era in which people choose access over ownership, Aristurtle wants to make the ultimate racing experience possible for everyone. The company's focus is to find new opportunities to grow, develop and realize its full potential. For this reason, Aristurtle aims to set up intelligent partnerships, combining its expertise with global experience, standards and perspectives. This will ease the initial investment and will accelerate the idea, helping to create opportunities at international level.

As for the racecar itself, its monocoque is designed to ensure driver safety, which is the top priority. The accumulator container, that can be changed in a few minutes, as well as the Regenerative Braking System make non-stop racing possible. Power output, up to 160 kW, can be modified to customer needs and track safety standards. Moreover, the suspension system, steering and braking focus on maximum driver feel. Last but not least, one of the key features that differentiate it is the aerodynamic package and active Drag Reduction System that increase top speed.

The racecar is initially manufactured in a U-lined factory located in the Industrial Area of Sindos, not far from the port, railway station and city center of Thessaloniki (Greece). As for the supply chain management, a combination of both Just in Case (JIC) and Just in Time (JIT) logistic policies will be implemented to ensure efficient cost management and warehouse circulation. The business's strategy follows the 5 P's model which pays attention to product, price, promotion, place, and people.

The average scenario promises that only one year after launching, more than 10,000 people will have experienced the service. The success of the company lies in the profit-making turning point. The income from every racecar will quickly break even its initial production cost. Overall, the net worth of the company is expected to increase radically within a 5-year period plan and will continue to do so. Revenue will multiply with expansion in contrast to the automotive market sales model, in which it stabilizes and falls rather soon.

PEOPLE

The three founders of Aristurtle Company believed in the perspective of an evolution in the car, and especially, racecar industry internationally. They also foresaw a great success in racecar sharing and they mobilized all the available resources to start out their dream business.

ELENA Chief Executive Officer

The inspiration behind the idea to create Aristurtle Co. came to Elena Kalogeropoulou after being active for two years in Aristurtle Formula Student team. Right now, she is the CEO of Aristurtle Co. She graduated Electrical and Computer Engineering from Aristotle University of Thessaloniki and is a highly motivated young entrepreneur. Elena is dynamic, results-oriented leader with a strong track record of performance in turnaround and high-paced organizations. Utilize keen analysis and insights and team approach to drive organizational improvements and implementation of best practices. Superior interpersonal skills, capable of resolving multiple and complex (sales, human resources, legal, financial, operational) issues and motivating staff to peak performance. Additional areas of expertise include strategy, vision & mission planning, programs, services & products, contract negotiations & strategic alliances, as well as human resources management.

KONSTANTINOS Chief Financial Officer & App Creator

Konstantinos Chelakis is the creator of a useful and efficient back-end web application. With his creation she offered solutions for a large-scale data analysis system. He has a BS in Electronic Information Engineering, a MS in Lightning, Science and Technology and his second MS is in Computer Science. Over the years he has worked with numerous developers. He managed to eliminated cost overruns and delays in more than 5 projects. He supplied troubleshooting, analysis and solutions for clients' database and application issues. He partnered with sales department to specify customers' requirements to offer technical solutions and close the deal. And in his past, he has mentored and trained employees on procedures regarding systems, programming and troubleshooting. He is extraordinary skilled for this position, as he has a full acknowledge of all procedures of the racecar manufacturing and he has the necessary financial knowledge. These were the management skills our company was looking for from its Chief Financial Officer.

DIMITRA Head of Marketing

Dimitra Litaina has a bachelor’s degree in Economics and is an expert at setting the right marketing strategies. She has soft skills that ease communication and always ensure the best of deals. She is responsible for the image of the company and is determined to raise brand awareness internationally. Before joining the dream team of Aristurtle she participated in many outstanding ventures and has won many awards for various projects. Additional areas of expertise include corporate risk management. This skill will set Aristurtle Co. at a great start and will help greatly with the upcoming challenges that will follow the three founders’ ambitious goals.

“

For more than 100 years motorsport has captured and entertained millions and became part of our history. The passion behind motorsport is what has made it into a way of life, a way to push ourselves and unleash our senses. Motorsport means commitment and dedication. Motorsport teaches us to stand up when we fall and never give up. So, what is stopping people? We believe that motorsport is for all. Everyone deserves to live their life to the fullest, to chase every limit, to live the moment.

The world we know is changing. As we're moving forward, people follow new paths and approach life with a sense of wonder and discovery, always seeking the next adventure. We challenge ourselves to try new things, be fearless, step out of our comfort zones, reach our limits, escape the routine and feel alive.

Economy follows people. In the fast, technology-driven era we are living, people are making a noticeable shift towards a concept that is not so new. In fact, it's as old as humanity. Sharing. The value of ownership is greatly affected. Nowadays, people value access over ownership and experiences over assets. And that's where we come in, to offer the ultimate racing experience. Humans have an innate need for acceleration, the racing instinct. It's almost as if they were meant to race, to dare.

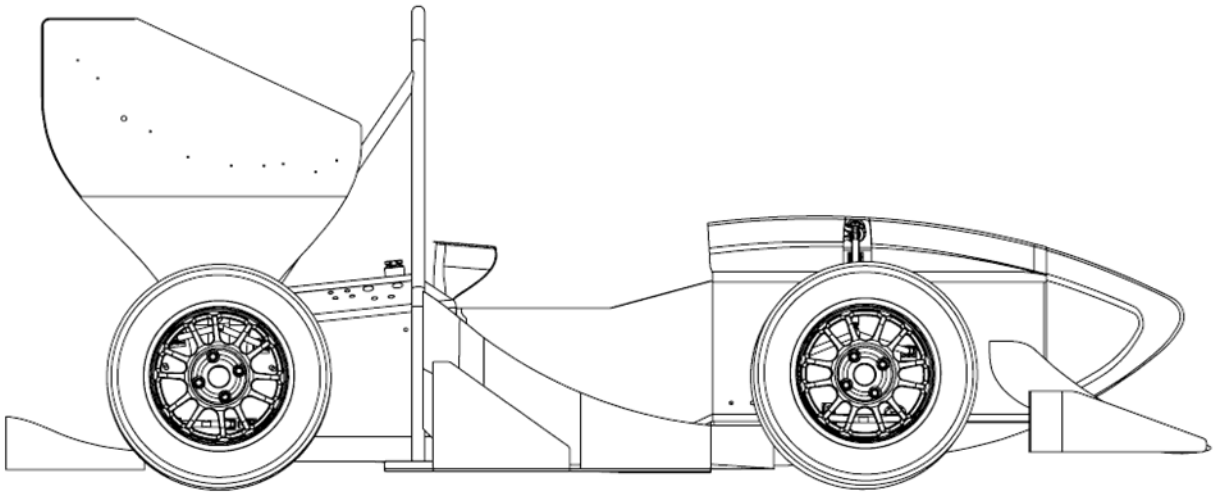
We believe that only those who dare, drive the world forward, and this is why we want to create uniqueness. To provide sheer racing pleasure with mood-changing technology. Machines don't have emotions, but some can inspire them.

We envision making access to formula racing friendlier and easier. Connecting people to motorsport, wherever they are. We want to give people the opportunity to be able to afford the experience of this unique feeling.

All along, we design and act with respect, never forgetting what truly matters, never forgetting our roots. We are positive that our presence and actions will have an impact, helping society step into this new greener era. We want to portray to the public the groundbreaking characteristics electric cars have. The future is electric, and so is racing.

RACECAR

Engineered for optimum reliability and performance, the racecar promises the ultimate racing experience. The overall design concept revolves around easy construction methods, reliability and optimization of driver feel. Key features are its aluminum monocoque and elaborate aerodynamic package. The company's strategic make/buy decisions have allowed a groundbreaking end result.



MONOCOQUE

The top priority behind the design and construction is safety. The monocoque of the racecar is made from aluminum. Expertly designed and tested for its shear strength and deformation. It ensures driver safety. Different aluminum skins and aluminum honeycomb laminations make up a composite structure. However, assembly and construction complexity remain low. Maintenance and repairs are much easier compared to a carbon fiber monocoque. Along with the front and main hoops, the monocoque is constructed to stay in place and protect the driver.

ERGONOMICS

Driver safety as well as comfort always come first. An adjustable carbon fiber seat as well as pedals make driving possible for a variety of heights. Adults and adolescents are able to enjoy the race. As a company, we must include people with special abilities in our potential customers. Therefore, an alternate steering wheel with acceleration and brake pads on it is available for each one of our racecars.

POWERTRAIN

The suspension system is optimized to endure aggressive racing and respond to driver commands. A set of two electric motors, located in the rear have a maximum power output of 110 kW. However, for different

customer needs power can be easily limited, allowing amateurs and professionals to enjoy rides as well as competitive races. The planetary gearbox translates one motor rotation to 3.5 rotation of the wheel on track.

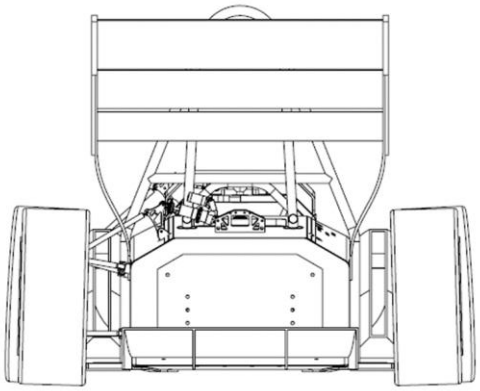
REGENERATIVE BRAKING

The regenerative braking system extends driving range, improves braking efficiency, reduces brake wear, and improves energy conservation. The energy used to recharge the batteries of the vehicle would normally be lost, and this is why it allows each vehicle to experience a prolonged charge while driving.

ELECTRONIC DIFFERENTIAL

The electronic differential allows independent torque for each wheel and additional capabilities including traction and stability control. It is reconfigurable and reprogrammable in order to include new features or tuned according to the driver's preferences. The torque is not limited by the wheel with least traction, as it is with a mechanical differential. The racecar shows overall faster response times.

ACCUMULATOR CONTAINER



Our business model focuses on optimizing the use of our racecar.

Probably one of the key characteristics of our racecar is its accumulator container which can be changed in under 10 minutes. This allows quick and easy replacement and maximizes racing time on track. Our strategy is to provide spare accumulator containers to tracks in order to make non-stop racing possible.

AERODYNAMIC PACKAGE

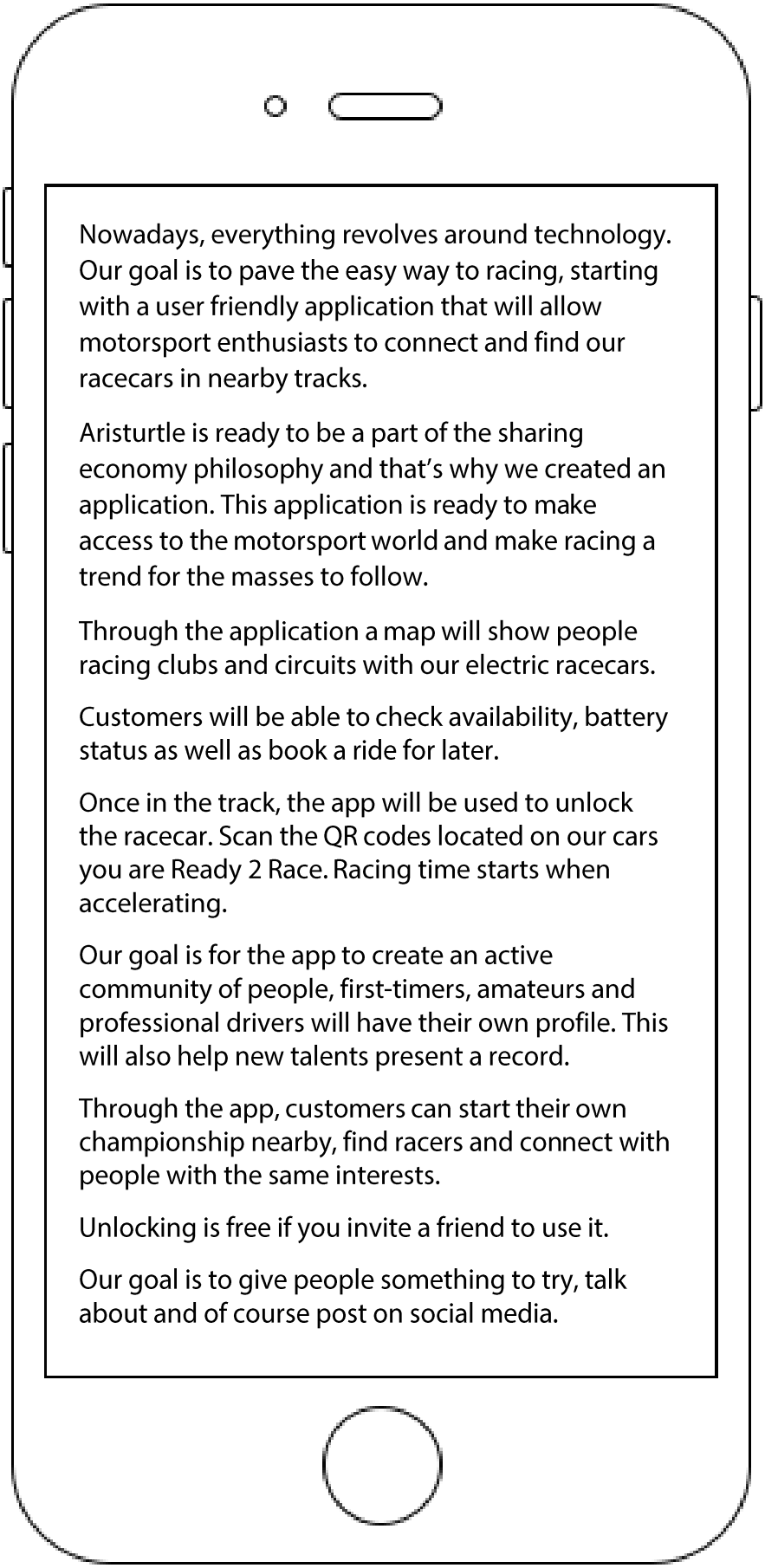
The carbon fiber aerodynamic package optimizes on track performance and significantly reduces drag at top speed. Air flow around the monocoque plays a key role for those who are more experiences and aim for time records. Constructing different foam as well as wooden molds, which are used multiple times to replicate various aerodynamic packages, we have been able to keep the production of aerodynamics to our needs.

DRS

The Drag Reduction System maximizes top speed and allows a seamless acceleration of 0-100 in less than 3.5 seconds.

SCAN TO RACE

THE APP



Nowadays, everything revolves around technology. Our goal is to pave the easy way to racing, starting with a user friendly application that will allow motorsport enthusiasts to connect and find our racecars in nearby tracks.

Aristurtle is ready to be a part of the sharing economy philosophy and that's why we created an application. This application is ready to make access to the motorsport world and make racing a trend for the masses to follow.

Through the application a map will show people racing clubs and circuits with our electric racecars.

Customers will be able to check availability, battery status as well as book a ride for later.

Once in the track, the app will be used to unlock the racecar. Scan the QR codes located on our cars you are Ready 2 Race. Racing time starts when accelerating.

Our goal is for the app to create an active community of people, first-timers, amateurs and professional drivers will have their own profile. This will also help new talents present a record.

Through the app, customers can start their own championship nearby, find racers and connect with people with the same interests.

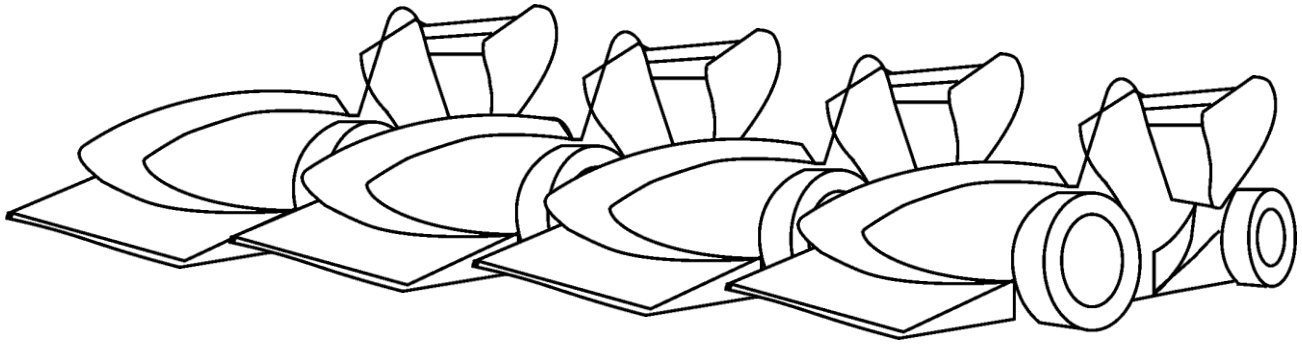
Unlocking is free if you invite a friend to use it.

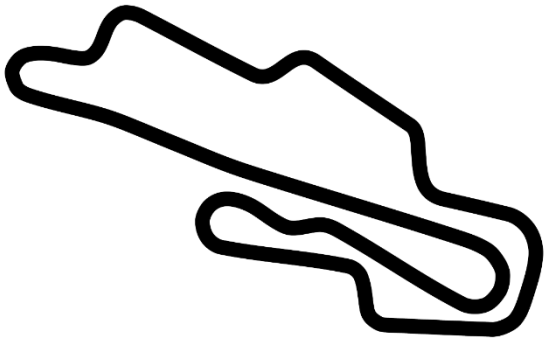
Our goal is to give people something to try, talk about and of course post on social media.

Make racing a trend

BUSINESS MODEL

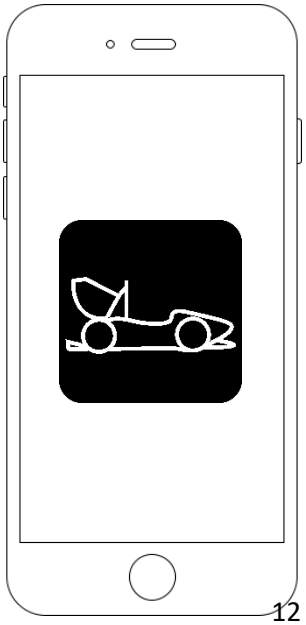
Aristurtle manufactures electric "formula-type" racecars which are given to tracks to operate for 5 years. Racecars are still property of Aristurtle



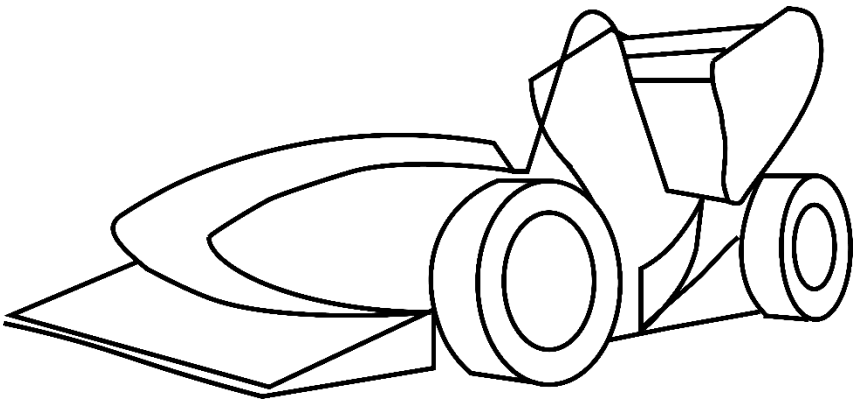


Tracks are responsible for managing, charging and guaranteeing the safety of the racecars. Maintenance & Support is covered by Aristurtle

Racers use and pay for our racecars through the app. Tracks are paid for their services by percentages of the income.

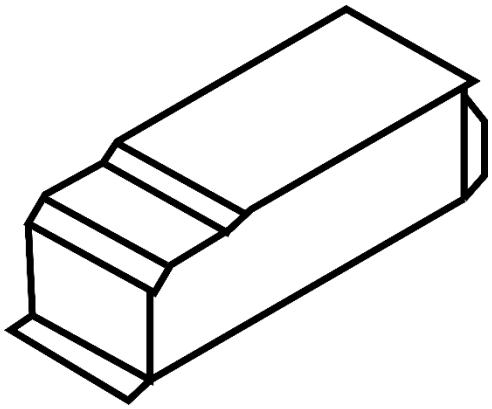


COMPLETE PRODUCT LINE



High quality formula electric racecars at a reasonable monthly price. Maintenance services that include tires replacement every month and delivery of spare interchangeable parts.

Turtlecell® - our state-of-art accumulator container. Easily replaceable spare accumulator containers will maximize time on track and allow racing tracks to make the most out of our formula racecar. Each accumulator container is renewed every year and we guarantee its safety and top-notch performance.



Custom charging station to facilitate tracks and ease the charging process. The station is constructed to be carried around with safety and helps monitor and check battery status.

WHAT HAPPENS AFTER?

After the end of the 5-year period, the track has the option to take the rights of the racecar if they choose to pay the acquisition fee that has been negotiated on the contract. In that case the track gets the full ownership and the responsibility of the racecar including maintenance and repair costs. The app can still be used through the app but all the revenue is given to the tracks after a small fee is deducted for the maintenance and support of the app. This fee has been negotiated between Aristurtle and the track owners at the first contract.

After having examined the insurance and maintenance costs at that point (5 years after the initial leasing contract was signed), Aristurtle will cost a new insurance package for the tracks that will choose to have their race cars covered. Tracks which will have chosen Aristurtle' s insurance package and perform any necessary checks and maintenance will still be able to use our brand at the app or at advertisement. Otherwise, tracks which have not their cars covered by our insurance package will be treated as "External Partners". This happens because we need to protect our branding and our service level as high as possible and we do not want to endanger our branding, our service level and our company.

If after the end of the 5 year period the track owners do not want to acquire all or part of the racecars, then Aristurtle will search for tracks that are interested in leasing or if that is not possible buying the race car. After a hard service of the racecar a new contract with any potential customer and with the same or different terms (ex. 3 year lease plan) will be made with any potential customer.

If Aristurtle cannot find any track that is interested in buying or leasing the product, then the race car will be disassembled, and the parts will be either used as spare parts for other race cars or they will be recycled.

