ACADEMY OF APPLIED STUDIES OF KOSOVO AND METOHIJA
Department Urosevac Leposavic

Master professional studies

INFORMATION AND COMMUNICATION TECHNOLOGIES IN ROAD TRAFFIC

ELECTRONIC AND SATELLITE TOLL COLLECTION

Electronic toll collection

Electronic Toll Collection (ETC) enables contactless toll payment using a TAG device. This technology provides a fast and safe passage through the toll plaza without stopping or using cash. Drivers are required to correctly position the TAG device and follow the instructions for its use.

Why is it useful to have a TAG device?

These devices are extremely useful because they allow for easy payment of tolls (ENP) without stopping and waiting. They are especially important during rush hour. Drivers with TAG devices, on specially marked electronic toll lanes, pass without waiting, thus bypassing and preventing congestion at toll spots.

ELECTRONIC AND SATELLITE TOLL COLLECTION

TAG device

Tag device

ELECTRONIC AND SATELLITE TOLL COLLECTION

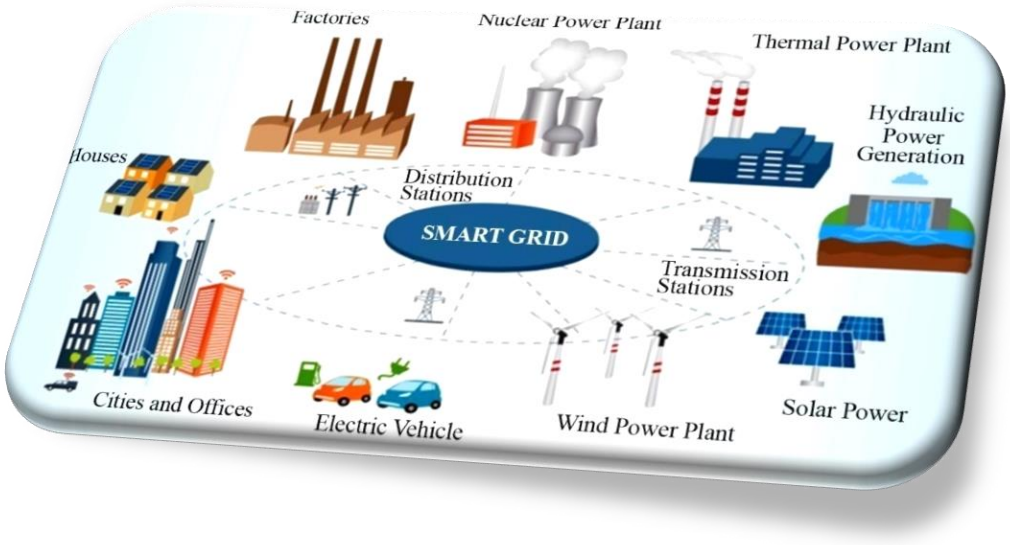
Satellite toll collection

In the future, there will be no toll booths on the highway in the Republic of Serbia, and tolls will be collected via satellite tracking of cars, as in some European countries. This system will speed up travel, as there would be no previous system in which some drivers had to wait at toll booths to get a card or pay the toll, while others passed without stopping (ENP).

