DOWNLOAD PDF FUTURE OF THE USE OF THE CAR

Chapter 1 : Car - Wikipedia

Jul 26, Â· The Mercedes F Luxury in Motion concept car is part of a trend of creating luxury designs for a driverless future. Photograph: Steve Marcus/Reuters What will the car look like by the time the.

Share by Email Car companies have recently been telling us what the car of will be like: However, the directions being proposed are a very good starting point to look even further and ask the question: For a start, will there even be cars in ? Will an invention that will be years old by then be replaced by something better? Will environmental concerns kill it? Will people become tired of getting behind the wheel, as recent studies suggest? And â€" done right - the automobile can be a sustainable and safe means of transportation. But we must also acknowledge this form of mobility comes at a premium, as polar ice melts, megacities become suffocated by smog and congestion, resources dwindle, and around 1. So what can â€" actually, must â€" we do in order to make the automobile of the year cleaner, safer, leaner and still enjoyable to use? This is a crucial question: Hands-free driving The automobile in will be self-driving. Companies are working on concepts allowing cars to cruise along on the highway without driver intervention, many of which are likely to be seen on our roads. There is the Super Cruise from General Motors , which controls the vehicle on long highway stretches when not much is happening. Then there is the Traffic Jam Assistant from BMW ; cars move along in a congested traffic area just like a school of fish. And when the car makes it to its destination, it can park itself in a high-tech parking structure, just as Audi has demonstrated. Will the driver need to do anything at all? Will there still be a steering wheel? Cars will probably require that drivers monitor what the vehicle does and switch from one mode to another â€" such as highway driving to city driving. There will probably still be a steering wheel, but some models could have a little joystick that the driver only uses rarely. Driving is likely to get much safer human error still accounts for the majority of all accidents and also much more efficient, as centralised traffic control will lead to a smoother flow and less congestion. But how much of an effect this new technology has will depend on how widely it is rolled out. The changes might not stop there. We may also have some other kinds of automobiles, which are small, highly efficient mobility pods similar to the GM EN-V concept or autonomous vehicles like the Induct Navia. These will be urban, flexible solutions to move people around. In many metro areas, a well-organised public transportation system will be the most effective way to move large numbers of people. However, some commuters might not want to take it, either because of network problems, schedules or safety concerns. Publicly organised on-demand transportation systems that can accommodate up to six people will bring travellers automatically to their destination in downtown areas, and then move on to serve others. Customers will simply enter their destination and payment information â€" think of it as a totally automated taxi system. Digital frontier Personal mobility will become more of a service, one that companies such as Google have recognised. The search and computing giant has become strongly involved in creating automated vehicles. And some think the car needs to serve us in other ways, whether we drive it or it drives itself. Many car companies are already working with Apple to integrate Siri into automobiles, creating virtual personal assistants in the car to help us with routes, traffic information, and the scheduling of our day. Our vehicles will be fully integrated into the digital lifestyle of â€" whatever that turns out to be. It is hard to imagine what the world of Apple, Microsoft, Facebook and Google will be like in 30 years time, but we can assume that everything that has a digital representation will be available in our cars. The automobile seems to be the final frontier for the digital lifestyle â€" some people want to be disconnected while driving â€" but in decades to come it will be completely connected and â€" hopefully â€" safe to use. But what will actually drive these cars? Or will it still guzzle petrol and diesel? At first glance, one might think the good-old internal combustion engine is on its way out. However, its demise may not be quite so quick. In general, the daily commute will be in an electric vehicle with no combustion engine. The electricity grid is likely to include a much higher percentage of renewable energy by then, so everyday driving will be cleaner as well. But what about longer trips? Batteries might allow a mile range, but they might be heavy and expensive, and recharging them might take time. So, the ultimate solution for long-distance car travel might still be a combustion engine. Research is underway by institutions and car companies across the world to