OUR COMPANY

FACILITIES

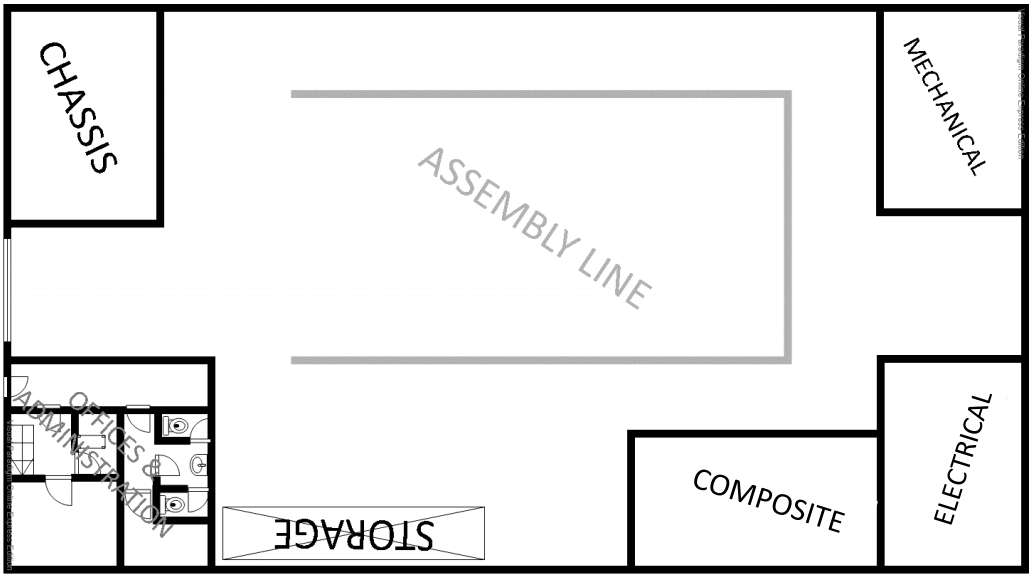
Our advanced manufacturing plant is an industrial site, consisting of a building, where workers manufacture goods or operate machine-processing. In particular, the main production line is in the middle and is surrounded by more workspaces, where the components of the car are manufactured under high standards conditions. The constructed components are being transferred in the main line in order to realize the assembly of the car. There is also a place where the offices of the company are being housed.

OUR FACTORY

Our factory is a modern production facility based on simplicity and efficiency. During the manufacturing process the car passes from numerous departments where all the specialized work is made. The assembly starts with the chassis and then continues with the mechanical and electrical department, the aero and in the end the final assembly and testing. The U-Shaped assembly line guarantees maximum flexibility, ergonomics and better allocation of work while with the addition of more workers we can produce more cars at the same facility. Moreover, offices are also housed in the factory, this allows us administration and the software development team to be in direct contact with the assembly line

Factory Location

ARISTURTLE's factory position is the industrial area of Sindos, in Thessaloniki (Greece). The site is of total area 3000 m2 and the only building 1200 m2. Sindos area is not far from the port and the railway station of the city and only 14km away from city center. These distances are covered only in a few minutes. In addition, OSE operates hourly services to Thessaloniki central station and the distance can be covered in less than 10 minutes.



FACTORY CHARACTERISTICS

LEGAL & ENVIRONMENTAL COMPLIANCES

Aristurtle follows Greek and European law as well as ISO/TS 16949:2009 for automotive production and relevant service part organizations to ensure quality management systems. ISO defines the quality management system requirements for the design and development, production and, when relevant, installation and service of automotive-related products.

Moreover, as we are dealing with dangerous materials such as batteries, our factory meets all safety standards regarding dangerous and flammable materials. An evacuation plan has been published which meets national laws.

MACHINERY

In order to acquire all the machinery needed to start production, Arist.u.r.t.le will use the leasing as a mean. This will enable us to spread the costs of these machinery through time.

After a negotiation period, we have reached an agreement with Alpha Leasing SA to lease the machinery for a 6 year period with a 6% interest. The interest rate is considered a very good deal if we take into account that we are a start-up company.

Machinery	
Custom press brakes	5.000,00 €
Cnc Mill	70.000,00 €
Band sawing machines	5.000,00 €
Gear Machine	5.000,00 €
Hydraulic Press	10.000,00 €
Ovens	30.000,00 €
Soldering Tig	2.000,00 €
Vacuum Pump	4.000,00 €
Fridge for Composites	6.000,00 €
Air Supply	7.000,00 €
3D Printer	15.000,00 €
Total	159.000,00 €

RECRUITMENT

The recruitment process directly affects the overall productivity of our company. A right selection may increase the overall performance and a wrong one may lead to material and financial loss. A perfect selection process can help us pick the most eligible candidates amongst all applicants. The process of selecting candidates focuses on abilities, knowledge, skills, experience and various other related factors. We use social media by making a job advert video which includes our current employees in order to give candidates a genuine idea of what our company is like.

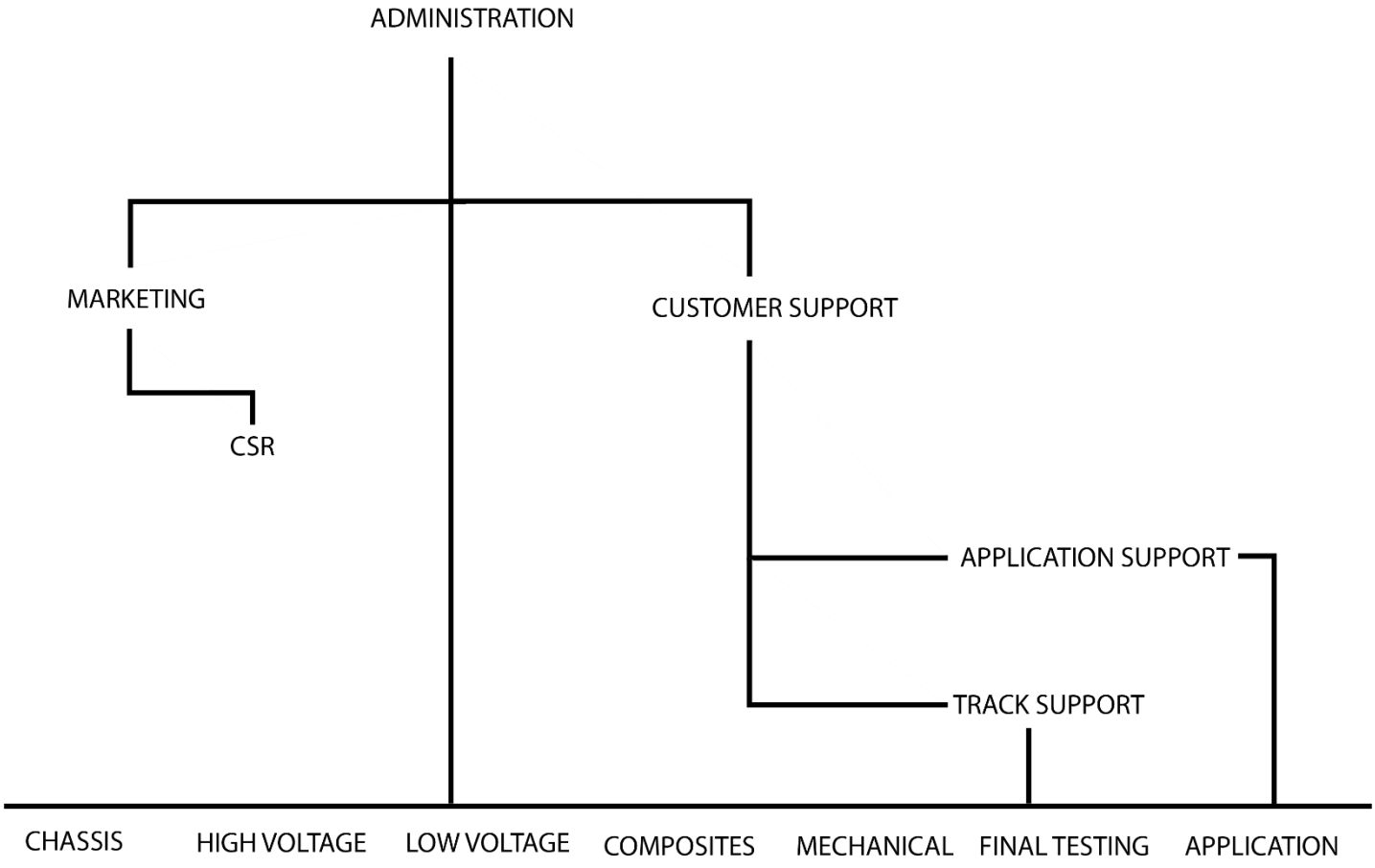
FORMULA STUDENT

To help and strengthen the Formula Student Community at the recruitment process we give priority to community's old members. We, as past members of the community would like to embrace the other past members to apply and come to work with us. To achieve this, we organize networking events for the Formula SAE teams.

We have replaced the typical group interview with group challenges**.** It's one thing to hear candidates say they're good team players but it's quite another to see it in action. In this situation, the task need not to be directly related to the job itself, but it will select the team players as well as the natural leaders.

Once we have successfully recruited our dream candidate, it's important for us to make the rest of the onboarding experience as enjoyable as possible. We make sure the introductory experience is lively and interesting, with minimal paperwork. No candidate wants their first day to just consist of sitting in a HR office, filling out form after form. A soft onboarding experience, such as a quick tour around our facilities, a more practical demonstration of the work they will be doing, or a go-kart experience is the final stage of hiring someone. Our belief is that a candidate will be more likely to take the job if they can visualize themselves working with us.

WORKING STRUCTURE



WORK-TIME MANAGEMENT

During manufacturing procedure, the car passes numerous departments where all the specialized work is made. Each department has a head engineer who is the main responsible for the works at the racecar. For each unit production, each department has some specified preparatory out-of-the-vehicle work to do that does not require the vehicle (e.g. front wing assembly) and some in-the-vehicle work which require work on the vehicle. In order to achieve the maximum efficiency of allocation of work both outside and inside the racecar, a project management study has been made using Gannt charts.

GANNT CHART

A Gantt chart is a type of bar chart that illustrates a project schedule. This chart lists the tasks to be performed on the vertical axis, and time intervals on the horizontal axis. The width of the horizontal bars in the graph shows the duration of each activity. Gantt charts illustrate the start and finish dates of the terminal elements and summary elements of a project. On our examples we have also taken into account the time that a certain department binds the whole vehicle and other departments cannot work on it. Moreover, there are dependencies and priorities. For example, the LV department cannot install all sensors and PCBs if the mechanical department has not completed all the mechanical works.

In the example below we can see the construction time for one racecar at year 1. Our goal is to produce 5 cars per month at the starting year. Starting at Day 1, the racecar passes through all the departments and it is ready after 23 days. This does not mean that we produce 1 car every 23 days. When the racecar leaves from the chassis department and goes to the mechanical, then the chassis staff is free to start the production of a new racecar. Moreover, a department can perform two tasks simultaneously, for example the front part of the chassis needs one day of work and one day of curing. When the part is curing, work on a next part can start. By taking into account all this information, we consider that it is feasible to manufacture 5 racecars in one month or to start 1 racecar every 4 days.

In the next years with the addition of more staff, more works will be done simultaneously, and more cars will be produced each month at the same factory.

PRODUCTION

LEAN OR TEAM MANUFACTURING

Like automated lines, lean assembly lines adapt classic assembly techniques. In lean assembly, products still come together piece by piece. However, teams of workers man each station instead of individuals. As a result, it makes assembly vastly easier for a range of different products, especially big, complicated items. Team members move around to different tasks, and assignments change periodically. In turn, this helps manufacturers get the most out of their assembly line workers, many of whom suffer from physical and mental problems after performing a single task for too long. In the end, the manufacturer enjoys faster, more aware workers. They also have to deal with fewer workers' comp claims.

Our assembly line consists of a mixture of both classic and lean assembly line characteristics. Let's see the main features of those manufacturing assembly line types.

A classic assembly line is the sort of manufacturing process early car manufacturers like Ford made memorable. This type of assembly line uses a number of steps, performed by different workers, to create a single product. That product is usually large and/or complex. Regardless of size or complexity, however, each product is essentially identical. Again, cars are a great example. A car is not a simple thing to build, but every car with the same make, model, and year feature all the same parts in the same places.

Like automated lines, lean assembly lines adapt classic assembly techniques. In lean assembly, products still come together piece by piece. However, teams of workers man each station instead of individuals. As a result, it makes assembly vastly easier for a range of different products, especially big, complicated items. Team members move around to different tasks, and assignments change periodically. In turn, this helps manufacturers get the most out of their assembly line workers, many of whom suffer from physical and mental problems after performing a single task for too long. In the end, the manufacturer enjoys faster, more aware workers. They also have to deal with fewer workers' comp claims.

OUR ASSEMBLY LINE

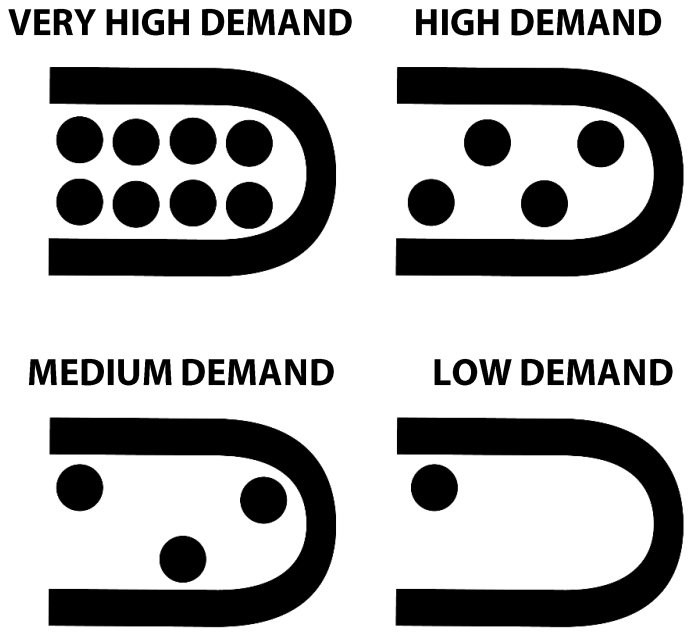
The U-line is actually quite famous in lean manufacturing. Often it is praised as the best possible line layout. This U-shaped line is indeed quite nifty, but it is not a universal solution for anything.

the ability of workers to tend multiple processes within the line
the worker can manage multiple work stations
well suited for multi-machine handling
a worker can tend to both the beginning and the end of a line
well suited to be scaled up

excessive walking distances

WHY

Easy to implement
Not enough room needed
Adaptable depending on market needs
More workers more productivity
Easy logistics
Workers can easily communicate
Easy increase of production with the addition of more workers, while at the same facility



PRODUCTION PROCESS

The production process follows the U-Line. The production process begins with the chassis assembly where the body of the racecar is being built. Our efficient chassis construction method ensures quick and right construction of our chassis. Then, the racecar heads to the mechanical assembly department where the motors, the suspension systems, as well as the powertrain system of the racecar. All major mechanical parts are assembled in this point. Next comes the electrical and the aero department. Several adjustments are being made so that the racecars so that the racecars indulge and consume the electric power correctly. Since these assemblies are completed, then final testing and inspection is being made so that we are sure that the racecar is functioning. The racecar is then stored at our storage department until transportation to the track.

IN & OUT OF HOUSE

As a Formula Student team, we are deeply proud to complete demanding procedures in-house. This has allowed us to get to know processes through failures and mistakes that turned into big lessons.

As a company we decided to make smart choices concerning this subject. This also reflects one of our core beliefs, which is that success lies in combining expertise in different fields.

One of the key decisions to be made, to ensure top product quality is the “make or buy” components that will be implemented in the racecar.

From the very beginning, Aristurtle decided which procedures are important to be done in-house. This decision was made according to the initial capabilities of the facilities, and of course, the cost of manufacturing the components. Additionally, Aristurtle is an automotive company and for this reason we focus on an innovative way of manufacturing. As a result, Aristurtle does not construct the parts that require not only enormous financial and material resources, but also a special equipment. These components are the batteries, the tires, the raw materials for the PCBs, as well as raw materials for mechanical parts.

Moreover, regarding the in-house procedures that were mentioned before, Aristurtle is divided into multiple sections, depending on manufacturing needs. In particular, based on these sections, we are able to construct the most parts of our electric single seat car, such as the chassis, all the mechanical parts, the PCBs, the parts made out of fiber glass and carbon, as well as the molds. Furthermore, our company provides a section entirely for the maintenance of the molds, in order to avoid their aimless reconstruction.

Finally, the cooperation of Aristurtle with external partners is not limited only to the supplies of raw materials and the necessary components of the car, but also involves the recycling of certain components of our single-seat car, maintain in this way the green policy.

We live in an increasingly globalized society. Outsourcing of manufacturing is part and parcel of every business nowadays, so much so that companies almost do so instinctively. However, there are also plenty of benefits with keeping the manufacturing process in house. Although our company relies in outsourcing for some of the required materials for our racecar, almost all racecars’ structural parts are assembled or manufactured in house. This will enable us to be less dependent on others while we want to have a strict plan of deliveries of racecars to the tracks. Our company strategically invests on in house manufacturing of the structural and mechanical parts of the racecar. For this reason we invest in the acquisition of a CNC machine, a gear machine and other machinery. This will allow us to be able to manufacture many parts of the racecar (chassis, hubs, uprights, inserts, gears, steering). Moreover we are going to have a fully equipped area dedicated to composite materials manufacturing.

In house	Out of house
chassis, hubs, uprights, inserts, gears, planetary, steering, 3D printed casings, front & rear wing, nose, sidepods, diffuser, lid, undertray, dashboard, seat, impact attenuator, pedals, steering wheel, Turtlecell structure and lid, maintenance plugs, battery segment casings, TSAL, motor base, powertrain	motors, inverters, dumpers, PCBs, tires, wheels, batteries, pumps, radiators, capacitors, fans, screen, steel tube for hoops, belts, carbon tubes

SUPPLY CHAIN

CARBON FIBER

CFT (Carbon Fiber Technologies) is a company specializing in the manufacture of fiber reinforced composites. They manufacture composite materials using a variety of construction methods. CFT is going to be the main supplier of composite materials such us carbon fiber, nomex and Kevlar which will be used in the construction of our race cars. Through a special deal with CFT, they will provide us all the necessary knowledge and equipment such as molds, ovens etc. and all the fibers for a bulk discount.

ALUMINUM

Elval is the aluminum rolling division of ElvalHalcor S.A., one of the leading aluminum rolling manufacturers worldwide and the only one in Greece. Elval is the main supplier of aluminum pieces, aluminum foils and honeycomb. Elval is one of the biggest aluminum suppliers in Greece and guarantees the highest quality at the exact time.

TIRES

Hoosier Racing Tire is the largest race tire manufacturer in the world. Hoosier has grown to produce over 1000 different types of race tires. The company has its own 300-mph test wheel; a technology center; state-of-the-art, fully-integrated production facilities recently adding a high-tech mixing plant, with enough capacity to produce not only for Hoosier Racing Tire, but to have the ability to produce rubber for additional entities as well as a model sales and distribution network. Hoosier is our main tire provider. We are directly purchase our tires from Hoosier Racing Tire Europe, avoiding all distributors in order to reduce the costs.

WHEELS

In all versions the wheels will have a diameter of 13" (inches) and of OZ Racing legendary brand. OZ produces alloy wheels for the top automotive markets, such as: racing (F1, Rally, DTM, Indy and more), aftermarket, motorcycle and OEM with special equipment for the most exclusive automobiles. The alloys' main material is the only changeable characteristic, which is either magnesium (more expensive) or aluminum (less expensive).

MOTORS

The motors used in the racecars by our company are the EMRAX 208. We have tested them and trust them for both their continuous power release and their peak potentials. More details about the motors are displayed in the official website of EMRAX. In general, EMRAX brand motors' advantages are that they are reliable, they have stacking capability and are EMC certified, which is very important. Furthermore, they are categorized in the best class power density (up to 10 kW/kg) motors and are highly efficient (up to 98%), unlike most motors. And all the above in the most competitive price in market.

BATTERIES

The cells of our batteries used in the racecar, is LiPo type 8000mAh . The milliampere hours (mAh or mA-h) that are shown in the above table represent the thousandths of an ampere hour (that equal 3.6 coulombs). The ampere hour is used as the unit of electric charge. Theoretically, a 8000 mAh capacity battery can supply 8000 mA for one hour. Our car has 252 cells in 84s3p configuration. Generating around 9kWh of energy.

JUST-IN-TIME

As it is clarified there's more to a business than furnishings and office space. Especially in the early stages, startup costs require careful planning and meticulous accounting. Many new businesses neglect this process, relying instead on a flood of customers to keep the operation afloat, usually with abysmal results.

Aristurtle follows an already known supply strategy that increases the company's efficiency and decreases the waste of raw materials, this strategy is known as "Just in Time" (JIT).

The just-in-time (JIT) inventory system is a management strategy that aligns raw material orders from suppliers directly with production schedules. Aristurtle uses this inventory strategy to increase efficiency and decrease waste by receiving goods only as they need them for the production process. This method requires producers to forecast demand accurately, which is our focus.

So our production line is based in the philosophy of making only "what is needed, when it is needed, and in the amount needed" producing quality products efficiently through the complete elimination of waste, inconsistencies, and unreasonable requirements on the production line.

In order to fulfill an order from a customer as quickly as possible, the vehicle is efficiently built within the shortest possible period of time by adhering to the following:

-When a vehicle order is received, production instructions are issued in advance so that the beginning of the vehicle production line to start as soon as possible.

-Our assembly line materials are stocked with the required number of all necessary parts and raw materials so that the ordered vehicles can be assembled.

-Then, our assembly line replaces the parts used by retrieving the same number of parts from the parts-producing process.

-Finally, the preceding process is stocked with small numbers of all types of parts and produce only the numbers of parts that were retrieved by an operator from the next process. We always make sure that every part of our car that is ordered (race car, accumulator container, aero package), so that is always delivered right on time.

TRACK ANALYSIS 01

SERRES RACING CIRCUIT

Location: Serres, Greece
Website: https://www.serrescircuit.gr

Area Served: Greece, North Macedonia, Bulgaria, Romania

Biggest Cities nearby: Serres (pop: 58.287) 3km, Thessaloniki (pop: 1.108.320) 83km, Sofia (pop: 1.236.000) 225km, Kavala (pop: 54.207) 91km, Drama (pop: 44.823) 73km

Broader Areas Served by Population: Macedonia (2.487.447), North Macedonia (2.074.100), Bulgaria (7.075.991), Romania (19.586.539)

Access: By Road: Motorway A25 (Thessaloniki - Greek-Bulgarian Border – Sofia) lies 9km west of the track. By Train: Serres railway station is just 1,5km from the track with daily services to Thessaloniki operated by Trainose. By Bus: Serres Intercity Bus Station is 2km away from the track with daily services to Thessaloniki, Athens, Sofia, Drama, Kavala and other cities nearby.

Track: The main track is 3.186 km long and 12-15 m wide. Inside the circuit apart from the main track there is an adjacent kart track where our racing cars will operate which is 1.200 meters long and 9 meters wide which is perfect for our race cars and the experience they offer.