Electric vehicles – vehicles of the future

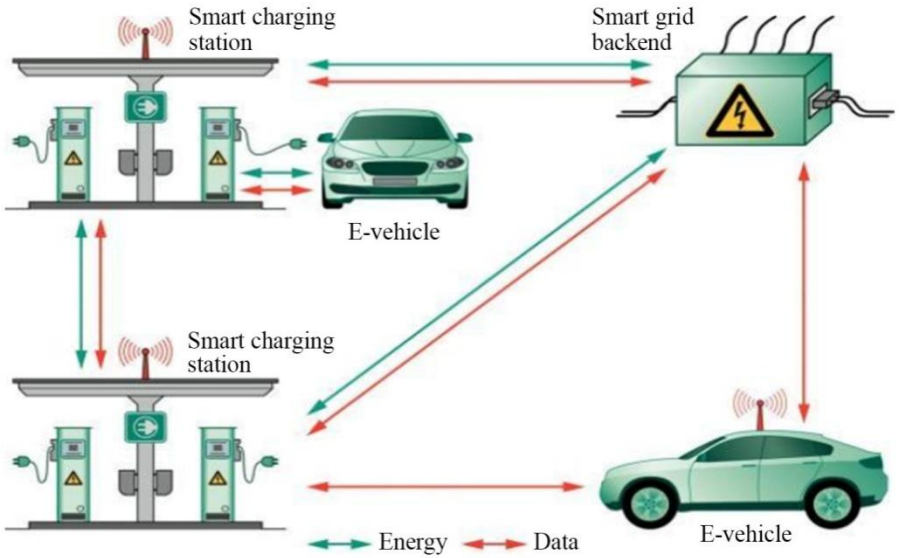
The electrification of vehicles is on the rise due to their environmental friendliness, energy efficiency and reduction of CO2 emissions. Electric vehicles are expected to become renewable energy storage and grid stabilizers, which requires the development of smart grid technologies. These technologies will enable the integration of renewable energy sources and the reduction of CO2 emissions, while in the future they will enable the exchange of data between vehicles and energy systems.

Smart grids and electric vehicles



Smart grid

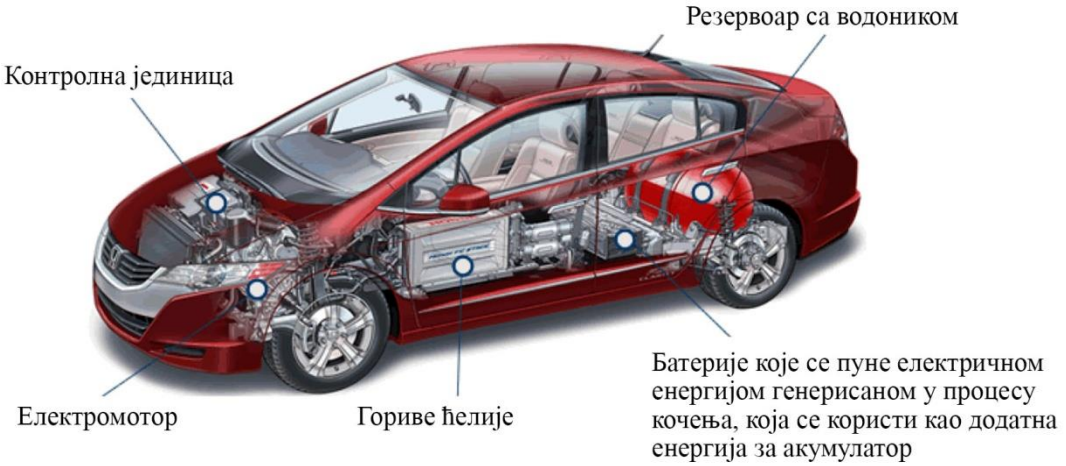
E-mobility network architecture



Smart vehicle charging stations

Electric and hybrid vehicle concepts

Electric vehicle encompasses all vehicles that use electricity for propulsion, including various hybrid and electric concepts currently on the market or in development.



Types of electric vehicles

Electric vehicles can be divided into

- ❑ electric vehicles (HEV – Hybrid Electric Vehicle);
- ❑ plug-in hybrid electric vehicles (PHEV – Plug-in Hybrid Electric Vehicle);
- ❑ all-electric vehicles (EVs – All-Electric Vehicles), and
- ❑ fuel cell electric vehicles (FCEVs – Fuel Cell Electric Vehicles (FCEVs).

Lifespan of electric vehicles

Electrical systems in vehicles are replacing mechanical systems, reducing failures and increasing efficiency. Technology, such as microprocessors and actuators, is improving reliability and durability, leading to a longer vehicle life. The expected lifespan of electric vehicles is 500,000 km, and ten-year warranties are becoming standard.

Questions ???

Thank you!