further improve efficiency and cut emissions. In a small, turbo-charged, rotary engine might serve as a range extender â€" used only a few days a year, but good to have on board. Another range extender might be wireless power transfer to the vehicle as it moves along the highway. An alternative is hydrogen-powered vehicles, converting hydrogen into electricity in a fuel cell. This would result in a smooth electric drive and only water vapour coming out the tailpipe. While fuel-cell technology has already come a long way Daimler and Toyota are at the forefront of this evolution , there are still challenges to overcome, such as where to get the hydrogen from. It is unclear if there will be an answer by Morphing motors People value flexibility; just as they have come to expect it from their smartphones and laptops, so will they want it from their car? As mobile technology has allowed us to make decisions on everything in an instant and away from home, we will want those same freedoms in our cars. The commuter of the future may have a "personal mobility portfolio", with the car being only one part of it. An automobile might be there to drive for pleasure on the weekend the affection for the car will probably not go away completely. As mobile internet becomes ever-more powerful it will be totally normal and convenient to step out on the street and make an immediate decision. You could hail a self-driving shared vehicle. You could jump into the car of a social-media friend, who just happens to be driving by and going in the same direction. Or you will take public transportation if is the best option. The car will be totally integrated into a greater mobility network. We are already seeing beyond existing car-sharing schemes, such as ZipCar , where people can book cars for the hours in which they actaully need them. There will be a network of different options to integrate services in places such as airports , all of them combined in one app on our communication device. We basically tell the app where we want to go and, based on our preferences, three different optimised transportation modes will be offered, similar to the three different routes that a GPS navigation system offers us today. Will we still be able to recognise it? It might still have a steering wheel, maybe just a joystick. It is safe to assume that it will still have four seats and wheels and might still resemble a metal box. Carbon fibre or other lightweight material might replace steel. The design will be a mix of efficient contours low aerodynamic drag and emotional styling. And maybe there will be some sort of morphing shape. MIT has looked into some very promising vehicle concepts that allow for small footprint in the city and a more safety and dynamic configuration for the open road. The car of might be relatively easy to recognise, which might not be true for the phone or computer. But the personal automobile as we know it will have much competition: And in our livable cities , good old-fashioned walking and cycling, too. If you would like to comment on this article or anything else you have seen on Future, head over to our Facebook page or message us on Twitter.

Chapter 2 : Car | Future | FANDOM powered by Wikia

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Over the past few decades, our cars and trucks have transformed into technological marvels, becoming safer, cooler, and more exciting to drive, while improving fuel efficiency and sustainability. During this march of innovation, it may not have been so noticeable that the use of plastics has skyrocketed. Most everything you can touch is made with plastics. Why is this important? And some point to a future of rapid customization and personalization of cars: This new manufacturing model may also lead to further improvements in sustainability. While mainstream automakers already use 3-D printing for rapid prototyping to help bring cars to market faster, the race is on to build 3-D printed cars that meet both government safety standards and consumer performance expectations. Divergent3D envisions various companies using its technology in widely distributed micro factories that can rapidly create customized cars. The company claims that such manufacturing would radically reduce the environmental footprint of auto making. Local Motors was the first to 3-D print an electric car, called Strati , which is made with carbon fiber-reinforced plastics. The process of 3-D printing the Strati is quite efficientâ€”it takes only a couple days to print the body of the vehicle, which is manufactured as one large piece. The entire car is made up of only 50 or so parts. Considering that traditionally manufactured cars can contain tens of thousands of painstakingly assembled parts, this points to great potential for improved efficiency, cost savings, and convenience in auto manufacturing. Local Motors is developing additional vehicles, including the OLLI public transport vehicle see below. Mainstream automakers are taking notice of these manufacturing advances. For example, in March Ford announced testing of large-scale 3-D printing for potential application in future production vehicles and personalized car parts. Ford noted that printed auto parts can be lighter than traditionally manufactured parts, which can help improve fuel efficiency. The composite material used for the vehicle is 80 percent acrylonitrile butadiene styrene ABS plastic and 20 percent carbon fiber. Riders hop in and ask for recommendations for dinner or a sightseeing spot and then sit back and relax as OLLI takes them there. Spira is a three-wheeled vehicle made mostly of a tough honeycomb fiberglass, ABS plastic, and a thick protective layer of polypropylene plastic foam. The manufacturer says the design offers improved safety for the driver plus pedestrians and motorcyclists, who make up a large proportion of vehicle deaths, especially in developing countries. In San Diego, a Spira was struck by a hit and run driver. The Spira and driver rolled four times after the crashâ€”both were just scratched up but fine. The company CEO brings that roughed up Spira to auto shows to demonstrate its resilience. While the future of such a radically redesigned vehicle is uncertain, it shines a light on the contribution of plastics to improved vehicle safety and sustainability. Car Parts Made Out of Thin Air Ford has announced plans to make auto parts using plastics made in part from captured carbon dioxide waste streams. Ford says the CO2 will be used as a feedstock to make foam plastics for use in seat cushions, seat backs, floor mats, and other components such as side paneling and consoles. Ford researchers say they were inspired by plants that take in carbon dioxide and create complex sugars. In a similar vein, Ford is taking excess carbon dioxide and making durable plastics to use in vehicles. The company plans to develop additional plastic materials using captured carbon to contribute to sustainability.

Chapter 3 : What will the car of be like? | Technology | The Guardian

The Future of In-Car Technology. But in the future, most new cars will become rolling Wi-Fi hot spots, either sharing an Internet connection with a "smartphone" (called "tethering") or.