Associated costs: Electricity cost in Greece is 0,10€/KWh

Schedule: Main track (24 hours open), Kart track (9:00-21:00 daily)

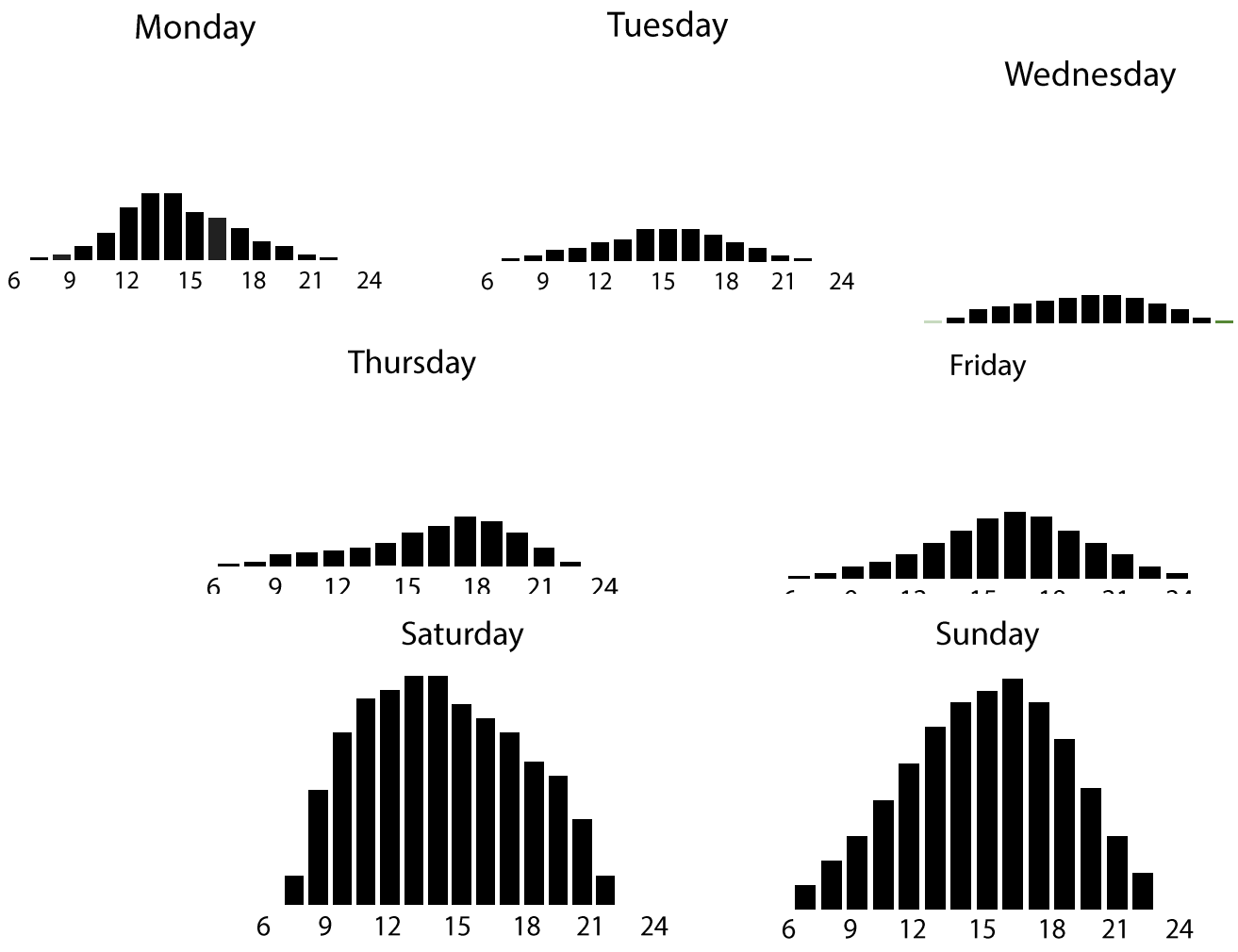
Summary: The Serres Racing Circuit is the only track in Greece but also in the Balkans, which fully complies with the International Motorcycle Federation (FIM) and the International Automobile Federation (FIA) construction standards for Formula 3 racing. The circuit opened on a 1,000 acre site in 1998, built in accordance with safety requirements up to Formula 3 levels. At 3.186 km it is the longest circuit in the region and receives plenty of use throughout the year.

The Serres Racing Circuit organizes events almost every weekend and attracts daily many visitors from Greece and Balkans. Moreover significant events like the Greek Rally Championship and the Romanian Moto Challenge. On weekdays car enthusiasts come for test drive while on many events and on weekends more than 2000 visit Serres Racing Circuit.

Events: Due to being the only FIA certified track in the area, the track hosts many national and international events throughout the year. Some significant events are: Romanian Motorcycle Championship, Greek Moto Championship, World Enduro Championship, Greek Drift Championship, World Drift Championship, Greek Dragster Championship, BMU European RoadRacing Championship, Mycenaean-Minoan Historic Rally 2019/ Classsic Rally Press Ltd

Moreover many other private clubs and companies from Greece, Bulgaria, Romania & North Macedonia organize events. The calendar is always full for the following 3 months.

Visitors: The events stated above last from 2 to 4 days, usually from Friday to Sunday. That's why the track is very crowded on weekends and they have some traffic on Mondays and Fridays when some events are still underway or some people from the events stay a few days more in order to race the track. Moreover on weekdays car enthusiasts visit the track to test their limits in a more private way. Extensive advertisement will be used in order to promote our product and attract visitors to try Aristurtle 's Formula The daily average traffic of the track is being shown below:



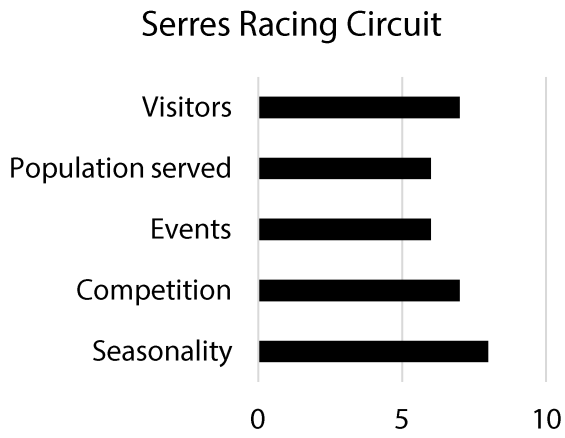
From the pattern above we can see that the arrivals of visitors can be separated into three patterns. The first pattern can be shown on Tuesdays and Wednesdays where the traffic is low throughout the day. These days on average the track has around 100 visitors who are mainly racing enthusiasts from the surrounding area of Serres and Thessaloniki.

The second pattern can be seen on Mondays, Thursdays and Fridays (the days before and after the events). On these days there is a slight increase in traffic because many people visit the track in order to see or to test their cars and prepare for the events. We expect a slight increase in demand and our customers these days, around 30.

The third pattern can be seen on Weekends when various motorsport events take place in the track and attract a lot of people, visitors, drivers, car enthusiasts and professionals. On these days it is calculated that more than 600 people visit the circuit. On some events the total attendance is expected to exceed 1,000 people. We expect that these days our racing cars will be used to the fullest. Aristurtle aims to open the access to formula racing to the public. Moreover, electric racecars are not a common sight in racing circuits just yet and this means that more people will be inclined to try formula electric racing for the first time. People nowadays are open to new experiences and our company's success lies in this fact.

Track Review:

We categorize the tracks we visit based on 5 factors: 1) the visitors this track currently has (0 not many visitors – 10 many visitors), 2) the population in the broad area that the track serves (0 not much population – 10 a lot of population), 3) the number of events the track hosts (0 none event – 10 many events), 4) the competition this track has to face by other tracks nearby (0 a lot of competition – 10 not much competition) and 5) the seasonality of the track (0 the track is very prone to seasonality and there is no equal distribution of visitors throughout the year – 10 the track is not prone to seasonality and there are visitors throughout the year)



Serres Racing Circuit Final Review (31/50)

Conclusion: Serres International Circuit is perhaps the biggest racing circuit in Greece and the Balkans. The reason why it is first in our delivery list is due to the proximity to our factory and because it is the most famous racing track in Greece. Based on the product lifecycle analysis we expect a bigger than usual introduction period, mainly because it is the first track that will operate our cars.

MUGELLO RACING CIRCUIT

Location: Mugello, Italy
Website: https://mugellocircuit.com/en/

02

Area Served: Central Italy, Toscana, Emilia-Romana

Biggest Cities nearby: Firenze (pop: 382.258) 30km, Pisa (pop: 90.488) 118km, Livorno (pop: 158.916) 129km, Bologna (pop: 388.367) 92km

Broader Areas Served by

Population: Tuscany (3.742.000), Emilia-Romana (4.449.000)

Access: By Road: Motorway A1 (Firenze-Bologna) lies 15km west of the track. By Train: Borgo San Lorenzo is 5km far from the with almost two services per hour to Firenze operated by Trenitalia. By Bus: Buses operated by SITA and AMV run daily from Firenze to Scarperia which is adjacent to the circuit .

Track: The track is long more than 5000 m through the charming hills of Tuscany, where technology and environment can live together in a perfect balance. Near the main track there is the Mugellino circuit, a 700 m kart circuit here our race cars will operate. The Mugellino circuit is a reference point for all motor sport enthusiasts. The circuit is one of the most suggestive modern and safe on the national scene.

Associated costs: Electricity cost in Italy is 0,2161€/KWh

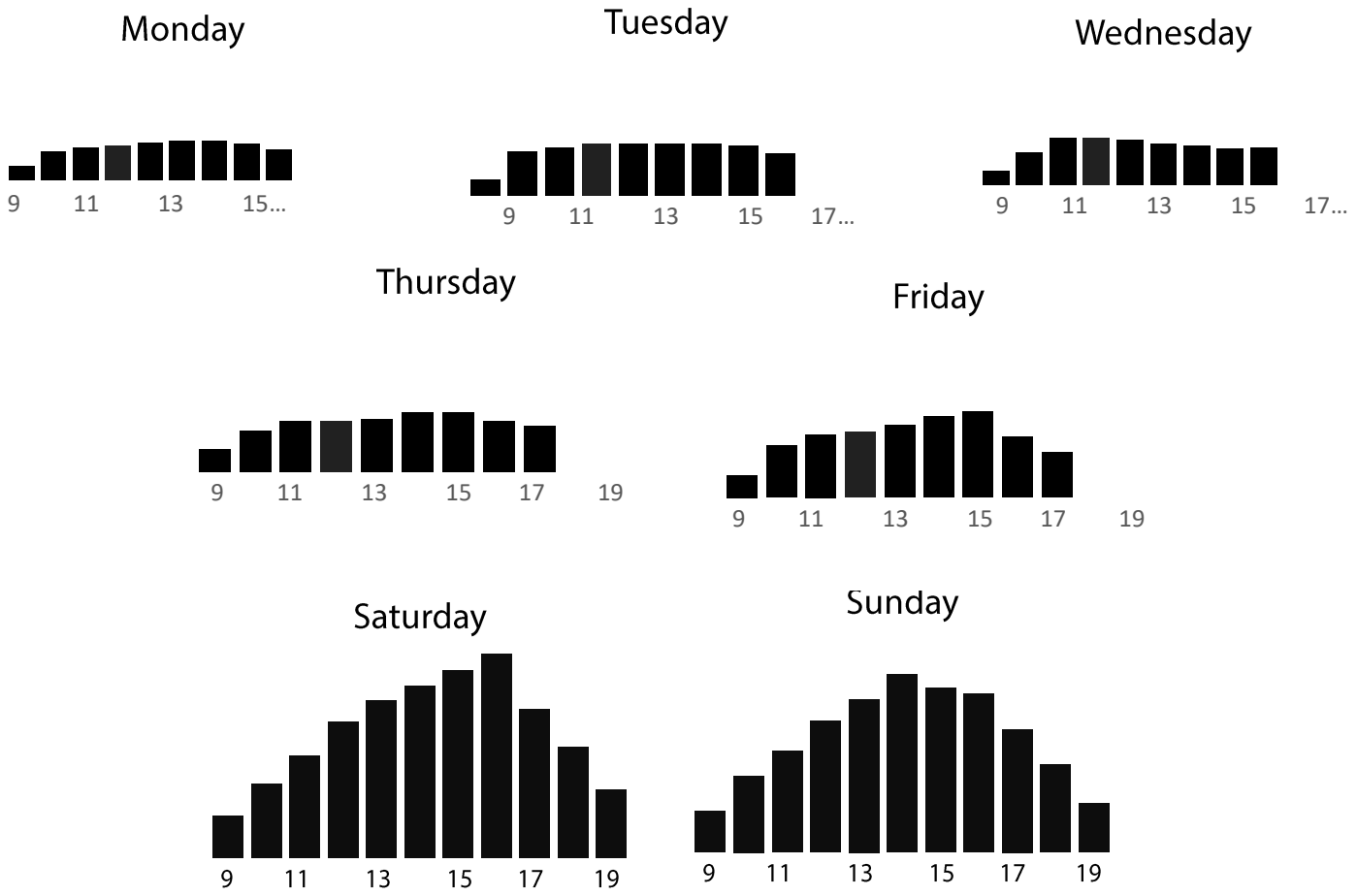
Schedule: Main track (daily 9:00-19:00), Mugellino (9:00-17:00 daily, 9:00-19:00 on weekends)

Summary: Mugello Circuit (Autodromo Internazionale del Mugello) is a race track in Scarperia e San Piero, Tuscany, Italy. Its length is 5.245 km. It has 14 turns and a long straight (1.141 km). The circuit stadium stands have a capacity of 50,000.

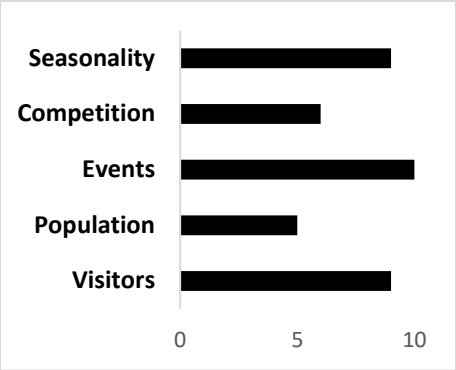
Grand Prix motorcycle racing host an annual event here (MotoGP and smaller classes). Also, the Deutsche Tourenwagen Masters hold an annual event. The track is property of Scuderia Ferrari which uses it for Formula One testing.

Events: Mugello circuits hosts events almost every week which attract visitors from Italy and abroad. Some significant events are: MotoGP Italian Grand Prix, Michelin - Ultimate Cup Series, Coppa Italia di motociclismo, ACI Racing Weekend, Promo Racing Cup, Finali Mondiali Ferrari, 200 Miglia del Mugello, 24H Series European Championship - TCE Series - GT Series - XBB X-Bow-Battle and is open everyday for free practices to all drivers amauteur or professionals

Visitors: The events stated above last from 2 to 4 days, usually from Friday to Sunday. That's why the track is very crowded on weekends and they have some traffic on Mondays and Fridays when some events are still underway or some people from the events stay a few days more in order to race the track. Moreover on weekdays car enthusiasts visit the track to test their limits in a more private way. Extensive advertisement will be used in order to promote our product and attract visitors to try Aristurtle 's Formula The daily average traffic of the track is being shown below:



From the pattern above we can see that the arrivals of visitors can also be separated into three patterns. The first pattern can be shown on Mondays, Tuesdays and Wednesdays where the traffic is considerably low throughout the day. The second pattern can be seen on Thursdays and Fridays when people visit Mugello in order to attend or to participate at an event in the weekend. The third pattern can be seen on Weekends. Mugello hosts many events that attract a lot of cars enthusiasts from Italy and abroad. On these days it is calculated that more than 5.000 people may visit the circuit depending on the event. We expect that these days our racing cars and service will be used to the fullest. Moreover our presence in Mugello acts also as an advertisement to our company as people visit the track, they will have the chance to see and test our products.



Mugello Final Review (40/50)

Conclusion: Mugello is one of the most famous race tracks in Europe. Aristurtle's presence at this track is very important for the promotion and advertisement of the company.

AUTODROMO MISANO – MARCO SIMONCELLI

03

Location: Rimini, Italy
Website: https://www.misanocircuit.com/?lang=en

Area Served: Misano Adriatico, Province of Rimini, Emilia-Romagna, Italy

Biggest Cities nearby: Rimini (pop: 149.403) 20km, Bologna (pop: 388.367) 128km, Ancona (pop: 100.696) 93km, Ravenna (pop: 159.057) 77km, Cesena (pop: 96.589) 40km

Broader Areas Served by Population: Population: Emilia Romana (4.449.000), Marche (1.538.000)

Access: By Road: Motorway A14 (Bologna-Taranto) lies next of the track. By Train: Misano is 1km far from the circuit with services to Rimini, Pesaro, Ravenna and Bergamo operated by Trenitalia.

Track: The track is long more than 4226 m . Near the main track there is the Misanino circuit, a 900 m kart circuit here our race cars will operate. The Misanino is a circuit where everyone can give vent to their unspoken or dreamed driving skills, in total serenity and security. The design of the tracks, particularly large and usable, have been developed together with professional drivers and combine fluency and road grip, safety and fun.

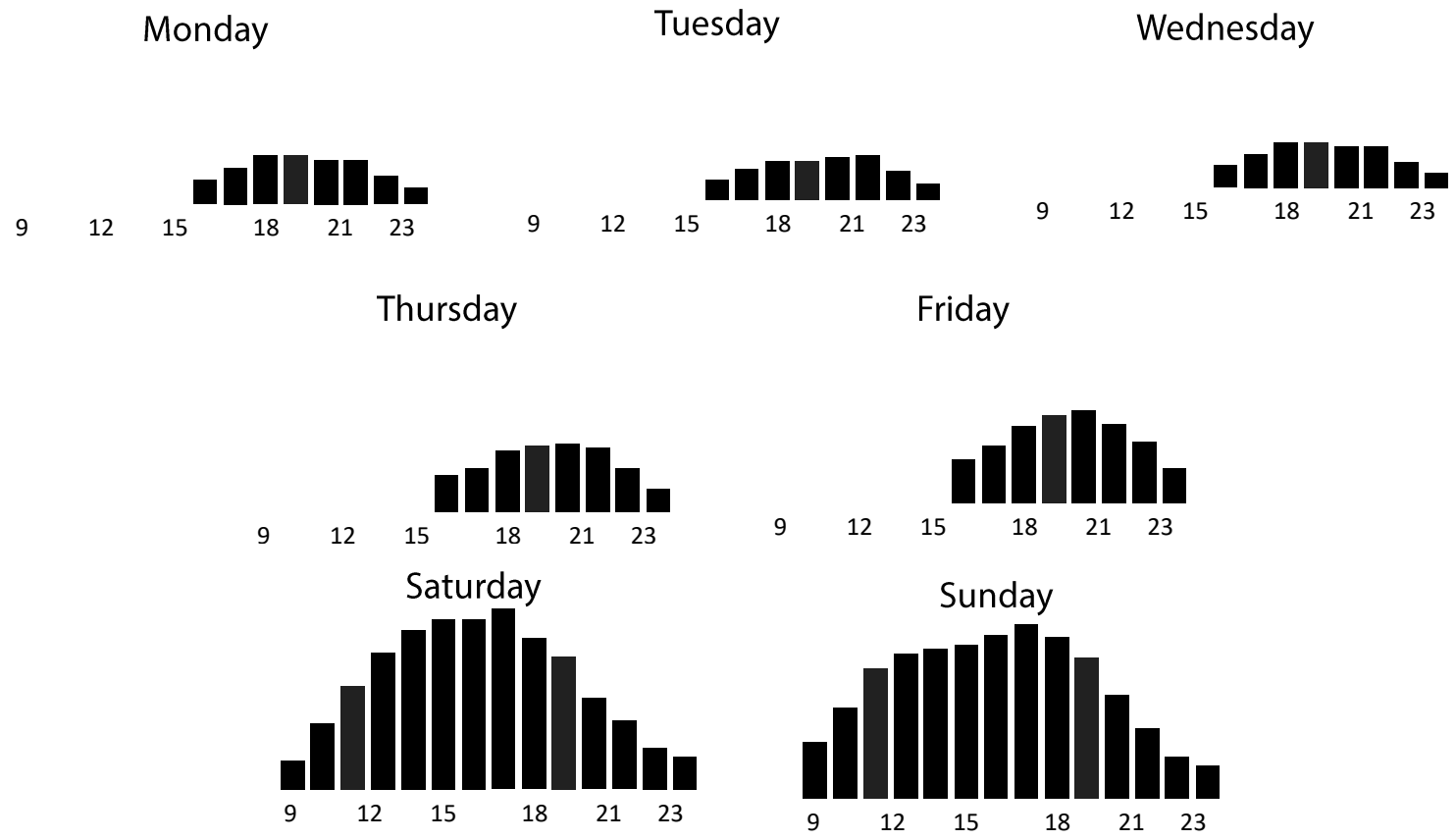
Associated costs: Electricity cost in Italy is 0,2161€/KWh

Schedule: Main track (Daily 16:00-23:00, Weekends 10:00-23:00), Mugellino (9:00-17:00 daily, 9:00-19:00 on weekends)

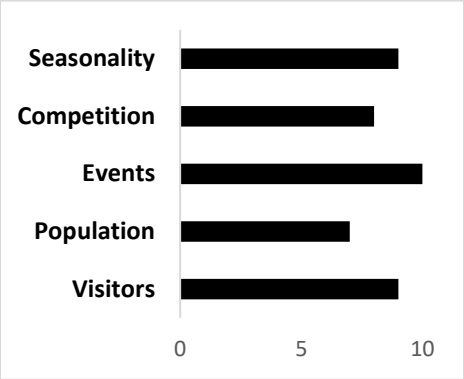
Summary: The Misano World Circuit (officially known as Misano World Circuit Marco Simoncelli is a race track located next to the town of Misano Adriatico (Province of Rimini) in the frazione of Santa Monica. As of 2007, it began hosting the San Marino and Rimini Coast Grand Prix as part of the MotoGP World Championship.

Events: Misano circuits hosts events almost every week which attract visitors from Italy and abroad. Some significant events are: MotoGP San Maino and Rimini, Superbike World Championship Pata Riviera Di Rimini Round, Coppa Italia di motociclismo, Blancpain Gt World Challenge, Dtm Misano, Gruppo Peroni Race, Porsche Sports Cup Suisse, Lamera Cup and is open everyday for free practices to all drivers amateur or professionals

Visitors: The events stated above last from 2 to 4 days, usually from Friday to Sunday. That's why the track is very crowded on weekends and they have some traffic on Mondays and Fridays when some events are still underway or some people from the events stay a few days more in order to race the track. Moreover on weekdays car enthusiasts visit the track to test their limits in a more private way. Extensive advertisement will be used in order to promote our product and attract visitors to try Aristurtle 's Formula The daily average traffic of the track is being shown below:



From the pattern above we can again divide the days into three groups. The first group consists of Monday through Thursday where the traffic is low to medium throughout the day. The second pattern can be seen on Fridays when people visit Misano from nearby cities in order to race or test their cars for the upcoming competitions. On weekends there are also many visitors who visit the circuit to watch or to participate to events that are hosted there. We expect that these days our racing cars will be used to the fullest on this track also.



