BOLJ GONIŠ, BOLJ GRE: POGONSKA GORIVA PRIHODNOSTI

Jaka Delčnjak

Srednja zdravstvena šola Slovenj Gradec

OŠ Jožeta Gorjupa, Kostanjevica na Krki, 31.5.2025

ŠCSG Srednja zdravstvena šola

Ekošola

PREGLED VSEBINE

01

- Uvod in kako se je vse skupaj začelo

02

- Potek dela

03

- Elektrika

04

- Biogoriva

05

- Vodik

06

- Jedrski pogon

07

- Voda

08

- Zaključek (kaj je to trajnost?)

UVOD IN KAKO SE JE VSE SKUPAJ ZAČELO

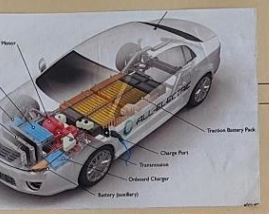
- Dijaki komaj čakajo, da vozijo avto-svoboda gibanja
- Pogovor z dijakinjo – vprašanje o vrsti pogona
- Avtomobili prihodnosti: kaj bo trajnostno?
- Osebna refleksija: Ali obstaja rešitev brez slabe vesti, boljša kot električni avtomobil?
- KAJ JE TRAJNOST?
- Kot pojem pogosto uporabljen, a premalo razumljen
- Mora biti cilj, ne spremljevalni pojem
- Vprašanje: Ali ima ta cilj prostor v sodobni, kapitalistični družbi?

CILJI TRAJNOSTNEGA RAZVOJA

- Zgraditi vzdržljivo infrastrukturo, spodbujati vključujočo in trajnostno industrializacijo ter pospeševati inovacije
- Zagotoviti dostop do cenovno sprejemljivih, zanesljivih, trajnostnih in sodobnih virov energije
- Poskrbeti za odprta, varna, vzdržljiva in trajnostna mesta in naselja

POTEK DELA

- New Headway 5th Edition, Unit 8 Future Friendly
- 2. letnik, 5 skupin, vsaka raziskuje eno vrsto pogona
- Domače iskanje virov + dodatno gradivo (učitelj)
- Uporaba UI prepovedana, razen za povzetke
- Branje virov, izločanje informacije, izdelava plakatov, predstavitev
- Definicija trajnosti: Typeform in diskusija



Battery (all-electric auxiliary): In an electric drive vehicle, the auxiliary battery provides electricity to power vehicle accessories.

Charge port: The charge port allows the vehicle to connect to an external power supply in order to charge the traction battery pack.

DC/DC converter: This device converts higher-voltage DC power from the traction battery pack to the lower-voltage DC power needed to run vehicle accessories and recharge the auxiliary battery.

Electric traction motor: Using power from the traction battery pack, this motor drives the vehicle's wheels. Some vehicles use motor generators that perform both the drive and regeneration functions.

Onboard charger: Takes the incoming AC electricity supplied via the charge port and converts it to DC power for charging the traction battery. It also communicates with the charging equipment and monitors battery characteristics such as voltage, current, temperature, and state of charge while charging the pack.

Power electronics controller: This unit manages the flow of electrical energy delivered by the traction battery, controlling the speed of the electric traction motor and the torque it produces.

Thermal system (cooling): This system maintains a proper operating temperature range of the engine, electric motor, power electronics, and other components.

Traction battery pack: Stores electricity for use by the electric traction motor.

Transmission (electric): The transmission transfers mechanical power from the electric traction motor to drive the wheels.

OW DO ALL ELECTRIC CARS WORK?