John Lithgow narrates as the brothers mix their trademark slapstick with serious nuts-and-bolts analysis of what it will take to make our autos more energy-efficient. Eight hundred million cars. They come in all shapes and colors, but have one thing in common. Our transportation system is almost entirely fueled by petroleum, more than 95 percent. A quarter of all the petroleum ever consumed in the history of the world was consumed in the last 10 years. Can I change the station? This is important stuff. This is scaring me. Two brothers have embarked on a quest. Are you ready to take a call? For 30 years, Tom and Ray Magliozzi have helped radio listeners solve their automotive problems. I have a Ford Ranger pickup, and I love the truck, but I hate the gas mileage it gets. Today, Click and Clack have a car problem of their own. Oh, it sounds like a sick cow. It really is time to move on and look for another vehicle. Well, what could be better than this? But where would I find another car? Take a wild guess. To replace a relic from the past, Tom and Ray head for Detroit, searching for the car of the future. Pretty damn spectacular show. I thought you were interested in these models. I meant the cars. How many horsepower is this thing, guys? You must know, right? What is this, ? Looks like my MG. Not the MG engine, the whole MG! This is an absurd amount of horsepower to have in anything, I would think. Absolutely ridiculous and stupid. But people want to buy them To lure buyers, cars and trucks have become bigger and more powerful every year. Since , average vehicle weight has increased 1, pounds. Horsepower has almost doubled. If you look anywhere in the world, not just the United States, you look anywhere in the world, people will buy the most horsepower they can afford. As weight and horsepower increase, cars are consuming more gasoline than ever before, despite its growing cost. Even a former Texas oilman seems to get it. For too long our nation has been dependent on foreign oil, and this dependence leaves us more vulnerable to hostile regimes and to terrorists. Think about where your money goes when you put your credit card in the pump. Some of your oil money is going directly to arm people who are trying to kill us. Burning oil is also changing the chemistry of the atmosphere. Coming out of your tailpipe are all those carbon dioxide molecules. Those go up in the air. Increased carbon emissions are creating climate changes that scientists warn us are dangerous. Wheels Festival, in Boston, is a different kind of car show that celebrates alternative energy and efficient transportation. If the Detroit car show is about primal thrills, Alt. Wheels is about social responsibility and concern for future. Like the green movement itself, Alt. This is right up your alley. I can tell, as soon as I saw this, that this is the kind of vehicle What makes it run? This is the accelerator. Is there a reverse? Creating the car of the future is no small feat. Whatever their environmental benefit, we expect our cars to be reliable, practical and safe. The car of the future also needs to store a lot of energy in a small space. And nothing does this better than petroleum, which comes from plants and tiny plankton, like these, that were buried in mud millions of years ago. Over time, these ancient fossils were transformed into energy-rich molecules of hydrogen and carbon, or hydrocarbons, that are refined into gasoline. This is the kind of car you want to leave to your first wife. Car companies have great hopes that hydrogen will someday replace carbon and power cars that are emissions free. So you fill up the tank. The tank must be in the back. Can we see it? These companies have invested billions to produce small fleets of prototypes like this one. I mean, you have to start building the cars and So the chickens are first? This is a time honored question. This chicken and egg question has no clear answer. History shows that cars and gasoline evolved together over many, many years. And they go to the local gas station and they fill up their gas tank. We have a fueling infrastructure of gasoline that was built over the course of many decades. And it has been paid off a long time ago, and it is delivering gasoline very cheaply. So to deliver an alternative fuel other than gasoline is no mean feat. Changing an economy based on petroleum is an almost insurmountable task. But a small island nation is hoping to do to do just that. Iceland has a thousand times fewer people and cars than the U. Still, rush hour in Reykjavik is no joke. In the meantime, a small fleet of buses has been warming the population to the new technology. Yes, it is the bus. Yeah, but it sounds the same. No smell, though; have you noticed that? No

smell, which is very nice, especially in the city. When we go back to the station, can we see you refuel the bus? Is there a brick wall we can stand behind? Like gasoline, hydrogen is volatile stuff. Wait, I want to get a look at this. You look like chickens. Hydrogen atoms are broken apart, releasing electrons that flow through a circuit, providing electricity that propels the bus. The only emission is water vapor. Iceland prides itself on helping to improve this technology by testing it every day. You go to a small society like Iceland where a lot of things are simpler than a big society like the U. While vehicles are tested in Reykjavik, the fueling infrastructure is being developed in the countryside. Iceland gets this energy from water that flows from melting glaciers and from steam that rises from the ground. This is so weird. How do I look? Power plants harness this geothermal energy to generate electricity that can be used to make hydrogen. Why is Iceland engaged in this geothermal power project, so to speak? And, you know, Iceland is straddling two tectonic plates, the North American plate and the Eurasian plate. And gentlemen, we are just in the middle of the two plates. Move over a couple of feet.

Chapter 4 : The Future of the Auto Mechanic is Clean - Quoted

The car's dynamic systems can be used to reduce vibrations through active suspension, or avoid sudden and unexpected changes of direction thanks to the satnav system knowing what's coming and in.