Misano Final Review (42/50)

Conclusion: Misano along with Mugello is one of the most famous race tracks in Europe and a significant income is expected from this track. Aristurtle's presence at this track is very important for the promotion and advertisement of the company.

DISTRIBUTION

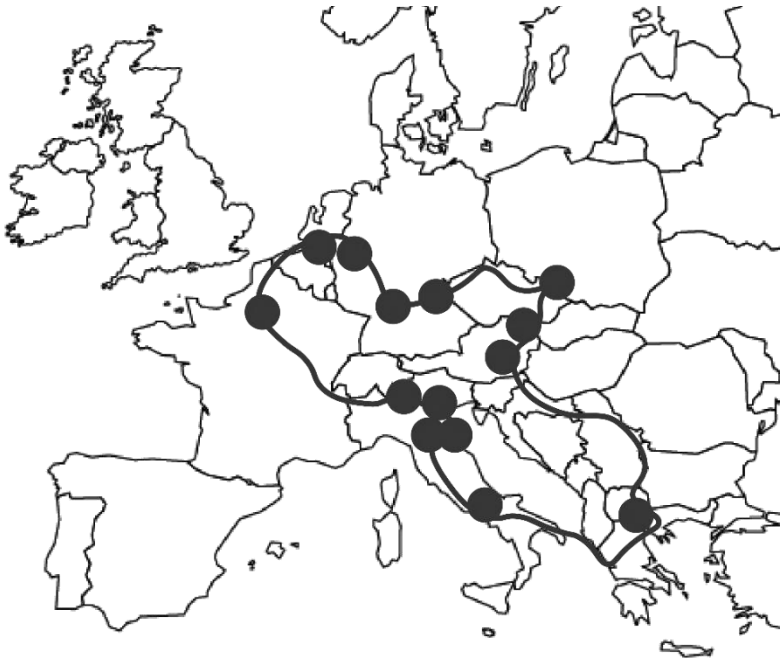
Phase I: Partner with a transportation company

At the first years of operation, Aristurtle will send its racecars, accumulator containers, tires and spare parts with third party partners. This is necessary because the expected deliveries of cars and other parts are relatively low and to close countries starting with Italy.

Phase II: Develop our own distribution network

As time passes by, Aristurtle wants to establish its own distribution network in Europe. Therefore we have made a survey in order to calculate the costs of owning and operating a truck which will enable us to reduce the costs of delivering racecars, tires, accumulator containers and spare parts as expected deliveries are increasing and sending them through a third party costs more and more.

EXPAMPLE ROUTE REPORT



Base: Thessaloniki, Greece

Serviced Tracks: 14

Total km: 6387,4 km

Total operating time: 89 h 7 min

Drivers per itinerary: 2

Drivers rights and working environment: As far as the drivers of our trucks are concerned, all EU and national laws will apply. Aristurtle will offer to its drivers more benefits than the minimum provided by law. This includes 45 minutes stop for every 4 hours of driving, 8 hours rest for every 8 hours of driving per driver and up to 3 overnight stays at a hotel per itinerary for both our drivers. Moreover Aristurtle will hire 3 drivers per each truck which will be rotated every week.

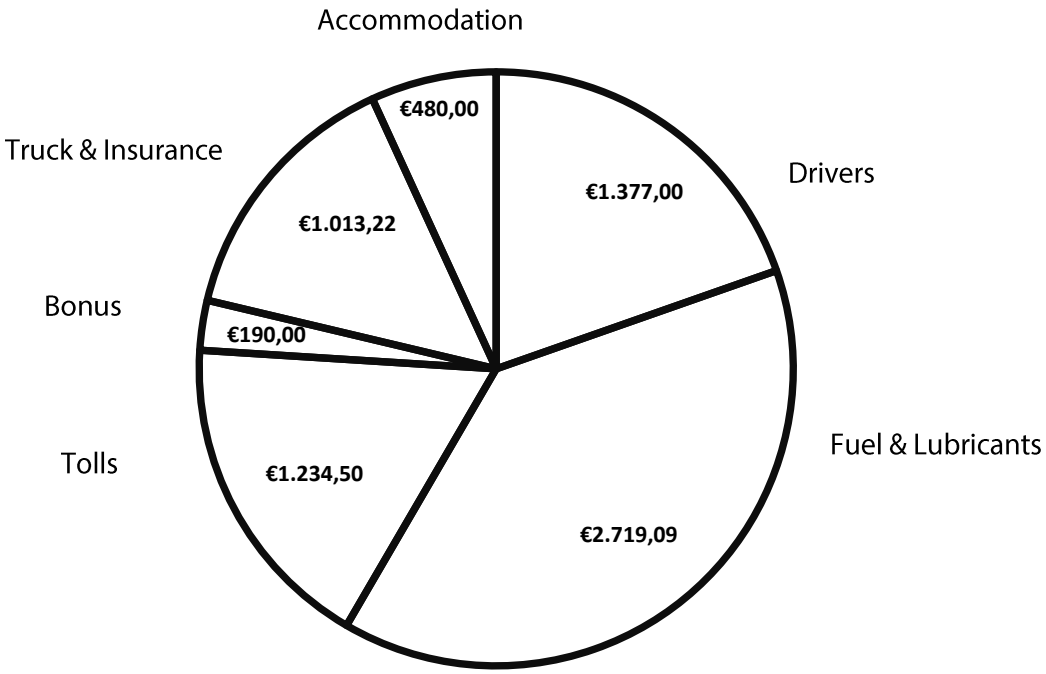
More Info: Each truck can make one itinerary per week. This means that each track can be served once per week with new parts, cars, tires etc. By adding a second truck soon after the introduction of our own distribution service, we can serve more tracks faster while we can guarantee that we can have at least one operating truck at any time. Truck acquisition, maintenance and insurance costs are included in the final calculation.

Info about the survey: These calculations have been made using the online tool Impargo which is used by truck drivers and companies to calculate costs and routes. In the following example, our calculations have been made according to a scenario where our track must serve 14 tracks all over Europe.

Thessaloniki, Central Macedonia, Greece		**(Day 0 16:00)**
324 km	4h 22min + 45 minutes break	
Igoumenitsa, Ipiros, Greece		**(Day 1 00:30)**
Ferry	9h	
Brindisi, Apulia, Italy		**(Day 1 09:30)**
380 km	4h 38min + 45 minutes break	
Naples, Province of Naples, Italy		**(Day 1 15:00)**
495,8 km	6h 16min + 45 minutes break	
Mugello, Province of Florence, Italy		**(Day 1 23:00)**
140,6 km	2h 5min	(+ overnight stay 8 hours at hotel)
Rimini, Province of Rimini, Italy		**(Day 2 9:00)**
140,1 km	2h 29min	
Adria, Province of Rovigo, Italy		**(Day 2 12:30)**
192,6 km	2h 40min	
Castrezzato, Province of Brescia, Italy		**(Day 2 16:00)**
915,1 km	11h 18min + 1h30 minutes break + change of drivers	
PKC Track, Ile-de-France, France		**(Day 3 08:00)**
396,3 km	4h 52min + 45 minutes break	
Genk, Limburg, Belgium		**(Day 3 14:30)**
84,3 km	1h 12 min	
Kerpen, North Rhine-Westphalie, Germany		**(Day 3 16:30)**
367 km	4h 15 min + 45 minutes break	
Stuttgart, Baden-Wuttemberg, Germany		**(Day 3 22:00)**
283,5 km	3h 36 min	(+ overnight stay 8 hours at hotel)
Wackersdorf, Bavaria, Germany		**(Day 4 10:00)**
596,3 km	7h 12 min + 45 minutes break	
Ostrava, Moravian-Silesian Region, Czech Republic		**(Day 4 18:30)**
325,2 km	4h 11 min + 45 minutes break	(+ overnight stay 8 hours at hotel)
Pachfurth, Hoflein, Austria		**(Day 5 08:00)**
227,6 km	2h 53 min	
Graz, Styria, Austria		**(Day 5 12:00)**
1204,4 km	14h 47 + 2h 15 min break + driver change	
Thessaloniki, Central Macedonia, Greece		**(Day 6 06:00)**

Total km: 6387,4 km **Total driving time:** 89h 7 mins **Total time:** 6 days

Truck:	**Iveco Stralis 450 or equivalent**
Price:	**60.000€**
Lifetime:	**6**
Rest Value:	**30.000€**
Fuel Consumption:	**33l/100km**
Lubricants:	**1%**
Tire Costs	**2205**
Tax:	**670€/year**
Insurance:	**5800€/year**
Service:	**7000€/year**



Total Cost per itinerary: **7.013,22€**
Cost per Month: **30.293,75€**
Cost per Year: **360.525,52€**

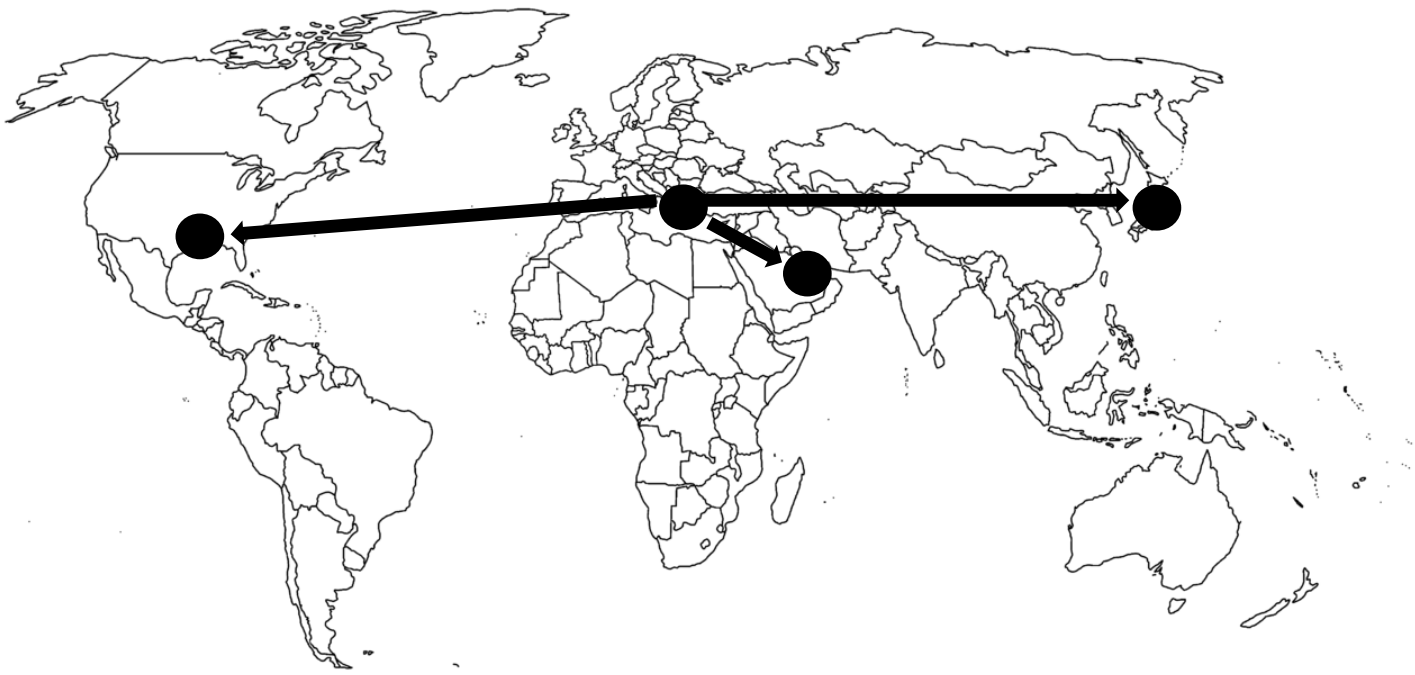
Calculations made at: https://apps.impargo.de

CONCLUSION

Creating our own distribution network is a priority in the following years as a strong distribution network is necessary for our company. Our distribution network will be created in two phases. In the first phase Aristurtle will acquire its first truck at year 4 which will soon take control of 70% of total deliveries. The remaining 30% will be transported through third party companies. This 30% includes remote tracks where delivery with the track is inefficient and the possibility that the truck needs service or repair and cannot serve at a certain point. In order to minimize this risk Aristurtle plans to acquire a second truck one year after the acquisition of its first truck.

Phase III: Hub-and-spoke network

A hub and spoke network is a centralized, integrated logistics system designed to keep costs down. Hub and spoke networks are based on maintaining one ore more hubs (factories or warehouses) where basic works can be carried out and from where cars, accumulator containers, tires and spare parts can be sent to tracks. Aristurtle has in the beginning one main hub which is our main factory in Thessaloniki, Greece. In order to further expand or to support other activities in the future, more hubs should be created throughout Europe.



FUTURE MARKET EXPANSION

This is a future vision of our company which will enable us to further strengthen our presence across the continent. Moreover by creating new hubs in others parts of the world, we can expand to other markets (Americas, Middle East, Asia etc.). This is the next big step of our company. Right now in the average scenario this is scheduled to happen after Year 6 when the company will have been established in the European market. In the best case scenario, this may happen earlier.

PRICING

Most tracks in Greece and in Europe charge their customers a standard fee in order to drive the karts for a certain time (usually 10-15 minutes). After a research we compared the prices in 38 kart tracks all over Europe in order to find out how much do kart tracks charge their customers. Most tracks charge their customers for a 10 minute ride a fixed amount of money which is shown below:

Track	Country	Charge (€)	Time (mins)	€ per min
PROMOTER KINISIA	Italy	25€	30’	0,83
Circuito Internazionale di Triscina	Italy	20€	15’	1,33
Big Kart	Italy	15€	10’	1,5
Autodromo di Franciacorta Kartodromio	Italy	18€	10’	1,8
Misanino GoKart	Italy	18€	10’	1,8
Pista Santa Venera	Italy	25€	10’	2,5
A.S.D. Riviera dei Cedri	Italy	15€	10’	1,5
Mugellino GoKart	Italy	20€	10’	2
Styria Karting Austria	Austria	13,50€	10’	1,35
Speedarena Austria	Austria	15€	10’	1,5
Daytona Raceway	Austria	14€	10’	1,4
Kartbahn Saalbach	Austria	13€	10’	1,3
Leoganger Freiluft GoKart	Austria	12€	10’	1,2
Kart-Bahn Wollen	Switzerland	33€	15’	2,2
Karting Develier	Switzerland	20€	10’	2
Michael Schumacher Kart & Event Center	Germany	12,50€	10’	1,25
Kartland	Germany	20€	15’	1,33
Megakart	Germany	14€	15’	0,93
Kart-o-mania	Germany	9€	15’	0,6
Kartbahn Winterberg	Germany	9€	8’	1,13
Kartbahn Teningen	Germany	19€	15’	1,27
Kart Arena Gollhofen	Germany	14€	10’	1,4
Le Mans Karting	Germany	35€	30’	1,17
Kartraceland Weil am Rhein	Germany	16€	12’	1,33
MK CIRCUIT	France	24€	10’	2,4
Circuit de L’Enclos	France	12€	10’	1,2
Karting 93	France	17€	10’	1,7
Karting Lille JPR	France	26€	15’	1,73
Paris Kart Indoor	France	26€	10’	2,6
Sundgau Kart	France	25€	12’	2,08
Kartland Paris	France	20€	10’	2
Drivepark	Greece	15€	10’	1,5
Kartodromo	Greece	11€	10’	1,1
AV Karting	Spain	28€	8’	3,5
Kart Center Campillos	Spain	25€	15’	1,67
Circuito de Sevilla	Spain	10€	10’	1

Lanzarote Karting	Spain	15€	8’	0,63
Karting Benidrom	Spain	21€	8’	2,63

The average price from the sample above is 1,60€ per minute, while the average time that the tracks allow a driver to race is 12 minutes. If we multiply the numbers above the average kart race costs around 19,20€.

Aristurtle’s pricing policy depends on the track and the country that our racecars are operating. To use our racecars, the customer has to pay an unlock fee plus a fixed amount per minute of racing. The unlock fee is only 2€ at all the tracks and can be free if someone invites a friend for racing through the app. The charge per minute is 1,58€ in countries considered as “high-income” and 1,44€ in “low-income” countries. Countries have been categorized based on data provided by Eurostat on GDP per capita and on how much do Europeans spend on entertainment[1]. With this price policy, a 12 minute race costs 20,96€ or 19,28€ (18,96€ or 17,28€ with promos or invitations) respectively which is very close to the European average.

Our pricing policy gives racers the chance to race as long as they want without time limitations. Moreover we think that our product is superior to those that tracks are currently offering both in drive feeling and performance.

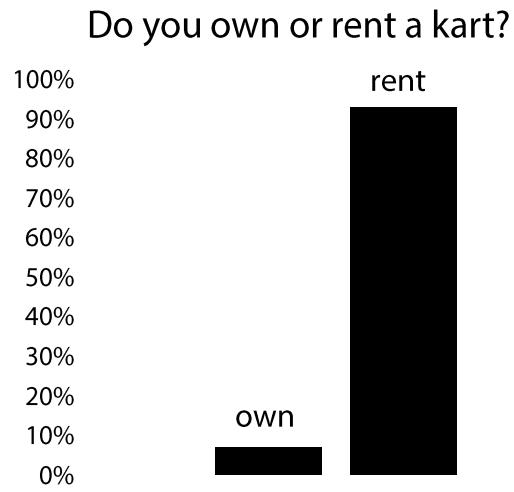
[1] https://www.thenewbarcelonapost.com/en/how-much-do-europeans-spend-on-culture-and-entertainment/

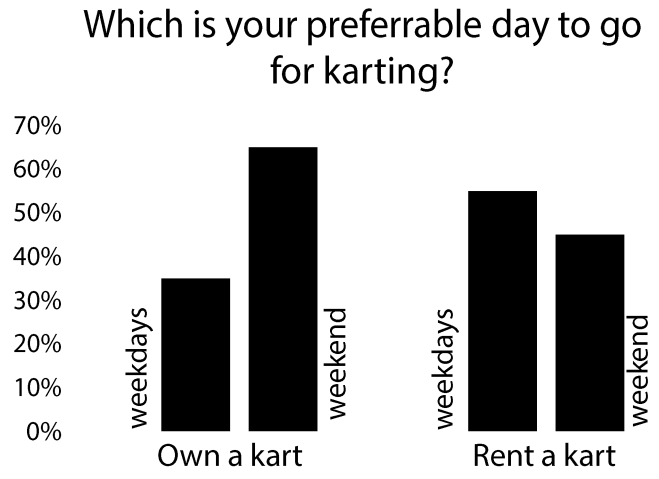
SURVEYS

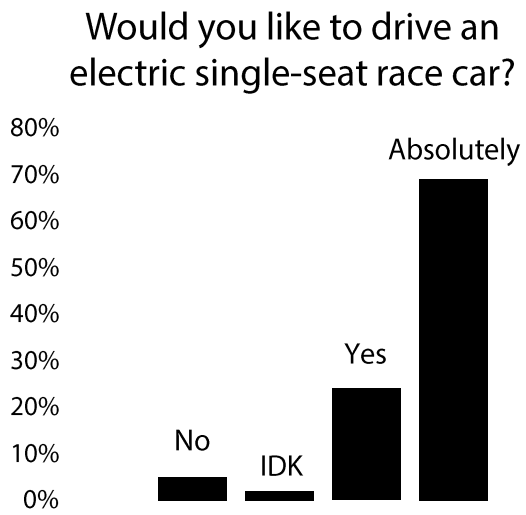
Aristurtle thinks that this time limit does not allow kart drivers to enjoy racing to the fullest. We think that drivers should be free to drive as long as they want and charged later depending on how much they have raced.