ELECTRIC VEHICLES

ADVANTAGES AND DISADVANTAGES

↳ ADVANTAGES:
1) Electric cars are energy efficient
2) Save money on fuel
3) Electric cars require lower maintenance
4) Electric cars are fast
5) Easy to drive
6) Reduced noise pollution

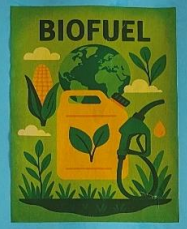
↳ DISADVANTAGES:
1) Range depends on its battery
2) Not many recharge points
3) Charging takes more time than refuelling
4) EVs cause pollution and e-waste

CHARGING AND BATTERIES

- You can charge electric vehicle at home
- Charging vehicles depends on:
  1) electric vehicle
  2) battery
  3) type of charge point
- You can charge electric car during the day with solar panels
- Batteries last from 10-20 years
- Slow charger: 6-12 hours
- Fast charger: 3-4 hours

WHAT IS BIOFUEL?

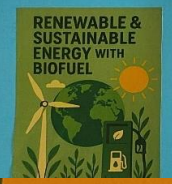
Biofuel is a type of renewable energy derived from organic matter such as plants, agricultural crops, algae, or animal waste. It is processed into liquid or gas forms (like ethanol or biodiesel) and used as a substitute or supplement to traditional fossil fuels in transportation.



BIOFUEL

RENEWABLE AND SUSTAINABLE ENERGY SOURCE

Unlike fossil fuels, which take millions of years to form, biofuels are made from sources that can be grown and harvested repeatedly. This makes more sustainable energy option in the long term, especially as global energy demands increase and fossil fuel resources decline.



FOOD VS. FUEL CONTROVERSY

A major criticism of biofuel is the "food vs. fuel" dilemma. Large-scale production often uses crops like corn, sugarcane, or soybeans, which otherwise be used for food. This can lead to higher food prices, strain on agricultural land, and food insecurity in vulnerable regions.

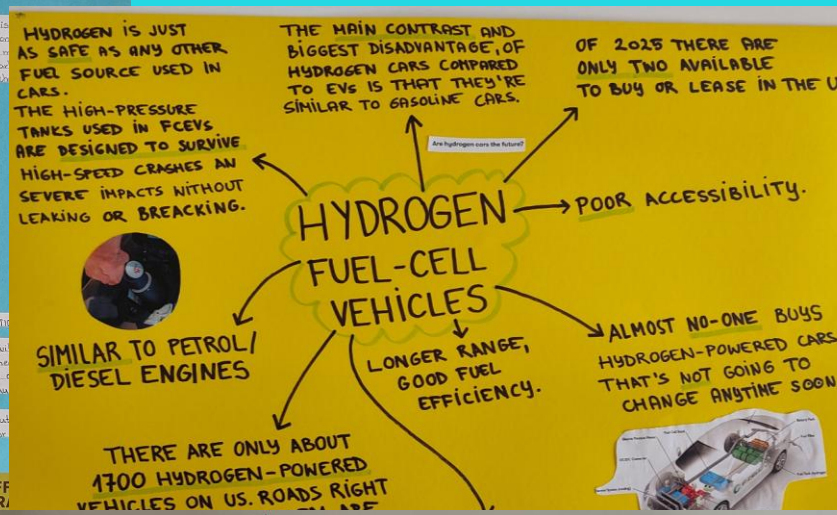
ENVIRONMENTAL BENEFITS

One of the key advantages of biofuel is significantly fewer greenhouse gas emissions fossil fuels. Because the plants used to absorb CO_2 during growth, the overall cor be lower, making it a cleaner alternative

EFFICIENCY AND PRACTICAL LIMITATIO

While biofuels can replace or blend wi they generally have lower density, me needed to produce the same amount the production process can be energy

The fuel is not always carbon-neu fossil fuels are used in farming or



reactor for power.
But it was never built.

It would utili
nuclear fission,
the process of spli
nuclei to release

WATER POWERED CAR

HOW DO THEY WORK?
- by boiling hydrogen
- it's believed splitting hydrogen uses more energy than burning it. Making electric cars better.

WATER FUEL CELL
- Stanley Meyers devices were found to be fraudulent in 1996.
- No one tried to copy his work
- Ionized hydrogen was also considered, but it can produce radioactive gas.
- Water powered and hydrogen powered cars are currently deemed impossible
- "success is simply not possible" said Elon Musk.

