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Ferrari Daytona Homage Coupe

The electric car revolution is happening. All major car brands are making the transition from fossil fuel-powered cars, to electric cars. Most of the new electric cars that have emerged recently lack the emotion from driving, that older cars used to give. But is all hope lost for car lovers? What electric cars have in advantage over the ICE cars is instant acceleration which results in insane performance. So imagine what would it be if the world's most recognized sportscar brand made an electric supercar. Ferrari's cars have a distinct aura around them – the looks, the sound, the feel, and the bright red colour which is so cemented into our minds. With my concept, I am trying to preserve the Ferrari DNA by making what would be an exciting EV with beautiful design and blistering performance. In the Ferrari Daytona Homage concept, I've combined 1970's styling cues with modern F1 technology blended in a futuristic shape that brings excitement.



Electric mobility has been the hot new topic in the automotive industry for the past few years. Since the enormous success of the Tesla automobiles, automakers have a new goal – convert their current lineup of petrol and diesel-powered cars into emission-free electric cars. The majority of the big-name companies in the automotive industry like Volkswagen have already announced that by the year 2026 they will make their whole gamma of cars fully electric. (*Industry Europe, 2019*) This has also been a result of the newly announced talks in the European Union about a permanent ban on internal combustion engine cars by the year 2025. (*Euractiv, 2021*) As the big transition to electric cars is happening, automakers try to make new electric vehicles more exciting for the consumer. Electric cars also have a

huge performance advantage over internal combustion engine cars as the electric motors give instant torque, which results in absolutely rapid acceleration times. It is logical that since we are seeing lots of electric commuter cars, there will be a supercar class for electric cars as well. After the huge success of the Tesla Model S and its “Ludicrous Mode” that leaves supercars in the dust, it was evident that supercar manufacturers would like to take up on the challenge. Porsche has already set the tone with their Taycan Turbo S model and the Croatian automaker Rimac is showing insane 0-100km/h figures and 100-200km/h times. (*Rimac-Automobili, 2020*)

The question is, why most electric cars lack that appeal of some of their ICE counterparts. Automakers are trying so hard to sell the idea of electric future mobility that they are pushing overly "futuristic" car designs with unusual shapes that we cannot adapt to so quickly. You can see a pattern in the design of electric cars that they always have the same "markings". Most of them include blue stripes, use softer curves, and include futuristic huge screens in the interior. This unification of the design and the uncanny similarities between all the electric cars make them less exciting for the public. At the end of the day, is that what the consumer wants? History has proven many times that people don't like repetitiveness. People like to stand out, they like unique things. Especially in the introduction of electric supercars, the cars should spark the same excitement in petrolheads as previous generations of ICE cars have done in the past. With my design project, I will show that an electric car shouldn't look stereotypical and can be futuristic while preserving heritage and show new exciting forms and shapes at the same time.

I have chosen Ferrari as it is one of my favourite brands and they produce an absolutely breath-taking experience for the driver and in fact, everyone on the road. I have had the amazing opportunity to drive both a V8-powered and a V12-powered Ferrari and the feeling they deliver is like in no other sportscar. I feel like if Ferrari manages to translate the same feel and emotion into an electric-powered sports car they can conquer the electric supercar market. Ferrari is the most recognized car brand in the world and it is easy to see why. Ferrari's cars have always brought joy to people. Ferrari's cars have a distinct aura around them – the looks, the sound, the feel, and the bright red colour which is so cemented into our minds, that you instantly associate it with the Ferrari brand. To enter the world of Electric Vehicles, Ferrari should find the right formula to implement all the essential things that make a Ferrari a true sportscar like no other. With my concept, I am trying to portray this new era of Electric Vehicles in the most exciting way while preserving the true Ferrari DNA.

After the huge success of their first flagship hybrid model – the La Ferrari, which featured an 800hp V12 engine helped by a 150hp electric motor. Ferrari showed even bigger potential and blisteringly fast figures with the Ferrari SF90. The SF90 features 770hp V8, this time helped by 3 electric motors which boast a combined power output of 217hp. (*Motor1, 2019*) This can only make us wonder what performance figures could a fully electric Ferrari show in the future with new electric motor technologies emerging on the horizon. Ferrari CEO Louis Camilleri, quoted by Reuters, said that a fully electric Ferrari is going to happen

eventually, but it won't arrive before 2025. (*Car and driver*, 2019)



I have chosen the Ferrari Daytona as an inspiration as it is one of the style icons that still leads the design direction of the front-engined Ferrari cars in the lineup as well as it was a milestone in the history of high-performance front-mid-engined supercars. With its gorgeous body sculptured by Pininfarina and its 4.4-litre V12 the Ferrari 365GTB/4 known by many as "Daytona" was destined to become a motoring legend. Its muscular shapes, the elongated hood, and the short rear make for the perfect proportions to create a beautiful timeless shape.