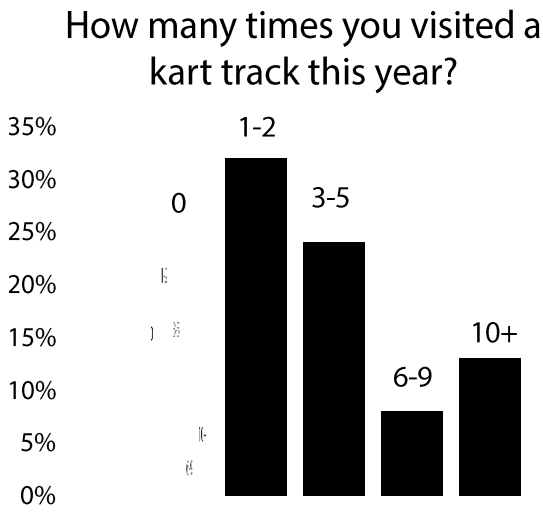
In order to know if the customers are satisfied with the time limit that tracks offer to them or if they are willing to drive more, we carried out a survey. First of all we asked some kart drivers how much they would like to race when in track if they had the opportunity (e.g. their own kart). Secondly we asked them if they were satisfied with the available time kart tracks give to them or if they wanted more. Last but not least we asked them that if they were to pay 1,5€ per racing minute on an electric formula type racing car (not an original car) how much they would like to spend in order to have a great experience in an affordable price. We asked 244 people who visited Serres Autodrome on 20&21 April 2019. Moreover we carried out another survey at Aristotle University of Thessaloniki where we asked 500 random students between 13-15 May 2019 in order to find out what they think about kart driving and racing in general. Here are the results:

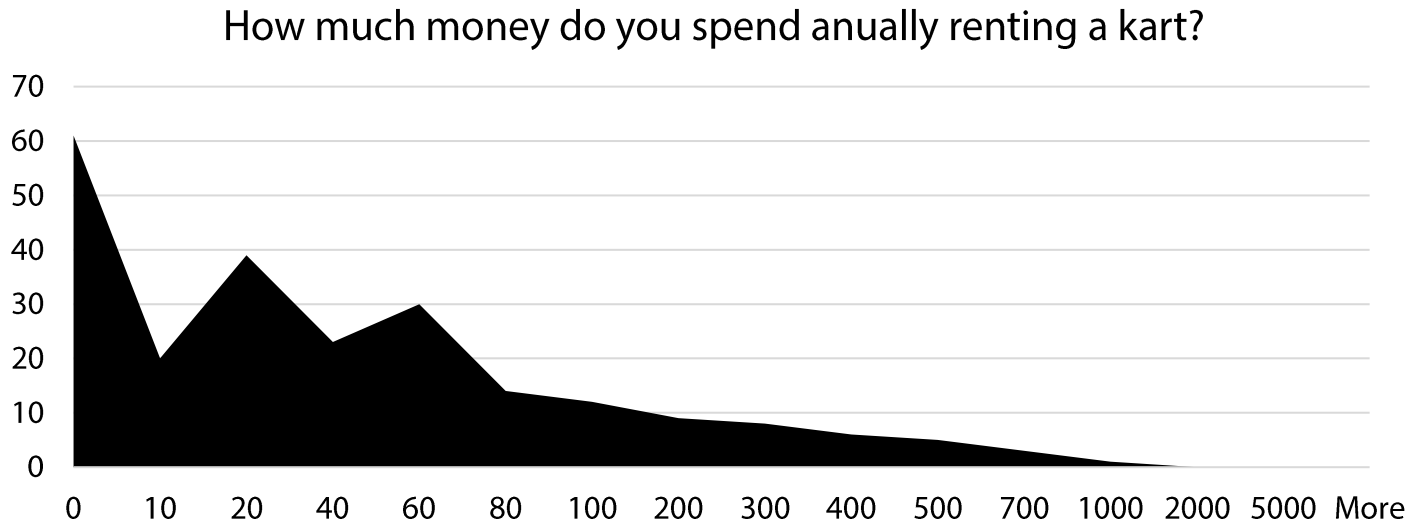
SERRES RACING CIRCUIT QUESTIONNAIRE RESULTS

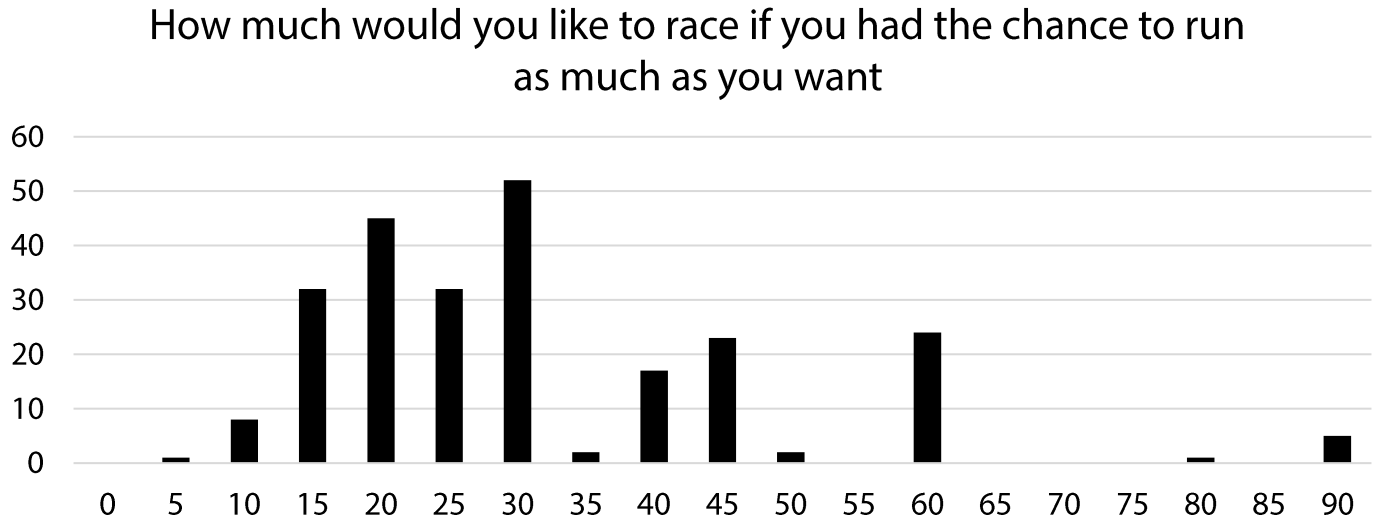


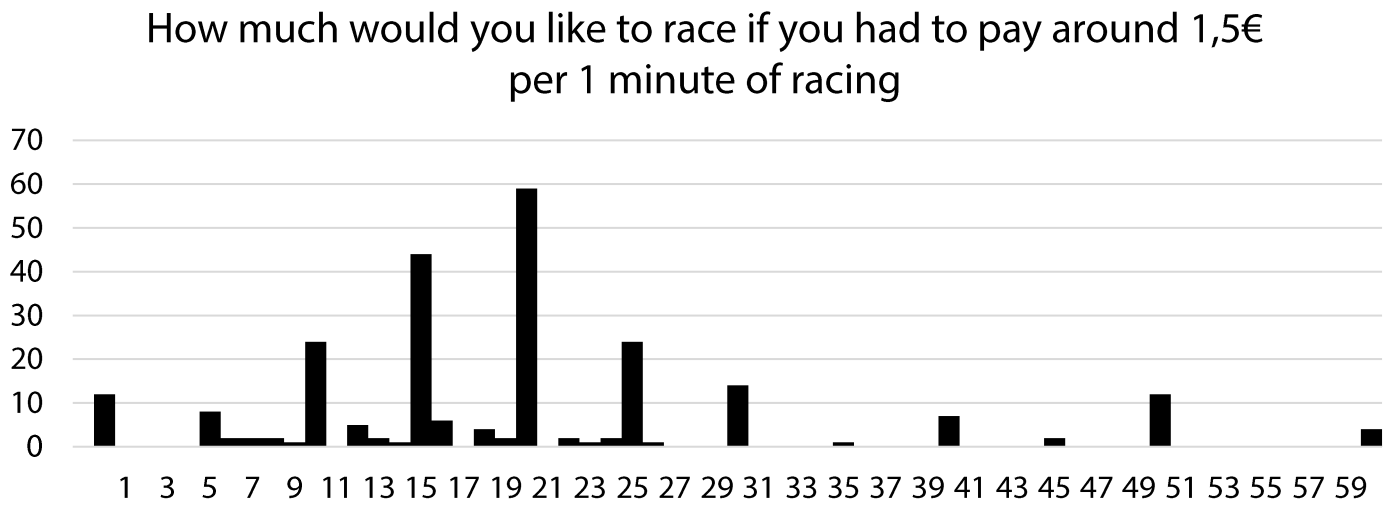



Would you like to drive an electric single-seat race car?
80%
70%
60%
50%
40%
30%
20%
10%
0%
No
IDK
Yes
Absolutely

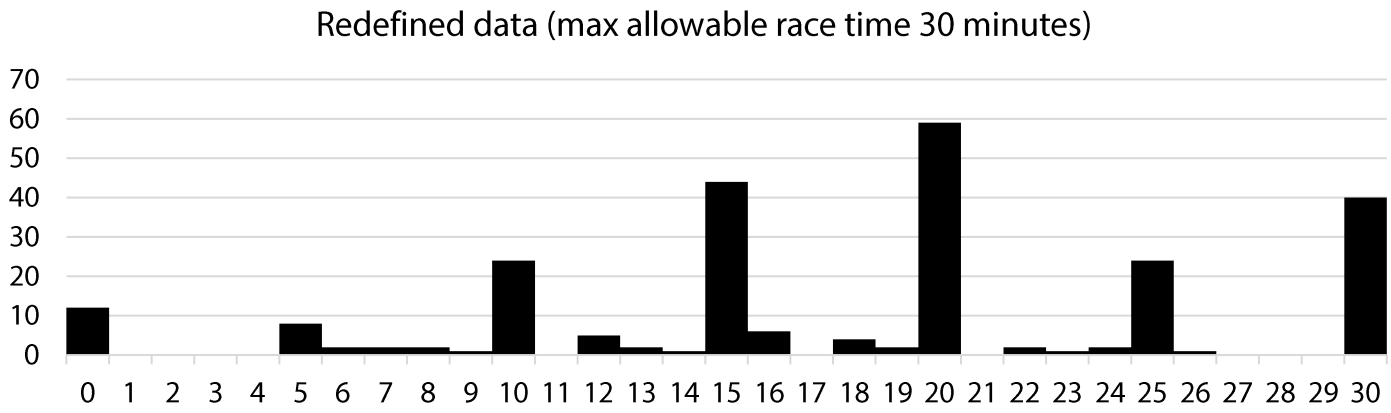

How many times you visited a kart track this year?
35%
30%
25%
20%
15%
10%
5%
0%
0
1-2
3-5
6-9
10+


How much money do you spend anually renting a kart?
70
60
50
40
30
20
10
0
0
10
20
40
60
80
100
200
300
400
500
700
1000
2000
5000
More


How much would you like to race if you had the chance to run as much as you want
60
50
40
30
20
10
0
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90



Our racecar can run for 30 minutes with a single charge. That means that a driver can race with Aristurtle's electric racecar for a maximum of 30 minutes. With this assumption, we consider that all answers over 30 minutes will be considered that these drivers will be able to drive for a maximum of 30 seconds. The redefined results are shown in the diagram and the table below.



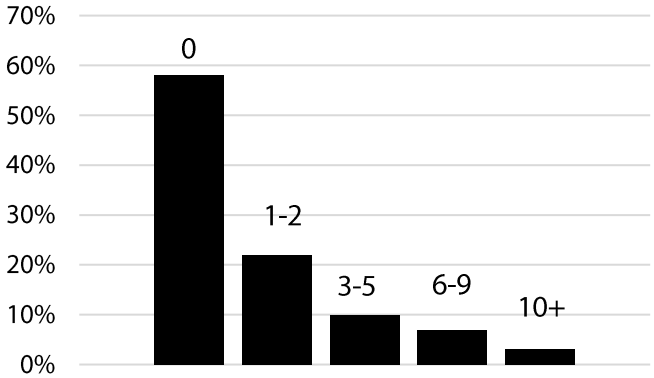
In order to get a better image of our data we remove the smallest group (0-5) and we link it it with the rest. We create 5 new groups which are shown in the table below:

Minutes	**Persons (Xi)**	**Fi**	**fi %**
0-7	12	0,0986	9,836%
7-12	32	0,2213	22,131%
12-16	53	0,209	20,902%
16-22	67	0,25	25%
22>	68	0,2212	22,121%
Total:	232	1	100%

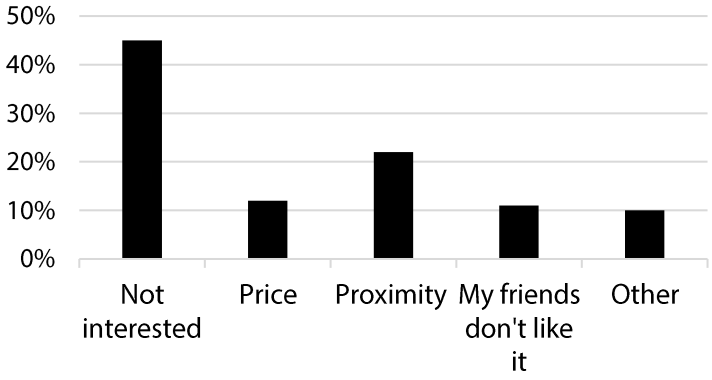
A similar survey was carried out at random students at Aristotle University of Thessaloniki. This survey had a slightly different approach. We wanted to know what people think about karting

ARISTOTLE UNIVERSITY OF THESSALONIKI QUESTIONNAIRE RESULTS

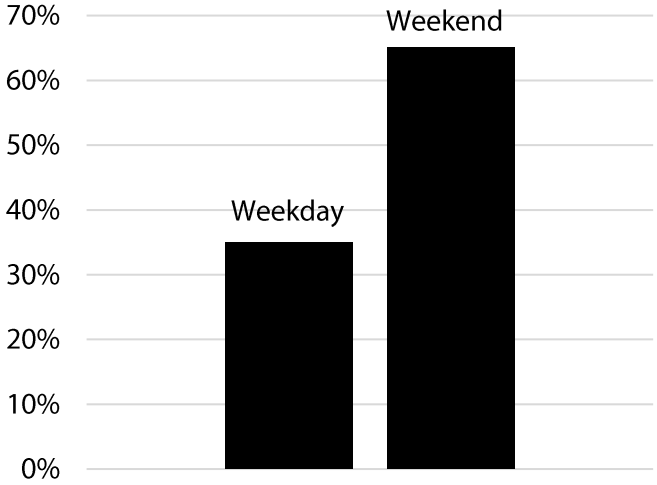
How many times you visited a kart track this year?



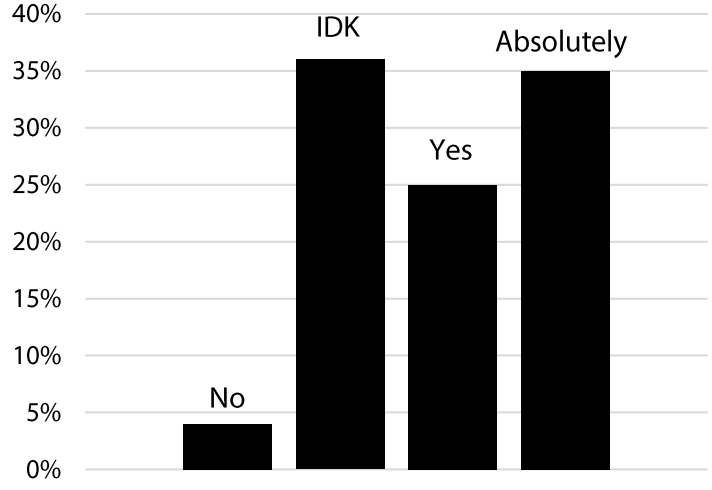
What discourages you to go for karting?



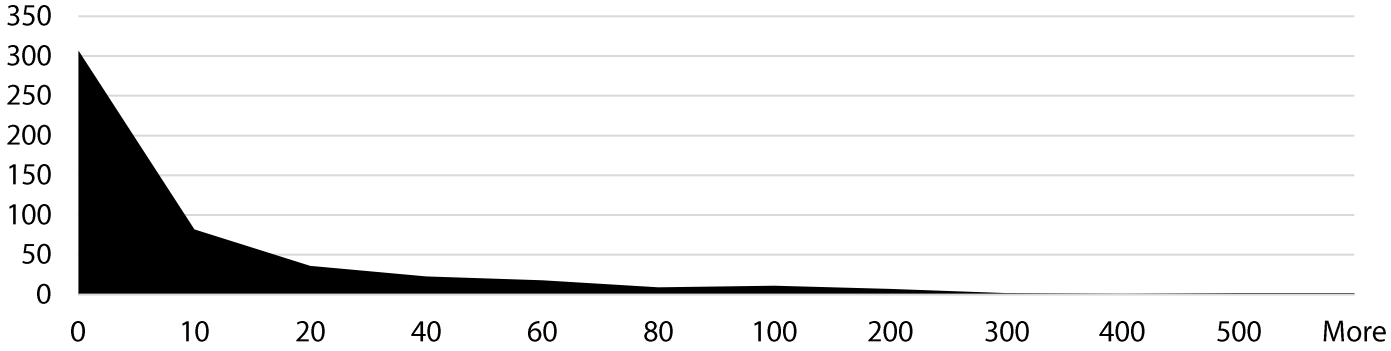
What day of the week would you go karting?



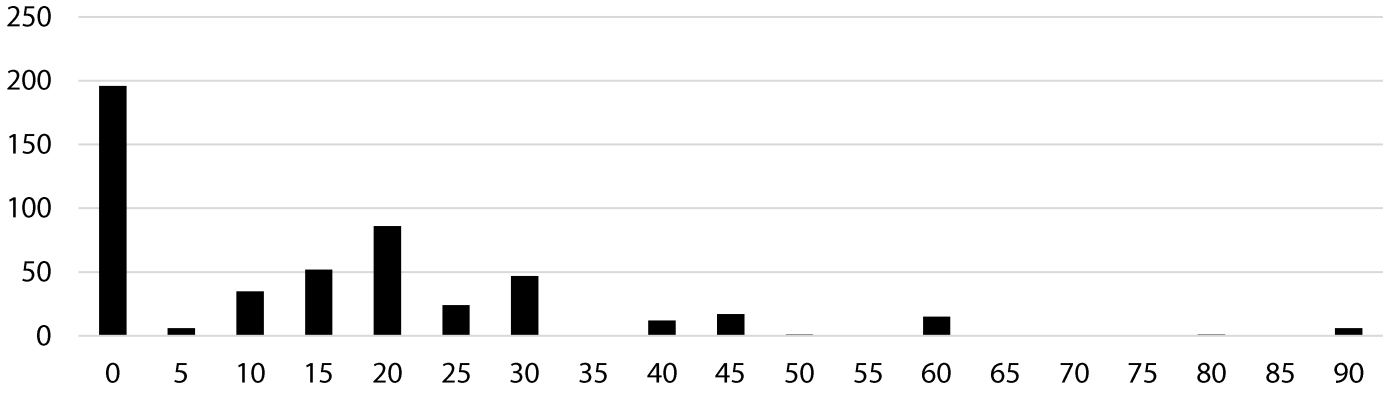
Would you like to drive an electric single-seat race car?



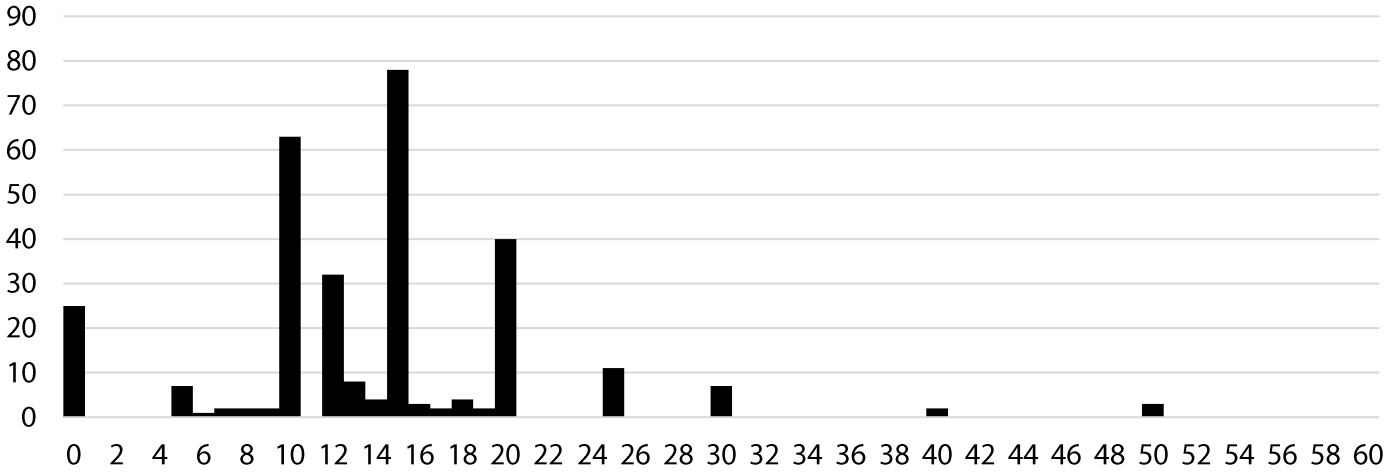
How much money would you spend anually for karting?



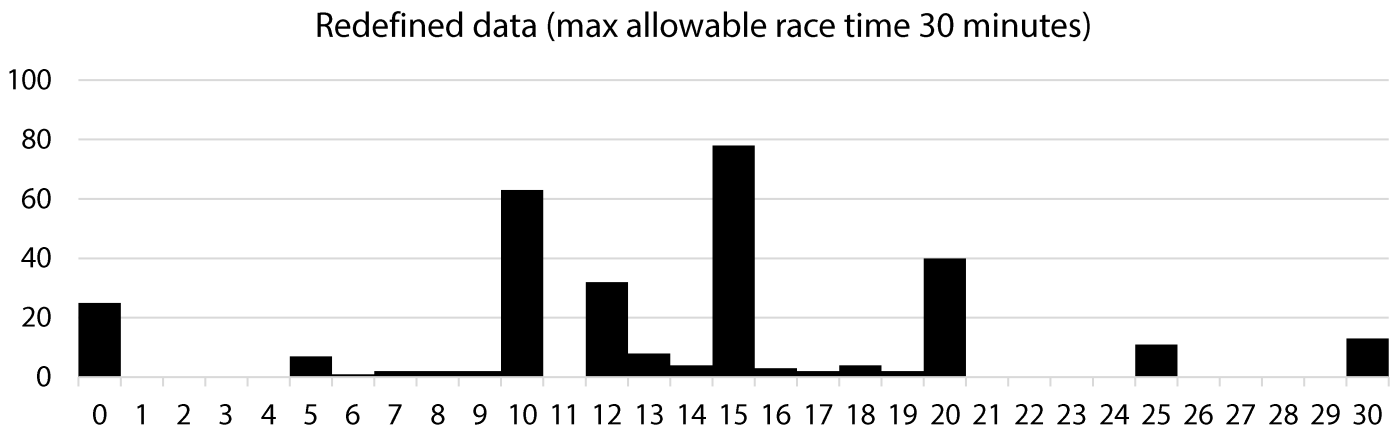
How much would you like to race if you had the chance to run as much as you want



How much would you like to race if you had to pay 1€ per 1 minute of racing



With the same assumption as we did before, we consider that all answers over 30 minutes will be considered that these drivers will be able to drive for a maximum of 30 mins and then probably will move to another available racecar. The redefined results are shown in the diagram and the table below.



In order to get a better image of our data we remove the smallest group (0-5) and we link it it with the rest. We create 5 new groups which are shown in the table below:

Minutes	**Persons (Xi)**	**fi**	**fi %**
0-7	32	0,1212	12,121%
7-12	87	0,3295	32,95%
12-16	82	0,2252	22,52%
16-22	42	0,1591	15,91%
22>	21	0,0795	7,95%
Total:	264	1	100%

CONCLUSION

W believe that people from the first questionere are the biggest part of the total customers. By combining the two surveys we conclude that

Minutes	**fi**	**fi %**
0-7	0,07903	7,90%
7-12	0,21476	21,47%
12-16	0,26107	26,11%
16-22	0,23728	23,73%
22>	0,20786	20,79%
Total:	1	100%

Based on our survey we consider that people who will visit a kart track where our racing cars are available on a random day will drive for the corresponding time according to the probability described on the table above. We think that these results are very reasonable. 8% of the total users of our racing car on a particular day will drive for less than 7 minutes. Those will be the ones that will simply try our service. After that, 21% will drive for more than 7 minutes and less than 12 because they are more price sensitive. 26% will use our racing cars for more than 12 minutes and less than 16 minutes enjoying the complete experience.

CUSTOMER SUPPORT

Our company's main goal is to provide the best customer experience and service to all our customers. That' s the main reason why our customer support is our number one priority.

Technical Support

Track owners can contact our expert technicians at any given moment in order to report any malfunction of the car or any potential damage. Our technicians will then be given access to the racecar through remote control[2]. Most problems will be solved through a firmware or software update. If the problem is not clear yet, our technicians will be the next working day possible at the track where the malfunctioned car is located. If there is still no solution, the racecar will be sent back to our factory for further investigation while a replacement vehicle will be delivered to the track within 10 working days.