In a trade that has required a unique set of hands-on skills and vehicle knowledge for decades, technology is really throwing a wrench into its future. Benz Patent Motorwagen Photo courtesy of Autowallpaper. DE Cars have, of course, been changing ever since. And one expert, Mary Barra, Chairman and CEO of General Motors, thinks the next five years might bring more change to the automobile industry than the last It advances in pulses. More and more industry insiders believe driverless vehicles are in our future and companies from Google to General Motors are working feverishly to make it happen. The connected cars of our present already have incredibly smart active safety features and they have already the ability to communicate both with each other and with their manufacturers. But what of the auto mechanic? Cars are becoming more and more technologically advanced and traditional combustion engines continue to be phased out in favor of energy-efficient power sources. So what will become of a profession that â€" just a generation ago â€" prided itself on working directly with the mechanics and electronics of cars and trucks? The next 5 years could bring more change to the auto industry than the past Many cars with connected technologies are already able to diagnose themselves and update their own software. Several startups, like Zubie , offer maintenance alerts and engine diagnostic information, including how severe a potential mechanical problem might be, all before you or your vehicle even set foot or wheel in a repair shop. Connected cars are already able to diagnose themselves so there is not as much for a mechanic to do. Both the job requirements and day-to-day activities of auto mechanics have also already changed in measurable ways. Vocational training â€" on the job, hands-on learning â€" used to be a hallmark of auto mechanics. But cars, and the systems that make them run, become more complex each year, and now mechanics must attend frequent software trainings in order to remain up-to-date. Mechanics transitioning into the role of technician are likely to be met with incredible job opportunities. The industry consensus, according to Automotive News , is that there is a serious lack of automotive technicians who are able to work on the advanced technology in vehicles today, and that shortage is likely to continue. Technicians will have job opportunities, but dealerships will have to keep up, as will training programs. Two auto industry experts say the key issue with the technician shortage involves how dealerships handle service â€" specifically, how their service adviser system works, says Automotive News. Smart vehicle technology, like brake assist, will put less wear and tear on vehicles, says CB Insights , meaning fewer trips to the shop for tune-ups, and hopefully fewer crashes and collisions. But, when the cars of the future do get to the repair shop, mechanics and technicians will need to understand and work with increasingly complex computer systems. Alternative-fuel vehicles undoubtedly will change and already have changed mechanical training as they look completely different under the hood than combustion engines. Instead, they have batteries that power electric motors.

Chapter 5 : DeLorean time machine - Wikipedia

Cars of the future won't take flight, but they will do a lot of things on their own. We explore how smart cars actually will become by the year

Kiichiro Toyoda , president of the Toyota Motor Corporation â€" Mass production at a Toyota plant in the s Large-scale, production-line manufacturing of affordable cars was started by Ransom Olds in at his Oldsmobile factory in Lansing, Michigan and based upon stationary assembly line techniques pioneered by Marc Isambard Brunel at the Portsmouth Block Mills , England, in The assembly line style of mass production and interchangeable parts had been pioneered in the U. Only Japan black would dry fast enough, forcing the company to drop the variety of colors available before , until fast-drying Duco lacquer was developed in The combination of high wages and high efficiency is called " Fordism ," and was copied by most major industries. The efficiency gains from the assembly line also coincided with the economic rise of the United States. The assembly line forced workers to work at a certain pace with very repetitive motions which led to more output per worker while other countries were using less productive methods. In the automotive industry, its success was dominating, and quickly spread worldwide seeing the founding of Ford France and Ford Britain in , Ford Denmark , Ford Germany ; in , Citroen was the first native European manufacturer to adopt the production method. Soon, companies had to have assembly lines, or risk going broke; by , companies which did not have them had disappeared. Key developments included electric ignition and the electric self-starter both by Charles Kettering , for the Cadillac Motor Company in â€" , independent suspension , and four-wheel brakes. Since the s, nearly all cars have been mass-produced to meet market needs, so marketing plans often have heavily influenced car design. It was Alfred P. Sloan who established the idea of different makes of cars produced by one company, called the General Motors Companion Make Program , so that buyers could "move up" as their fortunes improved. Reflecting the rapid pace of change, makes shared parts with one another so larger production volume resulted in lower costs for each price range. For example, in the s, LaSalles , sold by Cadillac , used cheaper mechanical parts made by Oldsmobile ; in the s, Chevrolet shared hood, doors, roof, and windows with Pontiac ; by the s, corporate powertrains and shared platforms with interchangeable brakes , suspension, and other parts were common. Even so, only major makers could afford high costs, and even companies with decades of production, such as Apperson , Cole , Dorris , Haynes , or Premier , could not manage: Most British small-car assemblers, from Abbey to Xtra , had gone under. Only a handful of companies were producing vehicles in limited numbers, and these were small, three-wheeled for commercial uses, like Daihatsu , or were the result of partnering with European companies, like Isuzu building the Wolseley A-9 in Toyota , Nissan , Suzuki , Mazda , and Honda began as companies producing non-automotive products before the war, switching to car production during the s. Subaru , meanwhile, was formed from a conglomerate of six companies who banded together as Fuji Heavy Industries , as a result of having been broken up under keiretsu legislation. Fuel and propulsion technologies See also: Alternative fuel vehicle Most cars in use in the s are propelled by an internal combustion engine, fueled by the deflagration rather than detonation combustion of hydrocarbon fossil fuels, mostly gasoline petrol and diesel , as well as some Autogas and CNG. Hydrocarbon fuels cause air pollution and contribute to climate change and global warming. Efforts to improve or replace existing technologies include the development of hybrid vehicles , plug-in electric vehicles and hydrogen vehicles. Vehicles using alternative fuels such as ethanol flexible-fuel vehicles and natural gas vehicles are also gaining popularity in some countries. Cars for racing or speed records have sometimes employed jet or rocket engines, but these are impractical for common use. Oil consumption in the twentieth and twenty-first centuries has been abundantly pushed by car growth; the â€" oil glut even fuelled the sales of low-economy vehicles in OECD countries. Car controls In the Ford Model T the left-side hand lever sets the rear wheel parking brakes and puts the transmission in neutral. The lever to the right controls the throttle. The lever on the left of the steering column is for ignition timing. The left foot pedal changes the two forward gears while the central pedal controls reverse. The right pedal is the brake. Cars are equipped with controls used for driving, passenger comfort and safety, normally operated by a combination of