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S WATER ENGINE COULD REVOLUTIONIZE
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Nuclear powered car's

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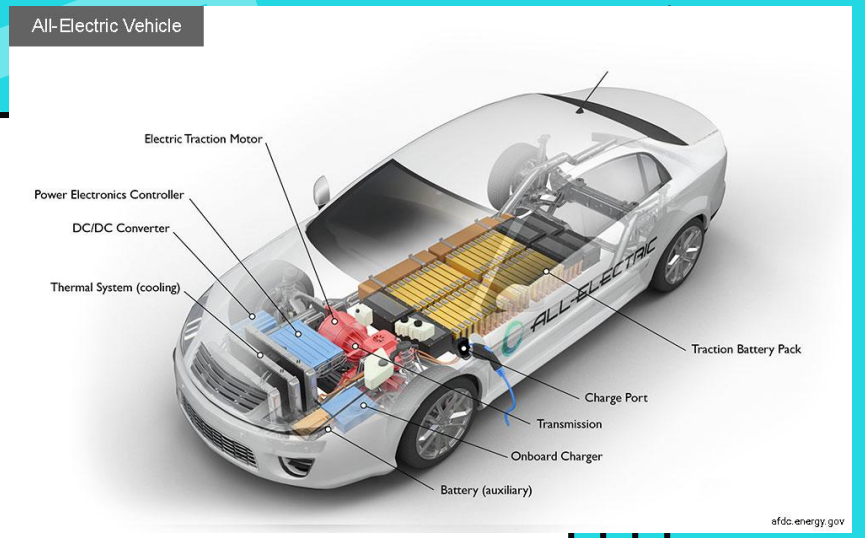
ELEKTRIKA

- Prednosti:
  - Brez izpušnih plinov, nižji stroški vzdrževanja
  - Subvencije, manj hrupa, enostavna vožnja
- Slabosti:
  - Čas polnjenja, domet, vpliv ekstremnih temperatur
  - Življenjska doba baterije
- Primeri vozil: Citroen e-C3, Škodal Elroq, Kia EV3