Real-time car surveillance

Track owners can easily see in real time any malfunction at any of the racecar's systems at any time thanks to our sophisticated telemetry system. This allows track owners to connect via Wi-Fi to the car and see the data from all sensors. In that way service can be easier because we may take a glimpse of the malfunctions. Most of the times some problems can be fixed with a software update.

Wi-Fi ensures also the protection of this system. Access to the vehicle's system can only be given by entering the developer mode, only then the racecar will be accessible via Wi-Fi by a PC.

Spare Parts Availability

New spare parts are available to all tracks where there are Aristurtle's cars in order to fix any potential damage as soon as possible. Delivery of spare parts is guaranteed 1-2 working days after the order. This can be feasible due to Aristurtle's smart distribution network which has Thessaloniki as its center where our main warehouse is based.

[2] Access to the racecar can be made only via Wi-Fi connection from a PC that is near the racecar. Access to the racecar by our technicians is only possible through a remote control software (TeamViewer).

Vehicle Warranty

Battery

The Aristurtle lithium-polymer battery and Drive Unit are extremely sophisticated powertrain components designed to withstand extreme driving conditions. You can rest easy knowing that Aristurtle's carefully designed Batteries are backed by this Battery Warranty, which covers the repair or replacement of the Battery, when its capacity drops below a certain point.

Aristurtle knows that LiPo batteries have limited life cycles and that the batteries of the accumulator container need to be changed after the capacitance drops below a certain point.

If your Battery requires repair, Aristurtle will repair the unit, or replace it with a new, reconditioned or re-manufactured part at the sole discretion of Aristurtle. The warranty replacement will restore the batteries to a "like new" condition.

To provide you with even more assurance, this Battery Warranty will also cover damage to your vehicle from a Battery fire even if it is the result of driver error. (Coverage will not extend to damage that had already been sustained before a Battery fire occurred, or to any damage if the Battery fire occurred after your vehicle had already been totaled.)

The vehicle's Battery is covered under this Battery Warranty for a period of 1 years (or 500 life cycles whichever comes first) with minimum 70% retention of Battery capacity* over the warranty period.

*For warranty claims specific to Battery capacity, the replacement Battery will be in a condition appropriate to the age and mileage of the vehicle sufficient to achieve or exceed the minimum Battery capacity for the remainder of the warranty period of the original Battery.

During the battery reconstruction period the accumulator container of our car is opened, and all the cells are changed with new ones.

Despite the breadth of this warranty, damage resulting from intentional actions (including intentionally abusing or destroying your vehicle or ignoring active vehicle warnings or service notifications), a collision or accident (excluding from Battery fires as specified above), or the servicing or opening of the Battery by non-Aristurtle or non-certified personnel, is not covered under this Battery Warranty.

Damage to the Battery resulting from the following activities is also not covered under this Battery Limited Warranty:

• Damaging the Battery, or intentionally attempting, either by physical means, programming, or other methods, to extend or reduce the life of the Battery;

• Exposing the Battery to direct flame (excluding from Battery fires as specified above); or

• Flooding the Battery.

The Battery, like all batteries, will experience gradual energy or power loss with time and use. Loss of Battery energy or power over time or due to or resulting from Battery usage is NOT covered under this Battery Warranty, except to the extent specified in this Battery Limited Warranty. See your owner documentation for important information on how to maximize the life and capacity of the Battery, failure to follow these recommended battery maintenance and charging procedures shall void this Battery Warranty.

Tires Change Program

Due to their harsh usage, racing tires need frequent change (every 45 days or 600 km whichever comes first). These costs have been taken into assumption and they are covered exclusively by Aristurtle.

Our sophisticated tires change program reliefs greatly our number one partners - tracks.

WHY CHOOSE US?

The low maintenance costs are the main reason to choose Aristurtle's electric racecars. Our real-time car data, less mechanic parts which are easily perished, the reliability of an electric motor, change of tires every 45 days or 600 km whichever comes first whichever comes first the Battery 5-year Warranty guarantee to any customer that he will have the best customer experience after the initial purchase of the race car.

Moreover, the price of a full charge (25km) is 1€ (assuming the price of electricity at 0,10€ per KWh) instead of 7,5€ for a 5 liter (assuming the price of gas at 1,56€ per lt).

Provide customer support & maintenance services, everywhere.

Direct flights from our base in Thessaloniki, Greece.

We consider very important the customer support service and we want to satisfy both the intermediary customer –the tracks– and the final customer –the racers– at all times. Wishing to offer the best possible service to its customers, Aristurtle has qualified teams providing both quality listening, specific advice and real follow-up.

Even if we are working every day to benefit from the most reliable race cars in the world, there is always a possibility of a problem or anomaly. Our customer service will be always there to find a solution.

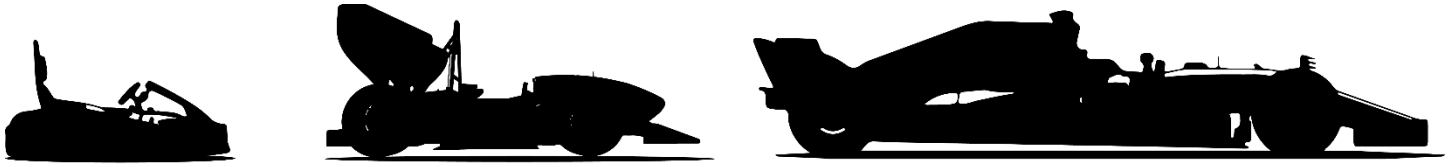
High skilled staff is ready to respond to all your questions and concerns by phone or on site. All our racecars can be monitored through Wi-Fi. By having access to these data we can find the failure and quickly fix it.

If there is no solution via this method, ARISTURTLE's expertised staff is ready to be everywhere around the world the next day possible to provide you a complete and customized solution. Thessaloniki Airport has weekly direct flights to almost all Europe so we can be anywhere in the next working day possible.

MARKET ANALYSIS

“Go-karting is for kids”

“I will never drive a formula racecar”



“Formula drivers are only rich people”

“Kart- racing is not enough”

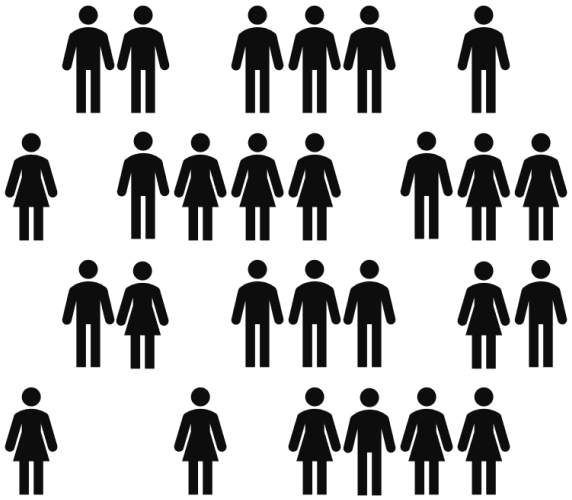
THE GAP

Our product wants to cover the huge gap between a kart and a formula racecar. Providing much more than a go-kart, and giving to the public the opportunity for the first time ever to taste a formula experience.

Formula racing does not have to be for the privileged few.

TARGET

Figures for the population of Europe vary according to how one defines the boundaries of Europe. In 2019 the population was almost 742 million, defining Europe's boundaries, and including the European parts of the countries of Russia and of Turkey. Some current and past factors in European demography have included emigration, ethnic relations, economic immigration etc.

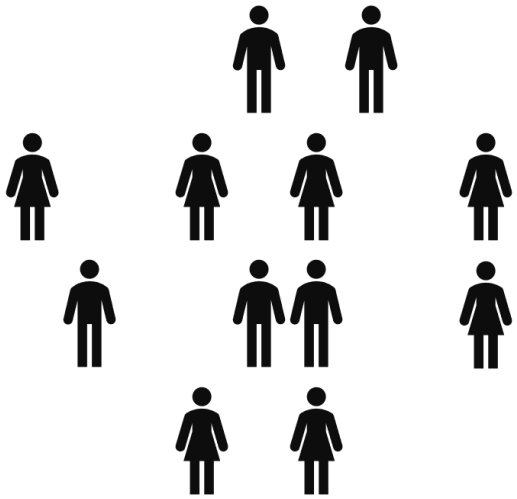


According to surveys, a 45% percentage of the aforementioned population, more than 333,6 million Europeans, belongs to a highly engaged and educated group, that is ambitious in its career and adventurous in trying new things. The average Experience Seeker is willing to taste new things and it is considered that these people tend to try hobbies that increase adrenaline levels. Our service is an appealing experience, even if someone has never attempted something like this before.

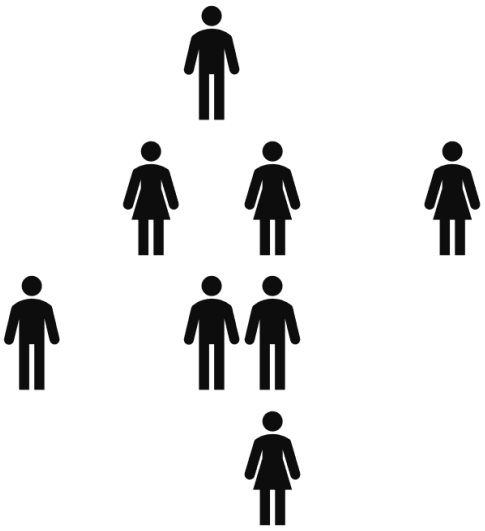
Aristurtle offers an experience that refers to a remarkable amount of the aforementioned percentage. More specific the 64.265% percent of our target group is aged between 14 and 64 years old, percentage which corresponds to 213.5232 million. Motorsport is for all ages and genders. However, we do think that primarily 14-25 year old will be the bigger percentage of our customers.

GROUP

The package we offer is considered to be affordable for the average European. And clearly our calculations were correct considering that more than 60% of them are willing to spend the amount of money we charge to try the whole racing experience that we offer.



Moreover, a percentage of more than 6.5% of Europeans belongs to formula motorsport fans, a percentage that we expect to be increased, because more and more people are interested in motorsport, since social media was used to attract successfully as many as possible. In addition, a percentage of 44% of Europeans tend to try recreational physical activities, a percentage that leads to the consideration that these people are candidates to test our race car. Finally , a percentage of 6%, which is a number of 12,82 million have declared that driving a race car, is one of their favorite sport.

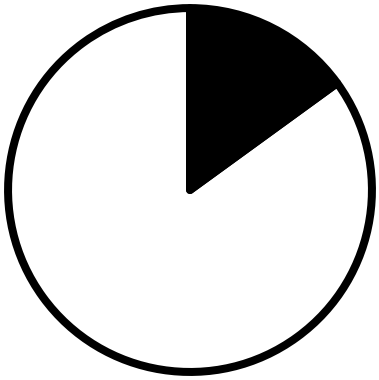


As we become more and more specific, it is important to mention that a percentage of 5% is actually active in motorsport, a percentage corresponding to a number of 10,68 million people, who are considered to be our actual potential customers in Europe.

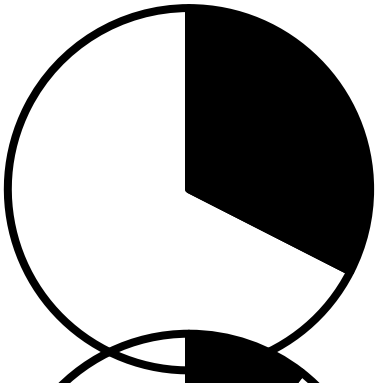
Motorsport has evolved from the recreational level into a high-profile international sport attracting millions of viewers worldwide. The goal of a racing driver is typically to achieve the fastest possible lap time. Unlike the extensive body of knowledge on the technological aspects of racecars, comparatively little is known about the motor, perceptual, and cognitive skills performance of an athlete with physical disabilities in motorsports. Knowledge of these skills may aid in designing training methods for racing drivers with special abilities and improve driver-vehicle interfaces for motorsport applications.

We strongly believe that it is important to include people with special abilities in our target group. We want to give them a chance to be part of the community our services will create.

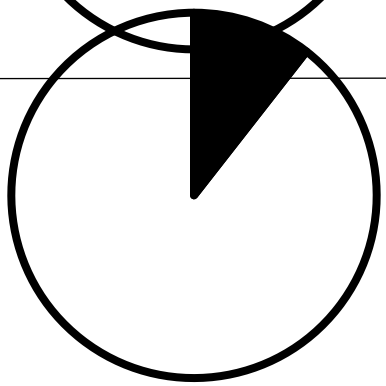
An important percentage of 15% of the world's population has a significant disability, which practically means that 1 in 5 people belong to a group of people who have some special needs. More specifically, the 32,5% of those people face a physical disability



15% of world population has a disability



32,5% are physical



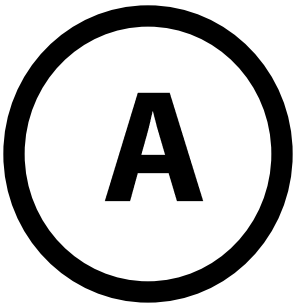
10,5% are lower body related

We consider that it is important for this big percentage of the population to have the opportunity to experience racing as a hobby and be able to be a part of and explore the motorsport world connecting with people with the same interests worldwide.

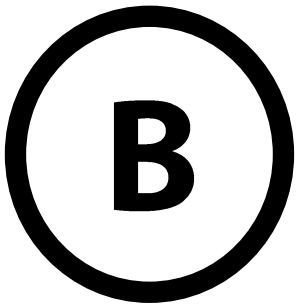
To do this we designed an alternate steering system which replaces the usual one. Brake and acceleration pedal pads allow the racecar to be controlled without using your feet.

“Motorsport for all” – our motto.

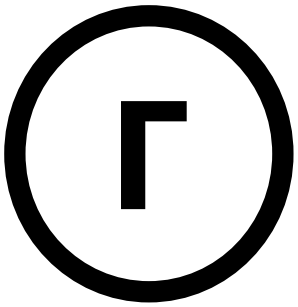
MARKETING STRATEGY



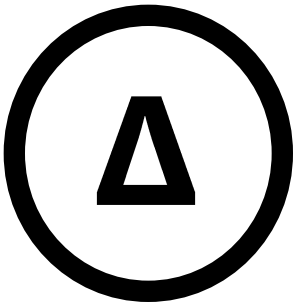
Brand Awareness Aristurtle has a specific advertisement budget and spends an amount of money on promotional actions. It uses social media platforms to connect with the customers and creates a buzz among the people through its application, which was manufactured to rise the brand of the company and increase its demand There are also two dominating forces for advertising that we take advantage of : Google, Facebook and Instagram Ads that help us connect with users, create demand and introduce our brand to new customers.



Interest By the time we have our customers' attention, it is very important that we keep it. The combination of the affordable price that we offer and the whole racing experience through the application allow the racer to share his races, photographs or thoughts. Brand positioning strategies are directly linked to consumer loyalty and consumer-based brand equity. We will strive for our brand to be perceived as favorable, different and credible in consumers' minds.



Desire Let's assume the advertiser has grabbed the consumer's attention, and kept it. Now, the ad must create desire. The story must become relevant in order to make the product irresistible. We have focused our positioning strategy on being perceived as "approachable, easy-to-race, and fun".



Action Our actions will have great impact. From the first year it is a fact that the owners of the tracks will be profitable and benefit from our products, which gives automatically value to our company. We introduce the next generation of racing and make access to formula racing friendlier and easier. Also, we will portray the benefits and capabilities of electric racecars.

COMPETITOR ANALYSIS

Aristurtle is a company which manufactures electric “formula-type” racecars. Aristurtle aims to fill the market gap between cheap and the track-dominant go-karts and high performance racecars, all these under the umbrella of sharing economy which makes easy for tracks to operate our racecar instead of traditional go-karts they use now.

Our main goal is to give everyone a real racing experience in an affordable way. Although our company tries to fill a market gap and there is no direct competitor, we are competing other companies that want their products to be available at most tracks like kart manufacturing companies (like Sodikart, Tonykart etc.). Moreover we consider as competitors companies which create high performance racing-leisure cars like KTM, Ariel and Caterham. In the following lines we will compare Aristurtle versus currently active companies that are considered our competitors.

ARISTURTLE thinks that GoKarts despite being cheap to acquire and to maintain they do not provide a “real” racecar feeling. In that way Aristurtle wants to offer a service to the level of Ariel Atom, KTM X-Bow, Drakan Spyder, Caterham Seven-Series and BAC Mono and also to the level of Formula 4 race cars such as Crowford, Tatuus and Mygale to everyone in an affordable and accessible way.

ARISTURTLE wants offer the racing experience to the fullest. That’s why our main competitors on the market are the companies stated above. It is estimated that the sales price of Aristurtle’s company model car is around 30.000€ and its weight 240 kg.

ARIEL MOTOR COMPANY (UK)

Ariel Motor Company Ltd is a low-volume performance motor vehicle manufacturing company founded in 1991, in Crewkerne, in Somerset, England.The company manufactures the Ariel Atom, an extremely light, high performance car, powered by a Honda Civic Type-R engine and gearbox. Apart from Atom, Ariel produces ACE, a motorcycle and NOMAD a buggy designed along the same principles as the Atom.Ariel takes all aspects of service seriously. Ariel promises that from an oil change to a new build ,the customer gets the same attention to detail, the same care and the same high standard, and according to customers’ confessions, Ariel’s services make someone believe that he is driving a new car. Ariel provides its products in USA, Europe and Australia and last model price was 88.760€ and its weight was 595kg.

KTM

KTM sportmotorcycle AG is an Austrian motorcycle and sports car manufacturer owned by KTM Industries AG and Indian manufacturer Bajaj Auto. It was formed in 1992 but traces its foundation to as early as 1934. Today, KTM AG is the parent company of the KTM Group. KTM is known for its off-road motorcycles (enduro, motocross and supermoto). Since the late 1990s, it has expanded into street motorcycle production and developing sports cars – namely the X-Bow. In 2017 KTM introduced a new version of the X-Bow mode named X-Bow GT4. KTM since 2012, KTM has been the largest motorcycle manufacturer in Europe for four

consecutive years. Globally, the company is among the leading off-road motorcycle manufacturers. KTM's model is the world's first production car full of carbon composite monocoque, and that's the reason why it is considered one of the most qualified cars. KTM's service and reliability is considered to be remarkable, because the company has dealer spots almost in all over the world. KTM's last model price was 65.000€ and its weight was 975kg. KTM's service policy is one of the most organized because the company has many service spots all over the world ready to fix damages and serve customers.

DRAKAN MOTORCARS

The Drakan was developed by us and a team of specialists, including Sector111, Palatov Motorsport, Zukun Plan and more. The Drakan is a variant of the Palatov D2 that has been redesigned to meet the vision of a track expert. Drakan's Motorcars last model price was 89.108,03€, and its weight was 907kg, its chassis TIG is welded chromoly tube. Drakan's dealer spots are only in US, Canada and north East.

CATERHAM CARS

Caterham Cars is a British manufacturer of specialist lightweight sports cars established in Caterham, Surrey, with their headquarters in Crawley, Sussex. Caterham announced that it would be creating a karting series starting in 2013. It was stated that the aim of this karting series was to make it easier for people to enter motorsports by providing a cheap karting series in which they could start off. Caterham's latest model, seven 270 is manufactured with tubular chassis and its weight is less than 500kg and its price was 32.550€. The company's service policy is committed to fix the damaged part of the vehicle with factory trained technicians and a guarantee of using only genuine Approved Caterham Parts.

BAC

Briggs Automotive Company (BAC) is a British supercar manufacturing company based in Speke, Liverpool. The company produces the Mono, a single seater road-legal sports car launched in 2011, and its chassis is constructed by carbon fibre composite material. BAC's latest model weight is around 540 kg and its price around 27.520€. BAC pays a lot of attention in the design and overall architecture of the vehicles.

GO-KART MANUFACTURING COMPANIES

Karts are a cheap option for rentals at tracks and they are the dominant service tracks are offering right now. Competition go-karts satisfy the philosophy of extreme simplicity. Karts until today have been developed mainly on the basis of experimental tests and personal experience of skilled technicians. However, the increasing technological content of these vehicles nowadays requires design and analysis criteria that are peculiar to modern engineering.

As Aristurtle wants to be the primary choice for all the tracks, our main competitors are gokart manufacturing companies who are the main supplier of "racing cars" in all tracks. Taking into consideration the main characteristics of their entrance in the market, ARISTURTLE is put into comparison with them. The top companies in the Kart Manufacturing companies are SodiKart and Tonykart.

SODIKART

SODIKART provides rental karts, racing and leisure karts, equipment and accessories for karts, races, and events organizations. The company was founded in 1981 and is based in Coueron, France. SODIKART, describes itself as a world leader in karting industry, supported by numerous patents and a constant pursuit

of excellence in serving its customers. SODIKART is a financially sound and profitable company since its creation and it is present on the five continents. SODIKART has dealers all over the world who sell their products and services in 38 countries across the globe. SODIKART, provides a wide range of racing, rental and second hand karts as well as electric and 2-seater karts. Its average price is 8.800€ and weight is 498kg.

TONY KART

TONY KART is an Italian company (a brand of OTK Kart Group), that produces racing kart chassis. It was founded in 1958 by Antonio "Tony" Bosio. It is based in Prevalle near Brescia in northern Italy. TONY KART chassis have been used to win several races and championships both nationally and internationally. TONY KART'S product lines include the Kosmic Kart chassis as well as Exprit, Red Speed, Trulli (few years ago) and Alonso (FA Kart) chassis. Vortex Engines company is part of the OTK Kart Group line products. TONY KART won the 1998, 2000, 2004 and 2006 karting World Championships with driver Davide Fore as well as the 2007 and 2008 titles with Marco Ardigò. The kart is priced at 9.987€ and weights 570kg.

LIFE CYCLE ASSESMENT

PRODUCT LIFE CYCLE

All products have a life cycle. Older, long-established products eventually become less popular, while in contrast, the demand for new, more modern goods usually increases quite rapidly after they are launched. Companies should understand the different product life cycle stages, and that the products they sell all have a limited lifespan, most of them will invest heavily in new product development to make sure that their businesses continue grow.

Cars have usually short product life cycle as new models with new technologies come to the market. From the other side if we see our business model as a whole, leasing is still in the introduction stage and renting assets instead of owning them is the new trend all over the world. Introducing race car leasing to tracks is the next step to the kart and racing industry and has a lot of potential into the future.

INTRODUCTION

When our products will hit the tracks there will be curiosity . Advertisement, information and some promotions will help our product to gain popularity and stimulate the demand. The fact that we are getting straight into tracks, with targeted advertisement, will attract many car enthusiasts to race with our racecar.

The initial stage of the product life cycle is all about building the demand for the product with the consumer, and establishing the market for the product. The key emphasis will be on promoting the product and attracting not only racing enthusiasts, but normal people who want to taste the racing experience we offer.

