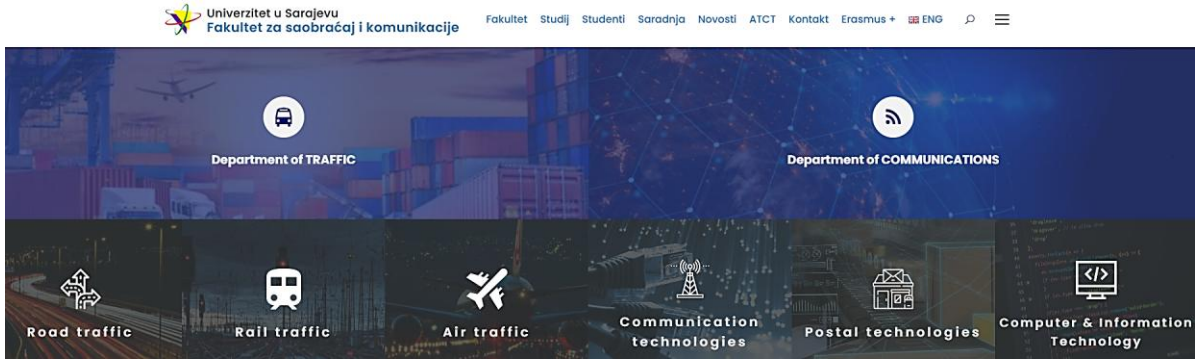
University of Sarajevo: https://www.unsa.ba
Faculty of Traffic and Communications: https://fsk.unsa.ba/



SIGURNOST ELEKTRIČNIH VOZILA

SAFETY OF ELECTRIC VEHICLES

Uvod u sigurnost električnih vozila / Introduction to Electric Vehicle Safety

- Električna vozila (EV) predstavljaju inovaciju u transportu, ali nose i posebne sigurnosne izazove.

- Electric vehicles (EVs) represent an innovation in transport, but they also carry special safety challenges.

Regulatorni okvir, standardi, propisi u zemljama EU / Regulatory framework, standards, regulations in EU countries

- U EU važe regulative poput UN ECE R100, ISO 6469 i Direktiva o sigurnosti vozila 2007/46/EC.

- In the EU, regulations such as UN ECE R100, ISO 6469 and the Vehicle Safety Directive 2007/46/EC apply.

Inicijative za razvoj i promociju E mobilnosti / Initiatives for the development and promotion of E-mobility

- EU Green Deal, Fit for 55, nacionalni planovi država članica - podrška širenju EV infrastrukture.

- EU Green Deal, Fit for 55, Member States' National Plans - Support for the Expansion of EV Infrastructure.

Pogonski sistem E vozila / E-vehicle propulsion system

- EV koristi elektromotore, baterije i pretvarače energije. Nema mehaničkog pogona klasičnog tipa.

- EVs use electric motors, batteries, and energy converters. There is no mechanical drive of the classic type.

Rizici i opasnosti prilikom korištenja i punjenja EV / Risks and Dangers When Using and Charging an EV

- Rizik požara, električnog udara, kvarova baterije – potrebna tehnička i sigurnosna zaštita.
- Risk of fire, electric shock, battery failure – technical and safety protection required.

Edukacija o sigurnosti kretanja E vozila u saobraćaju / Education on the safety of E vehicles in traffic

- Uključuje treninge za vozače, pravilnu upotrebu infrastrukture, signalizaciju.

- It includes training for drivers, proper use of infrastructure, signaling.

Sigurnosni aspekti kod saobraćajnih nezgoda / Safety Aspects in Traffic Accidents

- Baterije mogu izazvati sekundarne požare, potrebna specijalizacija hitnih službi.
- Batteries can cause secondary fires, emergency services specialization required.

Sigurnosni aspekti punionica / Safety aspects of charging stations

- Standardizacija kablova, izolacija, nadzor temperature, pristupna sigurnost punionica.

- Standardization of cables, insulation, temperature monitoring, access safety of charging stations.

Sigurnost električnih vozila: Praktični aspekti
/
Electric Vehicle Safety: Practical Aspects

- Fokus na svakodnevnu upotrebu i mjere zaštite pri vožnji i punjenju.

- Focus on everyday use and protection measures when driving and charging.