the use of feet and hands, and occasionally by voice on s-era cars. Controls are evolving in response to new technologies, for example the electric car and the integration of mobile communications. Since the car was first invented, its controls have become fewer and simpler through automation. For example, all cars once had a manual controls for the choke valve, clutch, ignition timing , and a crank instead of an electric starter. However new controls have also been added to vehicles, making them more complex. Examples include air conditioning , navigation systems , and in car entertainment. These include headlights , which are used to illuminate the way ahead and make the car visible to other users, so that the vehicle can be used at night; in some jurisdictions, daytime running lights ; red brake lights to indicate when the brakes are applied; amber turn signal lights to indicate the turn intentions of the driver; white-colored reverse lights to illuminate the area behind the car and indicate that the driver will be or is reversing ; and on some vehicles, additional lights e. Interior lights on the ceiling of the car are usually fitted for the driver and passengers. Some vehicles also have a trunk light and, more rarely, an engine compartment light. Car body style Most cars are designed to carry multiple occupants, often with four or five seats. Cars with five seats typically seat two passengers in the front and three in the rear. Full-size cars and large sport utility vehicles can often carry six, seven, or more occupants depending on the arrangement of the seats. On the other hand, sports cars are most often designed with only two seats. Car safety , Traffic accident , Low speed vehicle , and Epidemiology of motor vehicle collisions Result of a serious car accident Road traffic accidents are the largest cause of injury-related deaths worldwide. Costs and benefits Main articles: Economics of car usage , Car costs , and Effects of the car on societies Road congestion is an issue in many major cities. The benefits may include on-demand transportation, mobility, independence and convenience. The societal benefits may include: The ability for humans to move flexibly from place to place has far-reaching implications for the nature of societies. It shows the significant growth in BRIC. World map of passenger cars per people While there are different types of fuel that may power cars, most rely on gasoline or diesel. The United States Environmental Protection Agency states that the average vehicle emits 8, grams of the greenhouse gas carbon dioxide CO2 per gallon of gasoline. The average vehicle running on diesel fuel will emit 10, grams of carbon dioxide. High fuel taxes may provide a strong incentive for consumers to purchase lighter, smaller, more fuel-efficient cars, or to not drive. Light truck standards have changed more frequently, and were set at According to the American Surface Transportation Policy Project nearly half of all Americans are breathing unhealthy air. Their study showed air quality in dozens of metropolitan areas has worsened over the last decade. More recent road developments are including significant environmental mitigations in their designs such as green bridges to allow wildlife crossings , and creating wildlife corridors. Growth in the popularity of vehicles and commuting has led to traffic congestion. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. Research into future alternative forms of power include the development of fuel cells , Homogeneous charge compression ignition HCCI , stirling engines , [60] and even using the stored energy of compressed air or liquid nitrogen. New materials which may replace steel car bodies include duralumin , fiberglass , carbon fiber , biocomposites , and carbon nanotubes. Telematics technology is allowing more and more people to share cars, on a pay-as-you-go basis, through car share and carpool schemes. Communication is also evolving due to connected car systems. According to urban designer and futurist Michael E. This would also allow for getting the appropriate vehicle for the particular needâ€”a bus could come for a group of people, a limousine could come for a special night out, and a Segway could come for a short trip down the street for one person. Children could be chauffeured in supervised safety, DUIs would no longer exist, and 41, lives could be saved each year in the US alone. Open source car There have been several projects aiming to develop a car on the principles of open design , an approach to designing in which the plans for the machinery and systems are publicly shared, often without monetary compensation. The projects include OScar , Riversimple through 40fires. Some car hacking through on-board diagnostics OBD has been done so far. Services like car sharing offering a residents to "share" a vehicle rather than own a car in already congested neighborhoods. In , more than 70 million motor vehicles, including cars and commercial vehicles were produced worldwide. Of the major markets, China, Russia, Brazil and India saw the most rapid growth. About million vehicles are in use in the United States. The numbers are increasing rapidly, especially