As people are learning our product and how to use it there is an increase in car's usage. This increase is also depended on which track our cars are based. Tracks with more visitors and events tend to increase our cars rental. Tracks close to big cities are likely to have smaller introduction periods due to the fact that there is more buying public. The introduction period is estimated to last for 2-3 months depending on the track.

GROWTH

The Growth stage is the second of stages in the product life cycle, and in our case this is the key stage for establishing our position in a market, increasing sales, and improving profit margins. This is achieved by the continued development of consumer demand through the use of marketing and promotional activity, combined with the reduction of manufacturing costs. Our goal is to quickly move from Introduction Stage to Growth Stage. This will help to rapidly increase sales and help to furthermore extend the tracks that are willing to cooperate with our company.

Our marketing campaigns during the Introduction stage tend to benefit from all the buzz and hype that surrounds the launch of a new product. But once the product becomes established and is no longer 'new', a more sophisticated marketing approach is likely to be needed in order to make the most of the growth potential of this phase.

The benefits from this stage is that costs are now reduced as production increases to meet demand, and we are able to reduce our costs through economies of scale, and established routes to market will also become a lot more efficient. During the Growth phase more and more consumers will become aware of the new product. This means that the size of the market will start to increase and there will be a greater demand for the product; all of which leads to the relatively sharp increase in sales that is characteristic of the Growth stage.

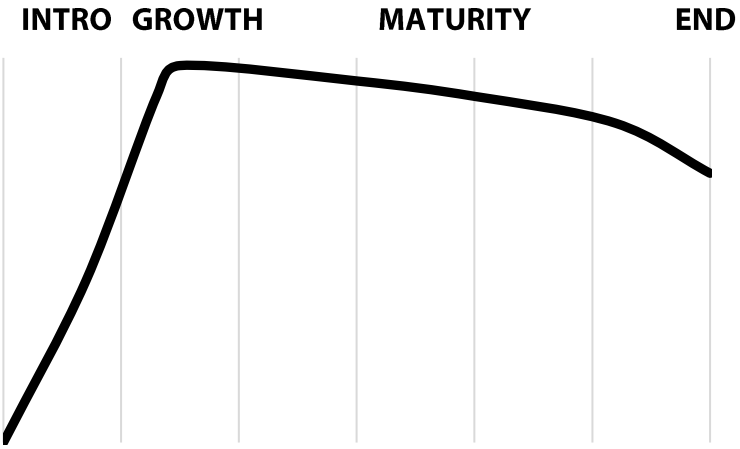
The standard Product Life Cycle Curve typically shows that profits are high during the Growth stage. But in order to try and ensure that our product has as long a life as possible, it is necessary to reinvest some of those profits in marketing and promotional activity during this stage, to help guarantee continued growth and reduce the threat from the competition.

During the growth phase there is usually a second batch of racecars that we deliver at the track in order to achieve the maximum usage of racecars. The growth phase lasts for 9 to 12 months after the end of the introduction phase.

MATURITY

After the Introduction and Growth stages, a product passes into the Maturity stage. The third of the product life cycle stages can be quite a challenging time for manufacturers. In the first two stages companies try to establish a market and then grow sales of their product to achieve as large a share of that market as possible. However, during the Maturity stage, the primary focus for most companies will be maintaining their market share in the face of a number of different challenges.

At the maturity stage and after the steady increase in sales the market starts to become saturated as there are fewer new customers and a lot of competition. Profits will have to be shared amongst all of the competitors in the market, and with sales likely to peak during this stage, any manufacturer that loses market share, and experiences a fall in sales, is likely to see a subsequent fall in profits. This decrease in profits could be compounded by the falling prices that are often seen when the sheer number of competitors forces some of them to try attracting more customers by competing on price.



END PHASE

The last of the product life cycle stages is the Decline stage, which is often the beginning of the end for a product. When you look at the classic product life cycle curve, the Decline stage is very clearly demonstrated by the fall in both sales and profits.

During this final phase of the product life cycle, the market for a product will start to decline. Consumers will typically stop buying the product in favour of something newer and better, and there's generally not much a manufacturer will be

able to do to prevent this. As a result of the declining market, sales will start to fall, and the overall profit that is available to the manufacturers in the market will start to decrease. Ultimately, for a lot of manufacturers it could get to a point where they are no longer making a profit from their product. As there may be no way to reverse this decline, the only option many business will have is to withdraw their product before it starts to lose them money.

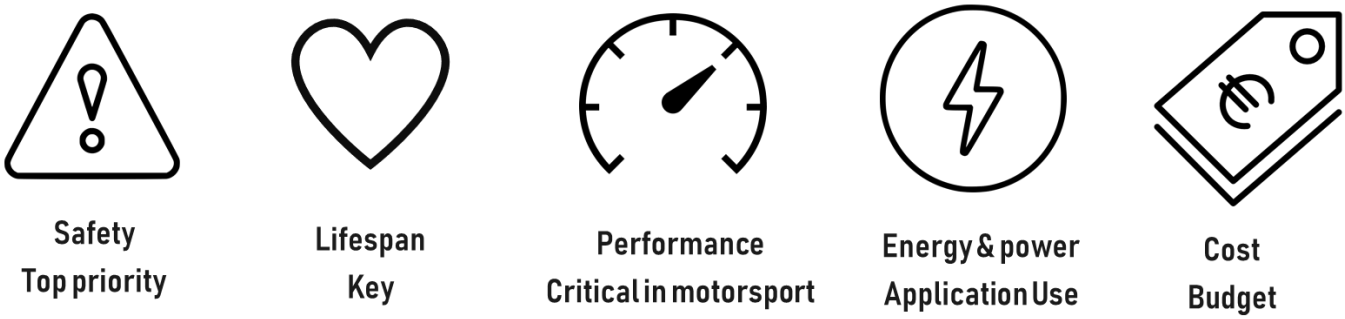
Even during the Ending stage, there may be opportunities for some companies to continue selling their products at a profit, if they are able to reduce their costs. By looking at alternative manufacturing options, using different techniques, or moving production to another location, a business may be able to extend the profitable life of a product. For some manufacturers, another way to continue making a profit from a product during the Decline stage may be to look to new, cheaper markets for sales. In the past, the profit potential from these markets may not have justified the investment need to enter them, but companies often see things differently when the only other alternative might be to withdraw a product altogether.

BATTERY LIFE CYCLE

PRODUCTION

The batteries are the most important part of our electric racecars. The reliability and the efficiency of our electric racecar depends highly on the batteries. That's why this choice is very crucial for our company.

The cells of our batteries used in the racecar, is LiPo type 8000mAh . The milliampere hours (mAh or mA-h) that are shown in the above table represent the thousandths of an ampere hour (that equal 3.6 coulombs). The ampere hour is used as the unit of electric charge. Theoretically, a 8000 mAh capacity battery can supply 8000 mA for one hour. Our car has 252 cells in 84s3p configuration. Generating around 9kWh of energy



CELL SUPPLIER

Aristurtle has signed a deal with SUNLIGHT S.A., a world leader in battery manufacturing based in Xanthi, Greece. An important reason for our choice is the low transportation costs and the reliability of the company in the battery sector. Although SUNLIGHT recently started to manufacture LiPo batteries, their experience in the energy storage market for more than three decades guarantees the best results. This will enable us to make large orders of battery cells at low price.

SYSTEMS SUNLIGHT S.A. is specializing in the development and production of batteries and energy storage systems for industrial and advanced technology applications. In its 3rd decade of sustained growth, the company today ranks among the world's top providers of energy storage manufacturers.

PROCESS

As we wanted to have a complete view about the manufacturing process of the batteries, we got the chance to visit the assembly line of Sunlight and we followed step-by-step how LiPo batteries are manufactured.

Sunlight's manufacturing plant is certified for applying management systems for Quality (ISO 9001:2008), Environment (ISO 14001:2004), Occupational Health and Safety (BS OHSAS 18001:2007), Anti-bribery (ISO 37001:2016) and Compliance (ISO 19600:2014). Moreover the company is using modern automatic production process, with state of the art machinery, under high-level process control and Quality Assurance. Batteries are constructed with respect towards the environment.

PRODUCTION STEPS

We have to have a comprehensive picture of the battery's life cycle contribution.

First of all, we have a Cradle-to-gate assessment which describes the partial product lifecycle from the manufacture ('cradle') to the factory gate.

Raw materials like copper, aluminum and steel are extracted which will be used for anode and cathode construction. Then some of these materials are processed and they are delivered to SUNLIGHT.

Then, the manufacturing of Li-Po cells can be divided into about ten steps. Additional to these are quality checks and inspection processes.

00 First, the electrode materials are mixed and prepared (material mixing).
01 The mixture is pasted onto metallic substrates (coating).

02 This is followed by drying, calendaring and slitting. Calendaring means rolling the material out to the desired thickness.
03 The slitting process brings the electrode bands to their planned final dimension.
04 Deflectors are attached to both electrodes (electrode assembly).
05 They are wound around the core together with the separator, usually a three-layered polyolefin (winding). The core consists generally of a flat pin.
06 The winding is placed in the cavity of a foil, which is partly folded and laid over the winding. The foil is welded to seal the sides.

These processes can be carried out in a normal atmosphere. The subsequent steps place higher demands on the production system.

_The packed winding must be dried in a vacuum under complete exclusion of moisture.

_Next is the injection of the electrolyte with the conductive salt, the degassing and the sealing of the cell.

_Since the cells are manufactured in a discharged state, they must now be formed and activated.

_The first charging takes place at this stage (electrical activation).

_The process is completed with tests of voltage over time (in which cells with short circuits are removed), capacity, quality and safety (x-ray full inspection and packaging inspection).

During manufacturing process, there are many risks for the environment. Lithium battery production requires extracting and refining rare earth metals, and is energy intensive because of the high heat and sterile conditions involved. Toxic and dangerous materials like cobalt, are treated carefully and according to all environmental laws.

Turtlecell® - OUR STATE-OF-ART ACCUMULATOR CONTAINER

There is no doubt, that electric mobility is the technology of the future and it has significant advantages: eco-friendly, high efficiency, less mechanic parts that require more maintenance, easy automated control. The only drawback is that our batteries need plenty time to fully charged (around 3 hours), but they can be discharged in some minutes, which means that a car can only make profit for around 30 minutes while this period the car should be inactive for 3 hours in order to be fully charged. Given that a track is open for around 10 hours a day, this means that our racecar can only make money for one-and-a-half hour.

The solution to this problem is a spare accumulator container, the Turtlecell, that can be replaced within less than 10 minutes. While the new accumulator container fits on the car, the discharged one starts to be charged in order to be ready to be used again later. This will ensure the maximum usage of our cars at the lowest cost.

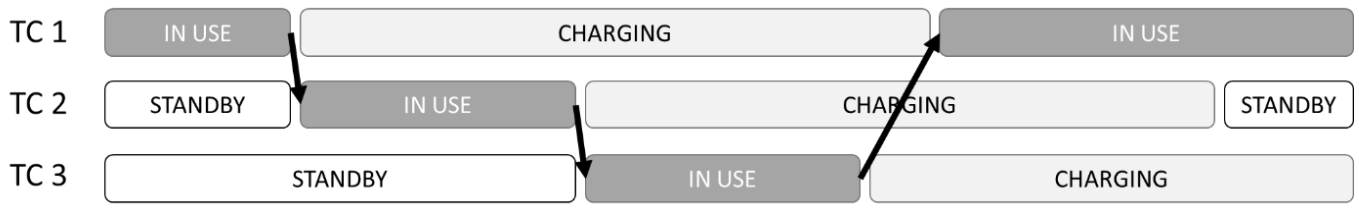
The whole procedure is the following:

_Shutting Down the car by pressing the shutdown button
_Remove 4 screws from the back of the chassis
_Press the 2 Accumulator Container Removal Handles, the Accumulator Container will come slightly backwards
_Take out the old accumulator container and put it on the special handcart (Removing and Inserting the
_Accumulator Container is very easy with the dedicated rails.
_Insert the fully charged Accumulator Container with the help of the rails and place it backwards
_When you hear the “clutch” sound and the Accumulator Container Removal Handles are on their original place the Accumulator Container will be ready to use.
_Click the Start Button and the car is ready to be used again

NUMBER OF Turtlecell® ACCUMULATOR CONTAINERS PER RACECAR

The number of accumulator containers that accompany a race car depends mainly on the track and the expected daily usage of the racecars.

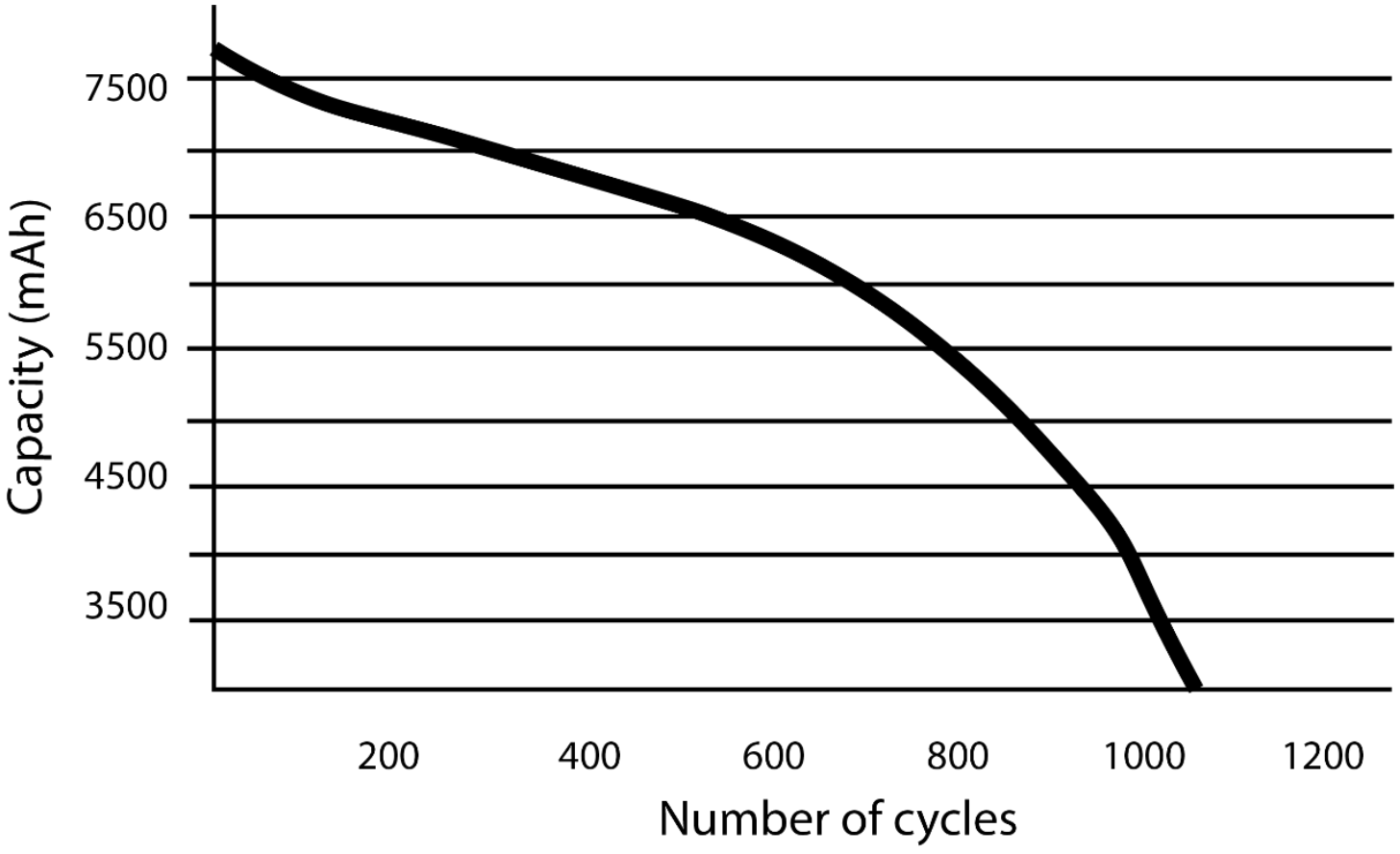
We can see the whole procedure in a time axis in the diagram below: As an example we take a track with 9 cars and 13 extra accumulator containers in a busy weekend day. As we can see the use of each Turtlecell (including those that are inside the cars) allows each car to be used almost continuously during the day.



CHARGING & DISCHARGING

In order to keep the health of our battery in a good state we do not want them to be charged over 95% and to be dropped below 20%. In order to ensure this, our software gets data from the battery management system and alerts the driver to exit the track and return to the pits, thus leaving the total available time for racing to 30 +/-5 minutes.

BATTERY HEALRTH & Turtlecell® REPLACEMENT PROGRAM

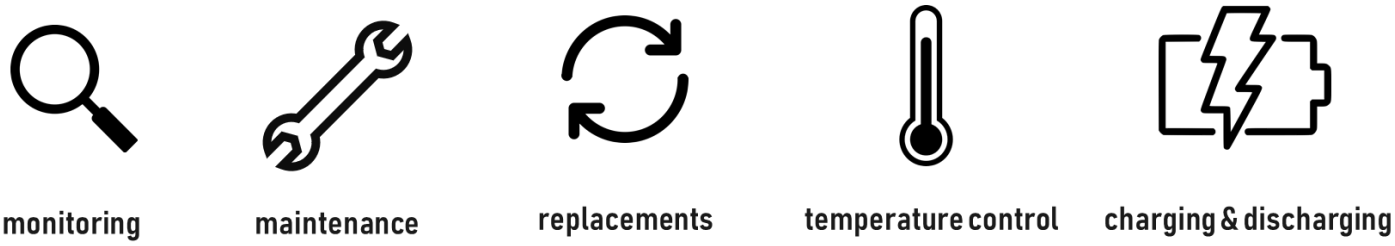


Every battery fades out over time. This also applies to our LiPo batteries that we are using in our racecars. After testing our batteries and from the manufacturer's datasheet, we found out that they lose 80% of their capacitance after 600 lifecycles.

By calculating how many times a single accumulator container and therefore the batteries will be charged and discharged within a week, we found out that each battery will complete 11 cycles per week on average or 47 cycles per month or 564 cycles per year. (calculation data are shown below)

This means that after 1 year of operation, batteries' health will be around 80% of its initial capacitance. That's why Aristurtle thinks that the ideal is to change the batteries to all our racecars and extra accumulator containers once per year.

During the change, a new accumulator container is delivered to the track and the old one is taken back to Aristurtle' s factory where all battery cells are changed with brand new ones and then delivered to another track.



Turtlecell® REPLACEMENT PROGRAM COSTS

The costs of the Turtlecell replacement program can be calculated as follows:

1. Cost of new Turtlecell delivery to the track[3]
2. Cost of returning the Turtlecell back to the factory[4]
3. Cost of brand new battery cells purchase from Sunlight
4. Cost of worker replacing the battery cells

By summarizing this cost is estimated at around 86€[1] + 60,5€[2] + 3.414,19€[3] + 50€[4] = 3.610,69€ and it is covered entirely by Aristurtle every year.

TRANSPORTATION OF BATTERIES

Transport is another troublesome issue as LiPo batteries as dangerous to be transported and need extra care. That's why special deals have been made with transportation company partners and this is why the cost of transporting a Turtlecell is more than double of a regular delivery. After the creation of our own transportation network, our drivers are educated in order to be capable to carry dangerous goods. Moreover they receive a bonus for each transfer of dangerous goods.

STORAGE OF BATTERIES

Storage of batteries are another crucial factor which must be fulfilled in order to have the expected life cycles. Batteries must be stored in a cool and dry place and never to be exposed to sunlight. Additionally tracks are responsible to store batteries as advised.

[3] Cost of new Turtlecell delivery: First Years (Delivery through third-party) : 86€ per transport
Later (Own distribution network) : Included in the cost of trucks operation and maintenance

[2] Cost of returning the Turtlecell to the factory: First Years (Delivery through third-party) : 60,5€ per transport
Later (Own distribution network) : Included in the cost of trucks operation and maintenance

END-OF-LIFE

The batteries reach the end of their functional first life once they have lost 20% to 30% of their capacity. When this exactly is depends on many factors, including behavior when charging and discharging, and other usage patterns such as driving styles, Technical specifications of the battery, including the powertrain efficiency, Climate, in specifically high or low temperatures.

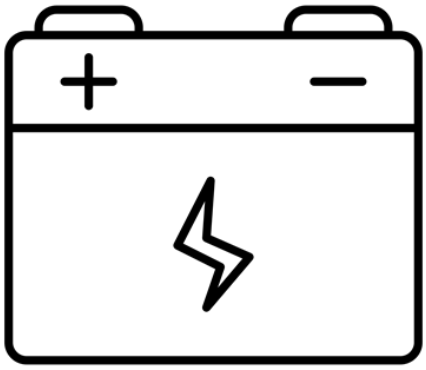
End of life treatment focuses on capturing the value that is left in a product after use is the cornerstone of circular economy. Through direct reuse, refurbishment, remanufacturing, and/or recycling, waste can be eliminated. Remanufacturing and reuse slow down the resource cycle by extending products' life while recycling. closes the resource loop. The processes of reuse and recycling are complementary to each other, and the largest sustainability benefit can be reached if EV batteries are first reused and then recycled.

THE 3 R'S

R1 **REMANUFACTURING**

R2 **REPURPOSING**

R3 **RECYCLING**



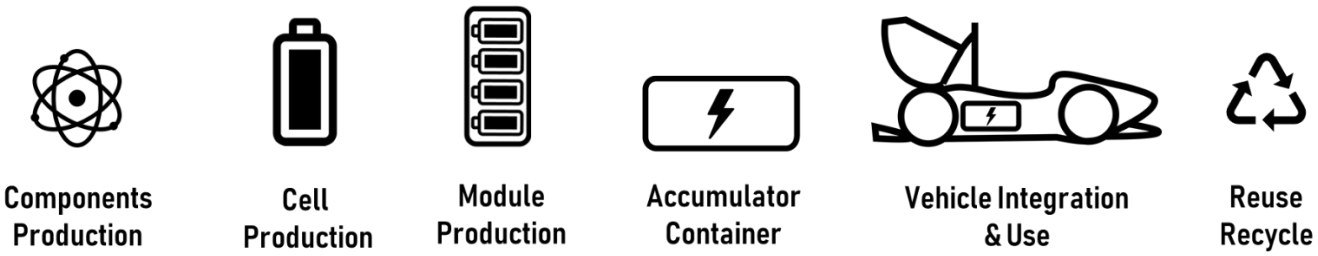
Aristurtle is expecting to manage a lot of batteries. As LiPo batteries have not many life cycles, in order to keep our racecars running efficiently, we will change all its batteries every year. This means a lot of "unfunctional" batteries at our disposal. In order to exploit as much as we can from these batteries, some battery packs will be disassembled and cells that hold sufficient capacity are **reused** along with new ones in the renewed accumulator container. A significant percentage of them will be used to **store energy from the solar panels** that will be gradually installed at our factory. These solar panels will cover the whole roof of our factory. This will provide us a significant amount of electricity as Greece has many hours of direct sunlight each year and can used right away in the factory or to be stored for use when there is no sunlight. The rest battery cells which will not be used in this way will be **recycled**.