EU standardi i zakonodavstvo / EU standards and legislation

- ISO 6469, IEC 61851, direktive o homologaciji i CE označavanju.
- ISO 6469, IEC 61851, the Type-Approval and CE Marking Directives.

Podsticaji i razvoj E mobilnosti / Incentives and development of E-mobility

- Finansijski podsticaji, besplatno parkiranje, širenje mreže punjača.

- Financial incentives, free parking, expansion of the charger network.

Tehnička struktura pogonskog sistema / Technical structure of the propulsion system

- Sastoji se od elektromotora, invertera, baterijskog paketa, BMS sistema.

- It consists of an electric motor, inverter, battery pack, BMS system.

Potencijalne opasnosti: Baterije i sistem napajanja / Potential Hazards: Batteries and Power System

- Termičko izgaranje, eksplozije, degradacija baterije – potreba za certifikovanim komponentama.
- Thermal combustion, explosions, battery degradation – the need for certified components.

Obuka korisnika EV / EV User Training

- Vozači moraju biti informisani o rukovanju, punjenju, intervencijama u hitnim slučajevima.

- Drivers must be informed about handling, charging, emergency interventions.

Saobraćajne nezgode sa EV / Traffic accidents with EVs.

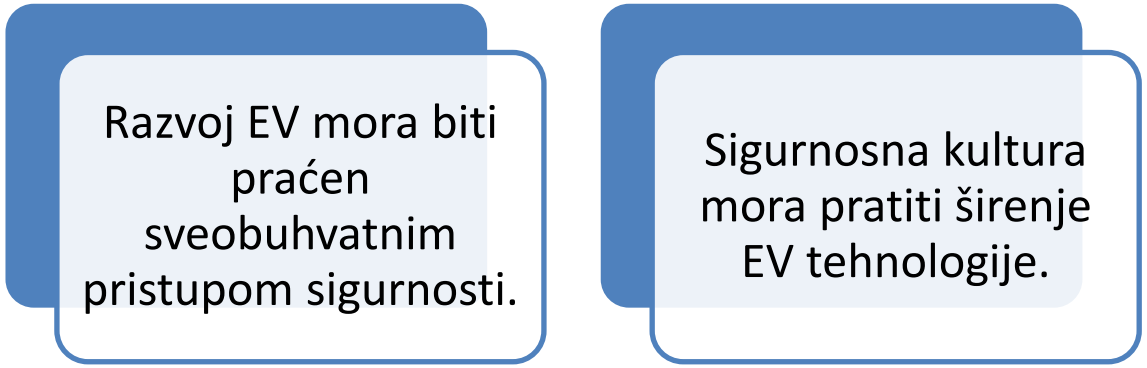
- Specifičnosti intervencija – električni rizici za spasilačke službe, pristup baterijama.
- Specifics of interventions – electrical risks for rescue services, access to batteries.

Sigurna infrastruktura punjenja / Safety charging infrastructure

- Mjere zaštite: IP zaštita, uzemljenje, pametna kontrola protoka energije.

- Protection measures: IP protection, grounding, smart control of energy flow.

Zaključak / Conclusion



- The development of EVs must be accompanied by a comprehensive approach to safety.
- A safety culture must accompany the spread of EV technology.

University of Sarajevo: https://www.unsa.ba
Faculty of Traffic and Communications: https://fsk.unsa.ba/

*PhD. **Osman Lindov**, Full Professor-Traff. Eng.*
Faculty of Traffic and Communications University of Sarajevo
Zmaja od Bosne 8, 71 000 Sarajevo, B&H
Phone: +387 (33) 565 200 / Mobile: + 387 (61) 161 482

Thank you for your attention

Osman Lindov: osman.lindov@fsk.unsa.ba

Amel Kosovac: amel.kosovac@fsk.unsa.ba

Drago Ezgeta: drago.ezgeta@fsk.unsa.ba

Adnan Omerhodžić: adnan.omerhodzic@fsk.unsa.ba

Belma Memić: belma.memic@fsk.unsa.ba

Elma Avdagic-Golub: elma.avdagic@fsk.unsa.ba

Aida Kalem: aida.kalem@fsk.unsa.ba

Edvin Šimić: edvin.simic@fsk.unsa.ba

Ajdin Džananović: ajdin.dzananovic@fsk.unsa.ba