In my Ferrari Daytona Homage, I've tried to catch the essence of the original Ferrari Daytona, while reworking some of its key features and presenting them in a style that is in line with the modern-day Ferrari lineup.

The leading key design feature in the classic Daytona is the front headlight housing that wraps around the whole front end of the car from edge to edge giving it a very distinct look. I have translated this feature into my concept as a one big light bar, instead of two separate headlights to give it a more futuristic look. The light bar is sitting behind a very dark tinted glass that compliments the aesthetics of the car and gives it a sleeker, closer to the original look. For the front light bar design, I also used for inspiration the hammerhead shark. Sharks are one of nature's most fascinating yet very dangerous predators. Their shape has inspired many car designs as they are very intimidating, yet agile.



I have also kept it as true to the original in the rear portion of the car. In the back of the original Ferrari Daytona, you can see four oval taillights which I have translated into four hexagonal style lights as the leading design element in my concept is the hexagon. There is also a distinct ducktail spoiler in the original Daytona, which I am a big fan of and also included in my design.

The hexagonal shape in my concept can be seen in many instances. You can see it clearly in the taillights, the side view profile, in the front hood cutout, and in the shape of the rim spokes.

The Daytona Homage Coupe will keep some key Ferrari design features, so instantly people can recognize that it is in fact a Ferrari. The design will mainly be inspired by the 1970's Ferrari icons – the Ferrari Daytona, Ferrari 512 race car, and the 512s based Ferrari Modulo. Most old-school Ferrari models feature a very distinct black side-stripe. It can be seen clearly on the side of the Ferrari F40 and the 388 GTO. The most distinct implementation of that side key line can be seen on the 1970's Ferrari 512S Modulo concept car. Stretching all across the middle of the car it adds to that UFO-style look of the Modulo. I have taken this key feature and implemented it into my concept as a sidelight bar, which will also have an added safety feature.

Throughout my design development, I have stayed true to the idea I had in my initial sketches. I have kept my concept of the car being split into a few different key components – glass roof, fenders, and bodywork, base (floating) carbon-fibre tub, floor carbon piece combining front aero, side skirts, and diffuser. I have also kept the proportions of the elongated hood and short back as those are the proportions of the original Ferrari Daytona.



In the side view, progression can be seen as I simplified the side profile and made it sleeker and more elegant. I have removed the shark gill-style side vents from the original sketch and converted them into a shark fin-like design. This gives the car an almost mirrored design between the upper fender part and the lower side skirt. I have also extended the side skirt's height in relation to the orthographic views, so the transition between the fender part and them is more seamless. In the final render, I have also added the sidelight and blended the rear diffuser better with the bodywork. As in the initial sketches and drawings, I am using a staggered set of wheels as the car's power will be distributed more in favour of the rear axle so it will still have a distinct for Ferrari "lively" rear while driven hard. I have always been a fan of staggered wheel setups since I've seen it on "Hot Wheels" cars as a kid. It gives the car a more aggressive side profile and makes the rear quarter of the car stand out more.



For my wheel design I have chosen to do a star-like shape as most iconic Ferrari models, as well as the original Ferrari Daytona wears a set of 5 spoke wheels in different designs and shapes that complement the car.

As we can see the rims of the F40 are edgier, while in its successor, the F50, the shape has been softened as the F50 has a softer body style. In my set of rims, I have carried out the hexagonal element which can be seen in various parts of my design. The center wheel cap is also a quick release hub, F1 inspired. The spokes stretch out to the lip of the rim as they spread out at the end to create a more interesting shape and give more strength to the structure of the rim itself. Behind the rims, I have put huge carbon-ceramic brake disks as this car should have lots of stopping power as the electric motors will be pushing around 2000hp.

In terms of aerodynamics, I took inspiration from modern-day F1 cars. With the main objective of saving weight by reducing panel size and using carbon fiber and different composites. The base carbon-fiber tub's design is similar to the shape of a modern-day F1's monocoque is. The majority of the panels will be made out of carbon fiber, carbon composite, and magnesium. All of those materials are light but very strong.