Our batteries provider, SUNLIGHT, has its own battery recycle plant in which they take valuable materials from old batteries and they are used in order to create new batteries. Moreover, Aristurtle cooperates with Umicore, an advanced materials company, has major operations devoted to battery recycling. Battery recycling is still critical to avoid the local impacts of metals production for use in battery cathode materials, among other reasons. Recycling electric vehicle batteries at the end of the product life cycle is seen as the greenest option. Many of the components - like nickel, cobalt, copper, and lithium - can be salvaged and

reused. These materials can be resold at a high market value, making dumping EV batteries into landfills a poor environmental and economic policy.

CIRCULAR BUSINESS MODEL

To enable the transition to a circular economy, with reuse and recycling, specific product designs and business models are required. When transitioning from linear to circular product logics, business models and value chains need to become circular in order to create value and satisfy customer and stakeholder needs sufficiently.



WELL-TO-WHEEL

Although electric vehicles are considered environmentally friendly, the lifecycle environmental impacts of electric cars are a topic of increasing controversy. In fact, despite there are no Greenhouse Gas (GHG) emissions directly attributed to the vehicle, the total CO2 emission of electric vehicle depends on the share of renewables in the grid, from which the traction batteries are charged. This means that the total GHG emissions of our racecar mainly depend on the country that it operates. In order to have a good image for the GHG emissions of our racecar, we will select four countries each of which depends heavily on a particular type of energy, namely coal (Germany), nuclear energy (France), natural gas (Italy) and renewable energy (Sweden) in their energy mix.

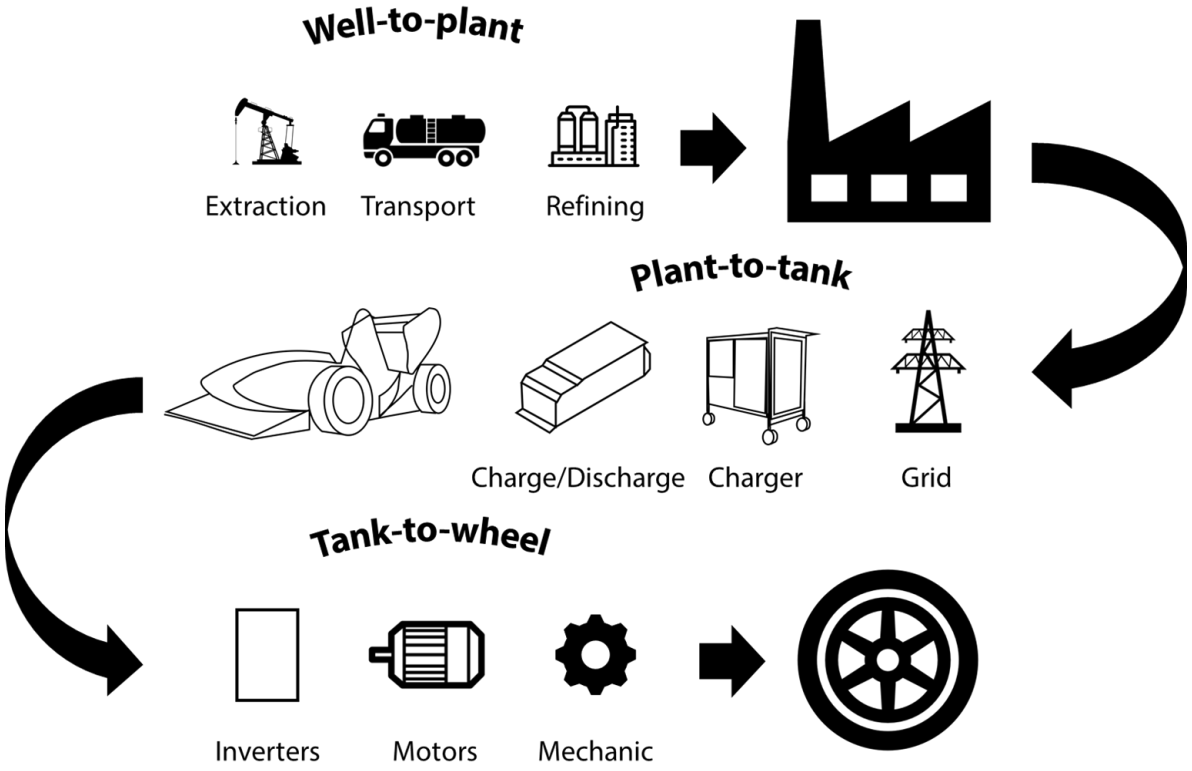
Methodology

The term “well-to-wheel” refers to the entire process of energy flow, from the mining of the energy source to the racecar being driven. Specifically, the well-to-wheel process of combustion vehicle is a seven-step process consisting of: 1) extraction (well), 2) transport, 3) refining, 4) distribution, 5) engine combustion, 6) power delivery system, and 7) wheel. On the other hand, the well-to-wheel process of an electric racecar includes nine steps: 1) extraction (well), 2) transport, 3) refining, 4) distribution, 5) power generation, 6) power transmission and distribution, 7) charging, 8) motor, and 9) wheel. We implement this approach to calculate the GHG emissions associated with our electric racecar.

The well-to-wheel process in electric vehicles consists of two processes. In order to find the total GHG emissions of a vehicle we have to calculate the emissions that are linked to the mining of the energy source and transport to the power plant (well-to-plant or upstream) and the other is the process of transmitting the electricity to the car and driving the

car using the electricity (plant-to-wheel). Thus, the well-to-wheel GHG emissions from an electric car is the sum of the GHG emissions of the well-to-plant and plant-to-wheel processes. This can be calculated by using the equation below:

$GHG_{WtW} = (GHG_{WtP} + GHG_{PtW})$*(Electricity Transport Efficiency)*(Car Efficiency)



Plant-to-wheel

First of all in an electric vehicle there are no GHG emissions after the power plant. So we have to calculate the kWh needed. The WtT value can be determined on the basis of CO2 emissions of a particular type of power station and losses from the plant to the tank are attributed to the efficiency of the power grid, the efficiency of the charger and the efficiency . The efficiency of the power grid does not depend on the primary fuel used and its different on each country[5]. After delivery to the point of charging, there are losses at the charger which in our case these have been calculated at 92%. Moreover the electricity is stored in the batteries of the vehicle (charging) and then absorbed by the drive system (discharging) with a specified efficiency, which for our racecar has been calculated at 95%. Electric drive allows you to convert energy from the battery to mechanical energy at the wheels of the vehicle. The nominal efficiency of the Emrax motor is 92%. The DC/AC converters (inverters) are used for motor control, which efficiency declared by the manufacturers is 97%. The losses in the mechanical part of the vehicle propulsion system are equal to about 2%. So the total Plant to Tank and Tank to Wheel efficiency of our racecar can be calculated from the following equation

$\eta_{PtT} = \eta_{grid} * \eta_{charger} * \eta_{charge/discharge}$

$\eta_{TtW} = \eta_{inv} * \eta_{motors} * \eta_{mechanical}$

$\eta_{PtW} = \eta_{PtT} * \eta_{TtW}$

The amount of electric energy our racecar needs for 1 km of racing is 0,319 kWh. All the efficiencies above are fixed for all countries our racecar operates except power grid efficiency which depends on the quality and the characteristics of

[5] https://www.ceer.eu/documents/104400/-/-/09ecee88-e877-3305-6767-e75404637087

each country's power grid. According to a Report on Power Losses by CEER (Council of European Energy Regulators) grid efficiency for the case study countries are:

Germany 96%

Italy 93,8%

France 93%

Sweden 97%

Based on these numbers we can calculate how much of the initial electric energy that is produced at the power plant, moves the wheels of our electric racecar. By calculating based on the formula above we conclude that from the percentage of the initial energy that is converted to kinetic energy is:

73,37% in Germany, 71,70% in Italy, 71,08% in France and 74,14% in Sweden

The losses in each country are 26,63%, 28,2%, 28,82% and 25,86% respectively.

So a plant has to generate:

0,43478 kWh in Germany, 0,4449 kWh in Italy, 0,44879 kWh in France and 0,43027 kWh in Sweden.

As we told before there are no GHG emissions at the transmission of energy from the plant to the racecar, but there are GHG emissions at the electricity production at the plant and at the process of extracting, processing and transporting the fuel to the plant.

Well-to-plant

The emissions of GHG gases depends on the energy mix of each country's electricity production. The energy mix is the group of different primary energy sources or fuels that are used to produce electricity. In the following sections, the results for electricity generation technologies are evaluated by energy source. For each electricity generation technology, GHG, emissions were evaluated and categorized according to contributions from the following three life cycle phases: 1) fuel provision (from the extraction of fuel to the gate of the plant), 2) plant operation (operation and maintenance, including residue disposal), and 3) infrastructure (commissioning and decommissioning). Life cycle emission factors for electricity generation from selected technologies. Factors at the top of the table refer to electricity output [g/kWhout] and values at the bottom refer to fuel input [g/kWhout]. [6]

	Energy source	CO_2-eq
Electricity output [kg/MWh$_{out}$]	Hard Coal	660-1050
	Lignite	800-1300
	Natural Gas	380-1000
	Oil	530-900
	Nuclear Power	3-35
	Biomass	8.5-130
	Hydropower	2-20
	Solar Energy	13-190
	Wind	3-41
Fuel input [kg/GJ$_{in}$]	Hard Coal	46-125
	Lignite	91-141
	Natural Gas	57-85
	Oil	75-94
	Biomass	0.1-10

Figure 1: CO2e emissions per type of fuel

The GHG emissions of the renewable power sources include commissions linked to infrastructure while fuel input emissions are 0.

Additionally, to this survey the fuel input emissions of a nuclear plant is 25 g/kWh[7] according to a report on gas emissions from nuclear plants.

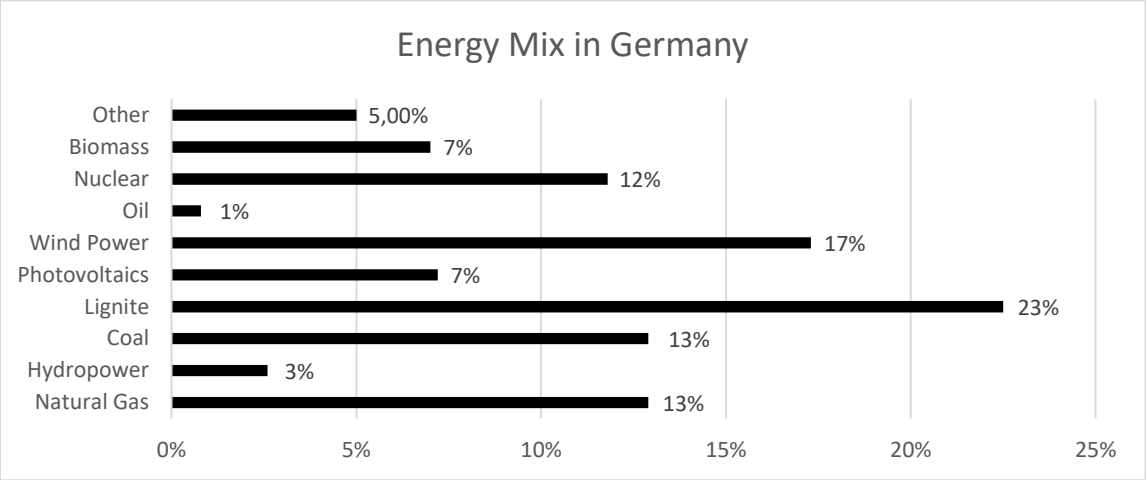
[6] Life cycle assessment (LCA) of electricity generation technologies: Overview, comparability and limitations, R. Turconi

[7] https://www.nirs.org/wp-content/uploads/climate/background/sovacool_nuclear_ghg.pdf?fbclid=IwAR23aqd5ExgeDFtbXDKNGJDQtL5ppl2qyON2UrEb4Dc9X1F5_WOSFTmRyaI

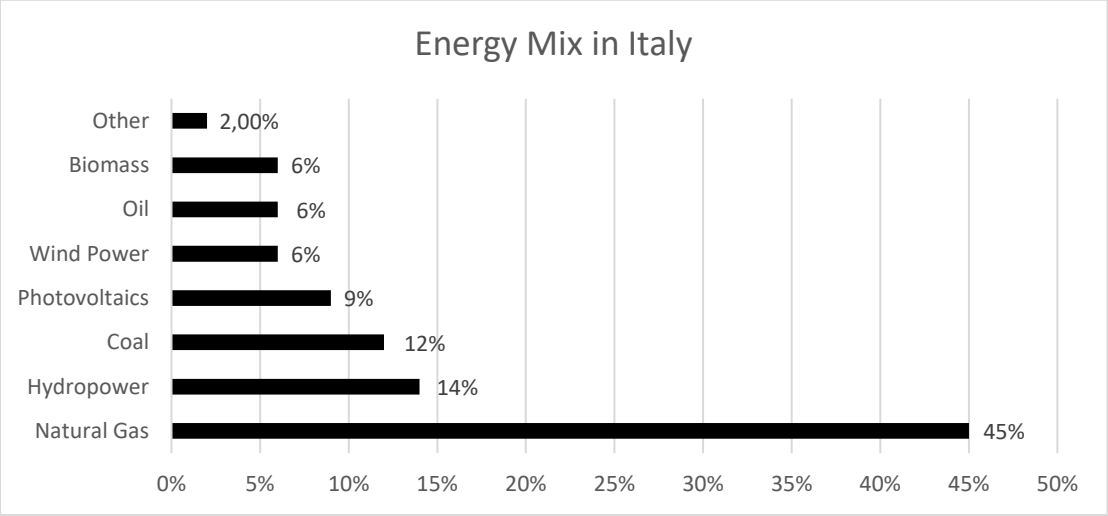
This table shows us the kilograms of CO2 equivalent per MWh generated or grams of CO2 equivalent per kWh generated.

As we have all the necessary data of GHG emissions per KWh generated, we consider that electricity that is used to power the racecar comes from all power sources of each country. The energy mix of the case study countries are the following:

Germany:[8]

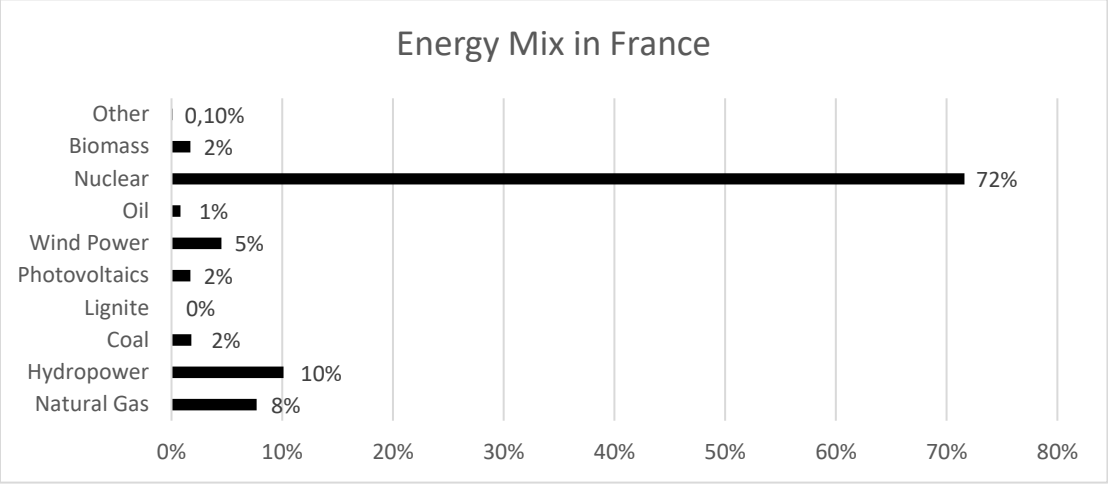


Italy:[9]

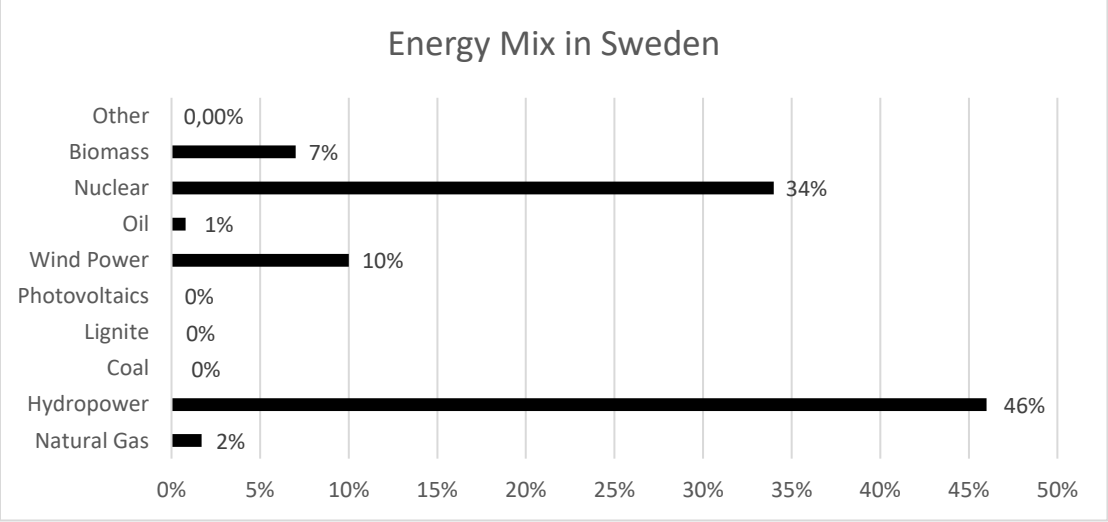


[8] https://www.cleanenergywire.org/factsheets/germanys-energy-consumption-and-power-mix-charts
[9] https://www.statista.com/statistics/873552/energy-mix-in-italy/

France:[10]



Sweden:[11]



[10] https://www.planete-energies.com/en/medias/close/france-s-overall-energy-mix
[11] https://www.ieabioenergy.com/wpontent/uploads/2018/11/CountryReport2018_Sweden_final2.pdf

GHG CO2 EMISSIONS

Let's now assume that in Germany, our racecars need 0,43478 kWh of the electricity produced in the power plant in order to race for 1 km. We consider that this amount of energy is comes proportionally from all power sources. Then according to the table that describes the power mix of Germany we can assume that:

	KWh generated	g CO_2e/kWh Fuel input	g CO_2e/kWh output	CO2e WtP	CO2e in plant	Total CO2e
Coal	0,06	18,9	855	1,047	47,354	49,01
Lignite	0,098	30,24	976	2,963	95,637	98,7
Natural Gas	0,055	16,74	410	0,927	22,708	23,635
Oil	0,004	22,41	737	0,095	3,140	3,235
Nuclear	0,051	25	27	1,278	1,380	2,658
Solar	0,03		65,05		1,94	1,94
Wind	0,072		9		0,652	0,652
Hydro	0,013		3		0,038	0,038
Biomass	0,03		194		12,5	12,5
					Germany Total	197,66 g
					Italy Total	162,67 g
					France Total	45,175 g
					Sweden Total	17,947 g

Conclusion

As we can see the eco-friendliness of an electric racecar depends mainly on the country that it operates. The more renewable sources that power the grid, the lesser the emission of GHGs. But even in countries that produce their electricity with a lot of GHG emissions, electric racecars produce less GHG emissions than an equivalent combustion car.

SOCIAL RESPONSIBILITY

Aristurtle produces electric race cars and accumulator containers. These products are perceived to promote environmental sustainability and this perception is effectively integrated into our company's marketing philosophy. Apart from legal obligations, our company will proactively protect the environment. One priority of our company that was mentioned before is to reduce its carbon footprint. For this reason, the manufacturing process obeys to European environmentally friendly Standards' eco-friendly attitudes. Being environmentally friendly consists of the guidelines and policies that help reduced waste, for example the process of recycling. In particular, Aristurtle has decided to implement this policy of recycling the most harmful parts of the car. These parts are the batteries the cables as well as the tires of our single seat car. Our company cooperates with specific recycling centers in Europe in order to make this happen. Conserving energy: Arist.u.r.tle's production line allows us to use the exact amount of energy we need so we ensure that nothing goes to waste. Zero – paper policy & Recyclable alternatives: We in Arist.u.r.t.le plan to use only environmentally friendly solutions and we intend to replace paper with zero waste technology solutions. Finally, we as a company are deeply concerned about Human Rights and Community

STRENGTHS

World-wide fan following of formula racing
Building expertise at a new market and making success of it
Introduction of innovative product and services
Opening access to electric formula racing
Affordable pricing
Strong partnerships & network
Reliable suppliers
Good returns on capital expenditure
Building a strong community, connecting tracks, consumers and company
Easy to use platform
In – depth experience and insight
Creative, yet practical designs
Optimized manufacturing process
Calculated, survey-based decision making

WEAKNESSES

Lack of trust in new startups
Kart as a competitor may be damaging
Quality of services dependent on tracks
Not very good at product diversification at first
Uncommon and relatively expensive form of entertainment business
Mainly male dominated sport
Reliance on outside capital necessary to grow the business
Difficulty of developing brand awareness as a startup business

OPPORTUNITIES

New environmental policies & government green drive support company's initiative
Great potential worldwide growth
Exponential growth of 'Experience' or 'Sharing' Economy
Change of consumer behavior to adventure and experience seeking
Growing interest in motorsports & unfulfilled customer needs
Embodying next generation of racing as we witness downfall of combustion motorsport
Further product development, differentiation and improvement adopting new technologies

THREATS

Every country has its own laws and regulations to comply with
Export duties & cross-border difficulties
Motorsports' questionable safety of racers or the inability to prevent accidents
Competition from already established market players

SWOT

PARTNERS

We know collaboration lies behind success and we want to combine expertise in different fields to boost our initiative. We are not seeking any partnerships, but the right ones. We are focusing on companies who paved the way and shaped the 'Sharing Economy'.

Companies that revolutionized commuting and made the best out of e-mobility are our main focus.

The list goes on. Let's take for example Lime. The company runs bicycle-, scooter-, and car-sharing services all over the world. We have been in contact and we know they are deeply interested in the first ever formula electric sharing service.

For a company like Lime, we could be their next step. We have the expertise and research they need to make the key move towards motorsport. We, on the other hand, will gain from their international presence & standards.

Joining forces, will boost our potential.

So, with a partnership of this kind, our best-case scenario promises worldwide presence and of course astonishing revenue for all investors and partners.

BUSINESS PROPOSAL

We ask from you an investment of 1.600.000 €

and in return we offer 4.300.000 €
in 7 years

31% ROI