ELECTRIC CARS

What is an electric car?

- An electric car is a car powered by an electric motor, using electricity stored in a battery, or other energy storage devices.

The emergence of an electric car

- They have emerged for concern about the rapid increase in oil prices and the need to reduce greenhouse gas emissions.
- The first electric cars were made in the late 19th and early 20th centuries.
- The energy crises of the 1970s and '80s led to a short-term interest in electric cars, and in the middle of 2000 renewed interest in the production of electric cars.

Tomas Parker's electric car from 1880 and Tomas Edison's electric car

Some of the newer, more developed el. cars

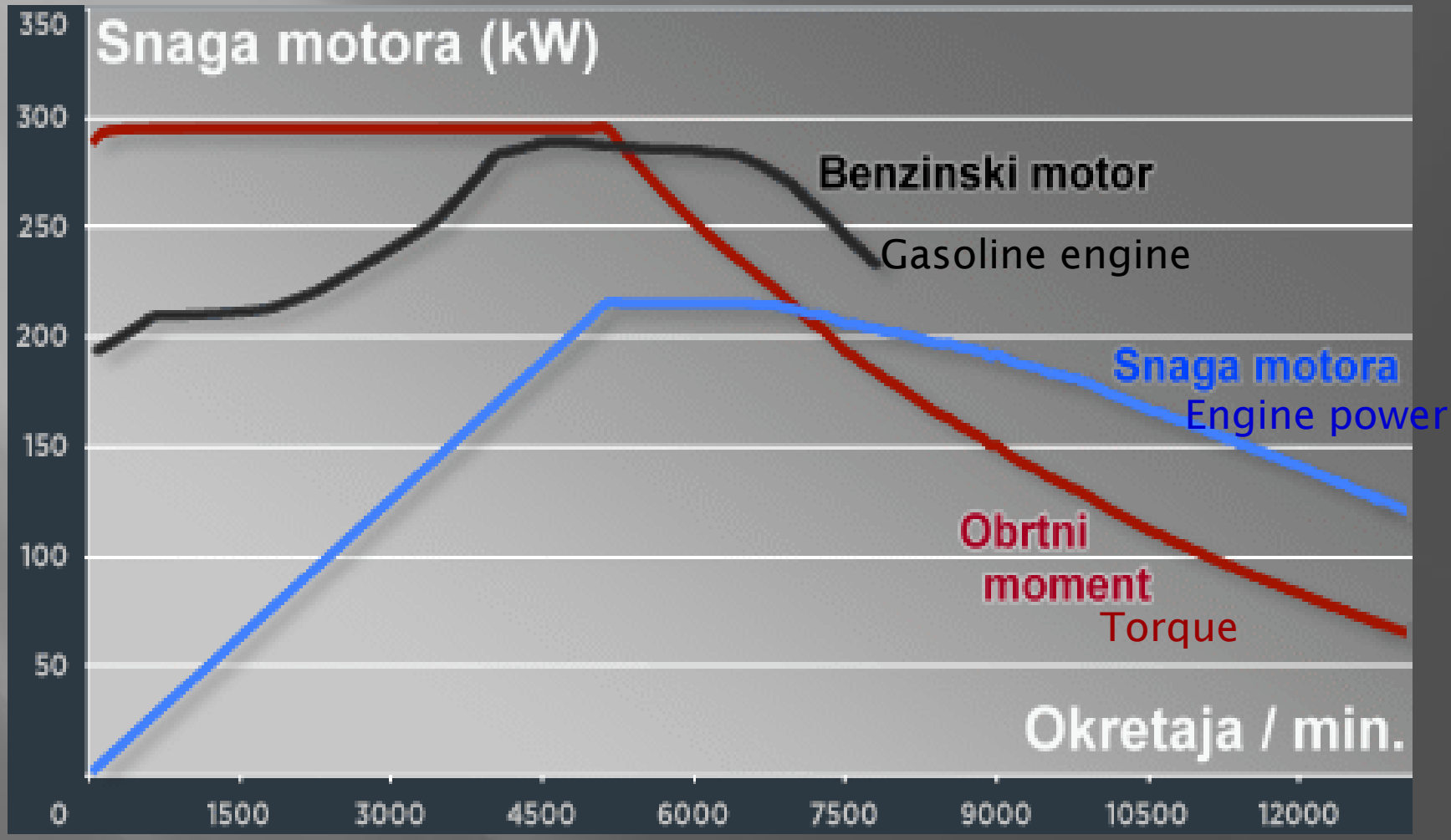
Engine principle

- Electric cars from the end of the 19th century had direct current motors with permanent magnets and brushes that did not last long.
- These problems do not have three-phase alternating current motors, and thanks to inverters, they can be powered by batteries, with the frequency being switched, which determines the speed of the motor rotation.
- The most common are synchronous motors with permanent brushless magnets, while Tesla applies asynchronously.