in China and India. Many of these negative impacts fall disproportionately on those social groups who are also least likely to own and drive cars. In , with rapidly rising oil prices, industries such as the automotive industry, are experiencing a combination of pricing pressures from raw material costs and changes in consumer buying habits. The industry is also facing increasing external competition from the public transport sector, as consumers re-evaluate their private vehicle usage. China sales had increased to

Chapter 6 : The Future of Rental Cars Is Here: Associations Now

The commuter of the future may have a "personal mobility portfolio", with the car being only one part of it. An automobile might be there to drive for pleasure on the weekend (the affection for.

After the end of the program, in , all but nine cars were destroyed. Of the nine remaining Chrysler Turbines, only about three are running and driving. We were, but the man loves turbine cars and wanted to share the joy. The Chrysler car is incredibly subtle considering its radical nature. Only the rear, with its afterburnery taillights hints at jet fighters and spacecraft. The interior is split by a long silver console that runs from the front seat through the rear buckets. The car starts as soon as Jay turns the key, and its engine whines quietly. Chrysler addressed all the uncivilized behaviors of a land-bound turbine, even developing a heat-exchanger element to the exhaust so the tailpipe emissions come out cooler than those of a standard piston engine. There were numerous test cars made during the s. Even Toyota gave it a try. Just think, the police could have been driving turbine-powered Diplomats. All kinds of tracks. In , Dan Gurney was briefly behind the wheel of a turbine car at Indy. Back here in the states, Art and Walt Arfons were starting careers based around turbine-powered dragsters and Bonneville cars. It finished 10th overall. A few years later, the Howmet TX, a small prototype carâ€”which was basically a seat in front of a Continental turbine wrapped in aluminum and gullwing doorsâ€”would try for the French checkered flag. The most famous of the turbine corner-turning racers were the Granatelli STP cars built for Indy in the lates. There were nearly a dozen different types of engines entered in the running of the Indy Some were supercharged, some turbocharged. There were overhead cams and dual-overhead cams and all manner of cylinder numberings. It was fast, though, and clever, with an air-brake flap that came up to assist in deceleration and four-wheel drive to lend a hand doing the opposite. The car was leading the race until a transmission bearing sent Parnelli coasting back to the pits just a few miles short of the win. The car caught everyone off guardâ€”nobody expected it to do much, as previous attempts to run turbine cars had failed to produce fast laps, but after seeing Parnelli fly by, leaving them like the earth-bound mortals they were, the drivers in the piston-engine cars began to worry. Although the turbine engines were reliable, the nuts and bolts around them disliked the heat and hardship of laps on the brickyard, and cars 60 and 20 ended just outside the top 10, retiring on laps and , respectively. Graham Hill, back again with turbines, drove the 70, set a qualifying record, and was in the top five until the back end made just enough contact with the wall to put him out of competition. One by one, the other cars fell victim to small parts failures, and Granatelli was once again sent home to salt his pasta with tears of disappointment. He would get his Indy win in , but with a more traditional car. Although turbine die-hard Jack Adams would try once more the following year, the continued USAC restrictions on intake size regulated the turbines out of competition. After the Indy attempt, the other Type 56 cars got moved around, raced here and there, and at one point Lotus even worked on an F1 car with the same design. Apparently, Colin Chapman had been won over to the idea of an engine that could go a whole season without maintenance, so much less finicky than those delicate Cosworths. Petty sold it at a Mecum auction in to a Texas-based philanthropist named Milton Verret, and Milton invited us to take a look at it. The 70 car was being run on Jet Aâ€”basically, keroseneâ€”on the day we got to see it, and when the start cart set things a-whirring, it was hard not to look up expecting an airplane. The driver sits in front of the turbine, helmet barely visible through the heat shimmer of the exhaust. As soon as you lift your foot off the brake, it begins to pick up speed. After riding in, and watching turbine cars in action, we wanted to get behind the wheel of one. Conveniently, Milton also owns a turbine-powered street car. It looks like a mildly customized 25th Anniversary edition Corvette. It sounds like a passenger liner preparing for takeoff. One starts to understand what made the builder, Vince Granatelli, upgrade the brakes from stock Chevy parts to state-of-the-art for ventilated NASCAR discs on all four wheels. Once we released the brakes, the car picked up speed, easily reaching a happy cruise at around 60 mph while our left foot hovered anxiously over the brake. Needing something to do with our right foot, we hit the gas. However, the design is basically the same as would be in a small helicopter. No, they tend to spin at five-digit speeds, and even with reduction gearboxes, the ST6N in the Corvette has an rpm higher than your average muscle-car shift