I have designed the carbon-fiber tub to be as close as possible to a teardrop shape to reduce drag and improve overall aerodynamics. Reducing frontal area drag by removing the front bumper as a whole and using just the carbon fiber splitters to create the same aesthetic. The whole undertray connects the front splitter, sideskirts and stretches out to the back and blends into the back diffuser. The front splitter consists of two winglets on both sides and a central part that represents the outline of a front grille while still acting as a double front

splitter. In the grille part, there is a middle carbon fiber part which is adding downforce while holding the iconic prancing horse badge. The side skirts consist of two fins that are placed close to the front and rear tires and extend upwards towards the main fender parts of the car.

In the rear of the car, you can see I have made the most changes from sketch to 3D model. My idea was to have most of the back exposed as to me when the car doesn't have a rear bumper it means business as most old-school LeMans race cars don't have a rear bumper. I fell in love with the aggressive stance of racecars that have no rear bumper such as the Ferrari 512s racecar and the 312PB. In the initial sketch, you can see a very exposed rear end with not many aero elements, while in the orthographic view I have added a 2nd layer to the rear diffuser. In the final 3d model the main subject is the double-stacked diffuser. It is split into two parts. The upper part is attached to the main body of the car while the lower part is seamlessly transitioned with the underbody. The suspension is a double-wishbone setup inspired once again by modern-day F1 cars. The idea of implementing F1 technology is for the car to stay planted to the ground while putting down around 2000HP from 4 individual electric motors.



Environment

As manufacturers aim to produce environmentally-friendly vehicles, today's electric cars still produce a lot of waste in the form of li-ion batteries. In my Ferrari Daytona Homage project, I have chosen to eliminate that problem by replacing the li-ion battery packs with graphene-based supercapacitors. As the supercapacitors are made out of graphene and an ultra-thin layer of carbon, the film will be a far more ecological choice compared to standard lithium batteries. Also, carbon is much easier to get sourced than lithium. Using those supercapacitors in more vehicles in the future could drastically reduce battery waste and help protect our environment. Replacing the batteries with supercapacitors will also benefit the car's performance and range as standard li-ion battery packs are quite heavy. With the removal of the li-ion battery packs, the car will be much lighter and more agile.

By the year 2026, manufacturing times and costs should have been reduced significantly. Most of the labor-intensive jobs would be automated. I believe that the parts made out of different composites such as carbon fiber, carbon, magnesium, and others will be much easier to produce in the near future. Graphene supercapacitors could be outsourced and not in-house made for faster and cheaper production.

My concept would also use power regeneration resources in the form of a solar film-covered glass roof and a brake power regeneration system.

The car will also be packed with multiple pedestrian and traffic safety features.

The stripe on the side of the car would be fully made out of LED's and it will not only act as a styling feature but also as a safety feature. The light will start to flash if another car gets too close to warn the other driver.

The car will also include an active sound booster system that will produce a sound, unique to the car. The active sound boost system will be placed at the lower rear and front parts of the car and it will produce sounds and vibrations to replicate the feeling of a running engine. Sound will also be amplified through the rear diffuser creating an effect close to what is known in F1 as a "blown diffuser". The levels of sound and vibration could be adjusted by the driver to their liking. The car will have a few different sound variations. The driver will have a choice between a futuristic sound, engineered specifically for this car and the other sound options would be some of Ferrari's best V8 and V12 engine notes. For me, it is key to correlate movement with sound as our minds are used to reacting to sounds. It is also important as a safety feature as if the car is too silent from the outside it could cause danger to pedestrians as they won't hear the vehicle approaching them.

The target customer for my concept would be a person that is passionate about cars and racing and would like to dive into the world of Electric Vehicles with the best possible car of choice. This Ferrari will be for the ones that want to feel the most thrill out of EV supercars, but will still be able to daily-drive the car. It will also have enough luggage space to be used as a GT for long trips. The vehicle will have a 2-seater coupe layout. This car will be the fastest EV when it comes out, which would also be key in marketing. It will be priced considerably high at over 500,000\$, but price would be justified by the performance and expensive materials used in the car.

Considering the factors discussed it is clear to conclude that, my concept aims to show that electric cars shouldn't be generic and can bring the same enjoyment as their predecessors in a much more technologically advanced way. The Ferrari Daytona Homage is combining the best of both worlds with classic design cues and modern-day F1 inspired technology. My concept celebrates the long racing history and heritage of Ferrari's cars.

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