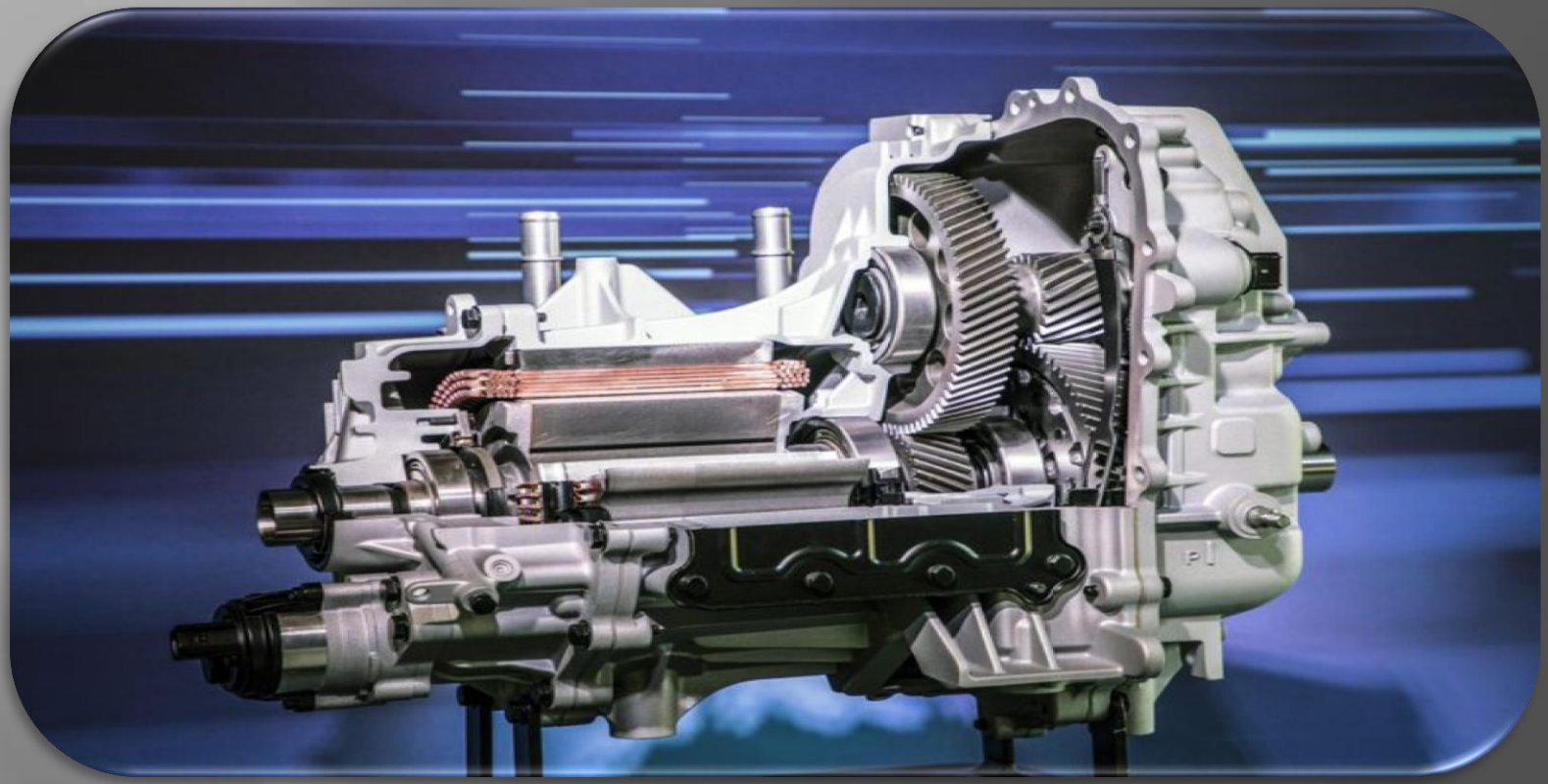
Start-up and engine operation

- As cars with internal combustion for start-up use a mixture of petroleum products (diesel or gasoline) and air, so electric cars to start using electricity.
- Electricity is stored in batteries inside the car, so the price of the electric and hybrid cars alone is higher than the internal combustion engine, but the prices of batteries start to fall slightly, and therefore more electric cars can be expected in the near future.

Graph: Engine power depending on the speed



Motor with permanent magnets



- It develops 204 hp and launches Opel Ampera in transmission and differential transmission

Driving an electric car

- Electric motors have great power in relation to the mass.
- Electric cars can use for each wheel of a single engine, which allows for a better distribution of power and activity in the event of slippery conditions on the road.
- The installation of electric motors that are directly attached to the wheels reduces the number of moving parts, which also increases the high utilization of electric motors (95%).

Consumption and power supply

- Electric car charging rates depend on the price of electricity - which varies from country to country.
- In Serbia, the transition distance of 100 km for a consumption of 21.25 kWh / 100km is 188.27 / 100km.
- For this type of charging, a distibutive electrical network is required.

- Vehicles are charged only when the peak of power consumption is low.
- Vehicles that are already full or have a lot of electricity can function as a network aid, and in this way less burden the system, or help it.

Charging el. cars

The price

- Electric cars are generally more expensive than petrol cars due to expensive batteries.
- Most modern electric cars in Serbia cost an average of 25-30 thousand euros.

Positive impact on the environment

- Electric cars contribute to clean air in cities, as they do not release harmful substances into the environment.
- Electric cars drive electric power which, if obtained, for example, Renewable energy sources cause minimal environmental pollution.
- Not using oil as a means of gaining mobility but electricity is greatly reduced dependence on oil of foreign countries.

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