point, which is why it needs such brawny brakes, and why it felt so strange to drive. Shrouding directs the intake air through this before it goes in the engine. At the back of the engine is the gearbox that drops output from percent and 37, rpm to a less tire-roasting 6, 03 Among the exotic bits and pieces were some recognizable parts, like the alternator and power-steering pump. We just found what was comparable to stock, from an rpm standpoint, [a shaft that] was [spinning a speed] most like a crank pulley. There are several batteries in the trunk area. The red cans to the side are a water-injection kit. There are numer-ous heat shields to protect the hood and the wiring. The heat of the underside was one of the reasons why current owner Verret changed the wheels from the inchers that Granatelli used to the oversize Centerlines you see in the photos. The more ground clearance, the better! How did this one-of-a-kind Cor-jette come into being? Who thought it would be a good idea to put an hp gas turbine in a brand-new Corvette? Things start to sort themselves out somewhat when you realize that Vince Granatelli is the son of Andy Granatelli. Vince had one of the turbine IndyCars sitting around and tried to sell it to a friend, Herb Orlowitz. The friend, a man after our own heart, asked if it was street legal, and then if the engine could be put in a street car. Rather than tear up the racer, Vince offered to use one of the leftover turbine engines from the Indy program and build a streetable car. This makes them ideal for hybrid applications, charging the battery for an electric motor. Now if they would only paint them Turbine Bronze.

Chapter 7 : Our Future Vehicles Will Use Lighter, Advanced Materials | Plastics Make it Possible

Future Cars Vehicles in the near future, will be fuel efficient, zero emission, and use high tech electronics and software to assist drivers in a variety of ways. Vehicles will communicate with each other, with the road and with traffic signals.

Operation[edit] The control of the time machine is the same in all three films. The operator is seated inside the DeLorean except the first time, when a remote control is used , and turns on the time circuits, activating a unit containing multiple fourteen- and seven-segment displays that show the destination red , present green , and last-departed yellow dates and times. After entering a target date, the operator accelerates the car to 88 miles per hour Fusion generator that uses garbage as fuel. Fusion unit provides the required power for the time machine, the DeLorean is still powered by an internal combustion engine for propulsion. Although rarely used, the "j" sound at the beginning of the SI prefix "giga-" is an acceptable pronunciation for " gigawatt. Doc originally conceived the idea for the flux capacitor on November 5 , , when he slipped while hanging a clock in his bathroom and hit his head on the sink. It is a parody of Mr. Coffee machines, which were very popular at the time of filming. In the film, Mr. Fusion allows the DeLorean time machine to generate the required 1. The energy produced by Mr. The plutonium fission reactor was most likely left installed underneath Mr. Fusion as a backup power source. However, the flight systems were destroyed as a result of a lightning strike, leaving Marty to rely on the original combustion engine, which in turn was disabled. Fictional timeline[edit] For most of the first film, the 1. Fusion Home Energy Reactor " generator possibly acquired in Fusion" device apparently converts household waste into electrical power; the name suggests nuclear fusion. Due to a "hover conversion" made in , the car also becomes capable of hovering and flight , though it lost this ability at the end of the second film. While there, the DeLorean is stolen by Biff who then travels back to November 12, , the same day as the climax of the first film, to give his past self a sports almanac to be used for gambling. The DeLorean then travels back to to restore the timeline, [4] but in the aftermath, it is struck by lightning again in the very same electrical storm, this time by accident. According to writers Bob Gale and Robert Zemeckis, the lightning causes the DeLorean to spin at 88 miles per hour, [11] and Doc later states in a letter to Marty that the bolt caused a "gigawatt overload" which "shorted out the time circuits and destroyed the flying circuits". The tires have disintegrated in storage, so Doc replaces them with whitewalls. The gasoline engine is still functional, but the flying circuits are not. In a letter Doc wrote to Marty in , Doc states he is happy in his new life there and requests that Marty not attempt to retrieve him, but instead to return to and destroy the DeLorean, believing that it has brought them and the world nothing but disaster. He and Doc patch it and attempt to use whiskey as a replacement fuel, since commercial gasoline is not yet available; the test fails, destroying the fuel injection and ignition systems and leaving the car unable to travel under its own power. Fusion unit provides the power required to activate the flux capacitor and make the jump through time. Once the DeLorean makes its final trip from , it arrives back in and is immediately destroyed by an oncoming freight train running in the opposite direction. Marty is able to bail out of the car seconds before the train strikes. Other elements[edit] The time circuits in a replica time machine In the films, the DeLorean time machine is a licensed, registered vehicle in the state of California, where the films take place. Fusion and the hover conversion Doc either rebuilds the one destroyed at the end of Part III or he simply builds a new one. He also seemingly adds the capability to travel through space in addition to time i. The cartoon DeLorean time machine has many add-ons, including a back seat in normal two-door mode, the ability to transform into a four-door, a pop-out covered wagon top, a blimp, a rear video screen, and a voice activated time input. Back to the Future: The Game features a chronal duplicate of the original DeLorean, which Doc Brown recovered from the timestream after the destruction of the original. He later traveled to and sent the DeLorean to to get Marty to rescue him from before he can be killed. As such, the chronal circuits of the duplicate DeLorean become even more glitchy, accumulating errors as severe as the interval of time traveled, with increasing damage with every attempt: The more adept Doc Brown returns in another duplicate DeLorean due to earlier events in the game, although it is unknown where it came from. After they explain to him that there is more than one DeLorean, Marty explains that the other DeLorean had malfunctioning time circuits. To make