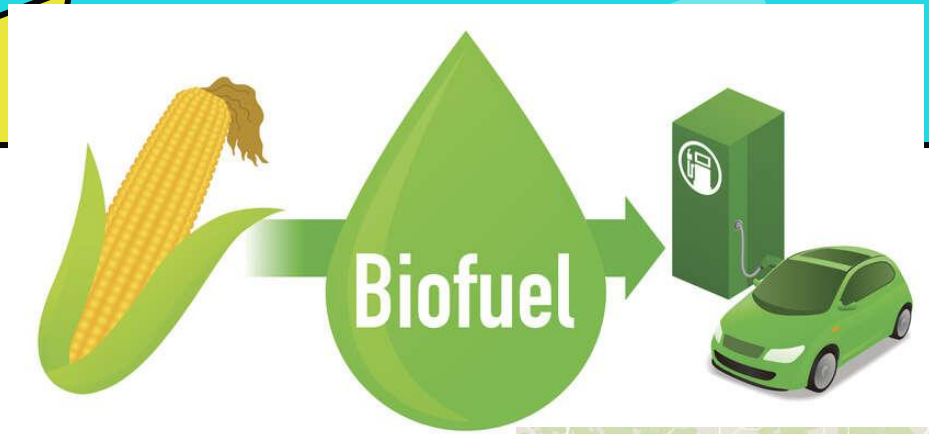
NAJ. ELEKTRIČNI AVTOMOBILI

Citroen e-C3
25.300 €
320 km

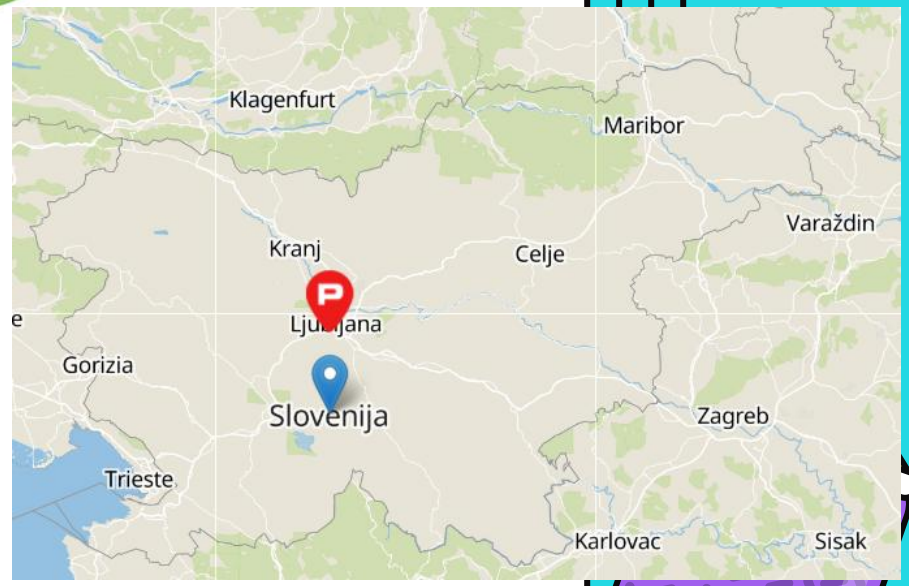
Škoda Elroq
34.700 €
480 km

KIA EV3
32.700 €
520 km

BIOGORIVA



- Vrste: etanol, biodizel, napredna biogoriva (alge, odpadni materiali)
- Biogoriva niso samostojna goriva ampak delež klasičnih goriv
- Prednosti:
  - Manj emisij, lokalna proizvodnja, boljša razgradljivost, uporabnost pri avtomobilih
- Slabosti:
  - Slaba dostopnost (v Sloveniji 1 lokacija – Ljubljana Barje)
  - Višja cena, uporaba pesticidov, izraba kmetijskih zemljišč



VODIK

- Dve vrsti
  - Motorji z izgorevanje vodika
  - Vozila na gorivne celice (HFC)
- Prednosti
  - Hitro polnjenje, visok doseg, vodna para kot stranski produkt
- Slabosti:
  - Visoka cena avtomobilov, zahtevna infrastruktura
  - Velika poraba energije za proizvodnjo