matters worse, the entire town of Hill Valley disappears around them. After they get information from Mary, who was really Edna, they go to The ending introduces a blue DeLorean and a black DeLorean, but it is unknown how these time machines were created. The Ride , Doc, who now lives in a lab, had created an 8-passenger DeLorean that can fly just like the original DeLorean which can be seen in the ride and in the outside display and the Hover Train which can only be seen in display outside of the attraction. Unlike the original DeLorean, the flux capacitor is in the front of the cockpit along with a small screen, the time circuits, and the speedometer. However, in a post-credits scene, Clara Clayton, who has built Hover Train with Doc, currently repaired the DeLorean and travels back to to a farm. In Doc Brown Saves the World , there was a repaired DeLorean time machine which included new replacement parts from The DeLorean is also seen in a video promoting Doc Brown Saves the World, and it is unknown as to whether or not a flux capacitor was inside. Behind the scenes[edit] Inside the cabin facing front Inside the cabin facing rear The time machine went through several variations during production of the first film, Back to the Future. In the first draft of the screenplay, the time machine was a laser device that was housed in a room. At the end of the first draft the device was attached to a refrigerator and taken to an atomic bomb test site. Director Robert Zemeckis said in an interview that the idea was scrapped because he did not want children to start climbing into refrigerators and getting trapped inside. In the third draft of the film the time machine was a car, as Zemeckis reasoned that if you were going to make a time machine, you would want it to be mobile. However, in order to send Marty back to the future, the vehicle had to drive into a nuclear test site. Ultimately this concept was considered too expensive to film, so the power source was changed to lightning. Andrew Probert was the first artist to explore the subject before Ron Cobb joined the production , but his designs were deemed "too perfect" for the look the producers wanted, which was to make it look as if it had been built in a garage by Doc Brown. The nuclear reactor was also a design choice made by Cobb. This choice proved to be important, given the direction the script had taken. Cobb complemented the nuclear reactor with one vent on the back of the car, since it was generally known at the time that nuclear reactors had vents. Once Cobb had left the production, the producers wanted to balance the design with another vent, keeping a symmetrical aesthetic. Probert was asked to step in and he brought the design to its final form. At the end of the first film of the trilogy these vents become the propulsion system for the improved DeLorean, which now had hovering abilities and could reach the time-traveling speed of 88 miles per hour flying. The production design team added other buttons and lights inside the car to make it look more appealing and complex in order for the audience to have something attractive to look at. Different parts from three DeLoreans were used in the first film. Liquid nitrogen was poured onto the car for scenes after it had travelled through time to give the impression that it was cold. The base for the nuclear reactor was made from the hubcap from a Dodge Polara. Aircraft parts and blinking lights were added for effect. In one of the first scenes, carbon dioxide extinguishers were hidden inside the DeLorean to simulate the exhaust effect. In the off-road scenes in the third film, a modified-for-off-road VW Beetle frame was fitted to the DeLorean with the whitewall tires and baby Moon hubcaps. Replicas[edit] Two DeLorean time machine replicas A number of private auto customizers have built replicas of the DeLorean time machine. Starting with a stock DMC, they added most, if not all, the props used by the movie producers for the picture cars. These vehicles are, for the most part, roadworthy DeLoreans with stock drivetrains, and are frequently driven to car shows and Back to the Future-related events.

Chapter 8 : BBC - Future - The cars weâ€™ll be driving in the world of

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