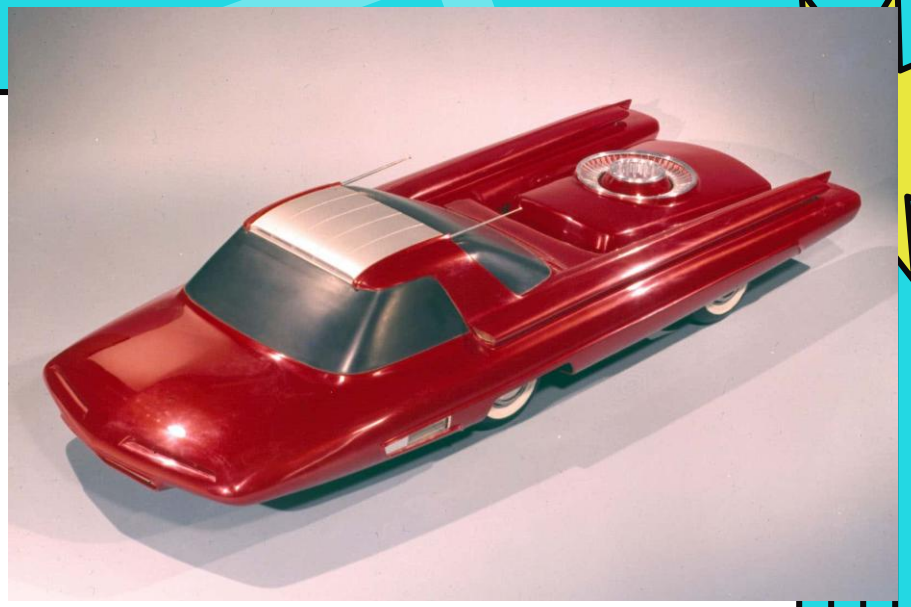
TOYOTA

MSRP

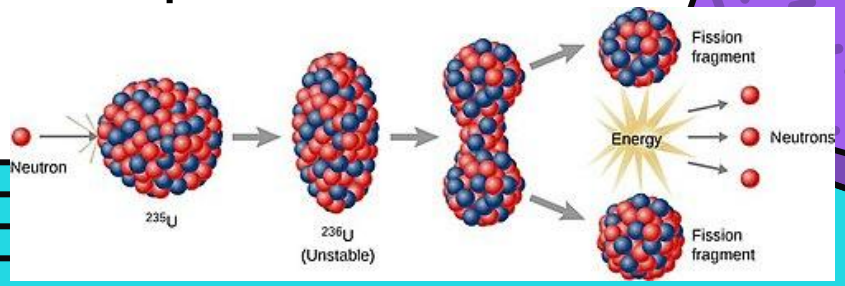
$52.930

Toyota Mirai

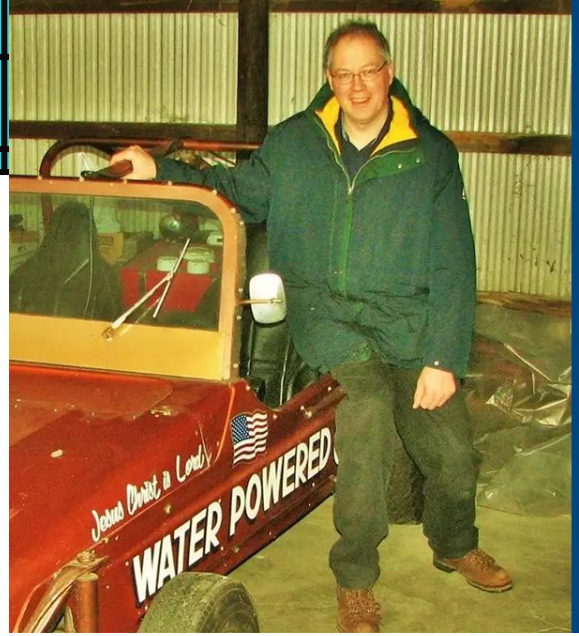
JEDRSKI POGON



- Zgodovinski primeri
  (Studebaker-Packard Astral in Ford Nucleon 1957)
- Potencial, a ogromne ovire:
  - Varnost, velikost, javno mnenje, zakonodaja ravnanja z jedrskimi odpadki.
- Danes še vedno nerealna možnost za civilni promet.



VODA



- Začetek razvoja v 90ih letih- Stanley Meyer
- 4L vode=160km
- Pomanjkljivi podatki in nenadna smrt Meyerja=teorije zarote.
- Glavni problem – vir energije za izvedbo elektrolize.
- Elektriq Global 2024 razvije vozilo s 1000 km dometa

ZAKLJUČEK (KAJ JE TRAJNOST?)

- Definicija trajnosti
- Nobena tehnologija ni popolnoma trajnostna
- Vsaka obremenjuje okolje na drugačen način
- Trajnost je podrejena profitabilnosti
- Inovacije pogojene s tržno logiko
- Potrebno je celostno razumevanje: tehnologija + sistemske spremembe
- Končne ugotovitve: zelena laž in dijaki ne znajo več raziskovati.

Response type	Kaj je zate trajnost?
Completed	nič onesnaževanja in skromnost
Completed	da ne uporabiš preveč virov
Completed	neki kar traja pa ne skoduje
Completed	cim manj onesnaževanja pa da dolg traja
Completed	Omejitev tistega kar narava da na minimum
Completed	Ko si okolju prijazen
Completed	da nekaj traja in ne onesnažuje okolja
Completed	Ko uzameš samo toliko kot rabiš
Completed	Da ne onesnazujes okolja

TRAJNOSTNA REŠITEV?

HVALA ZA POZORNOST