The car...
safety and more

IEC work in support of the automotive industry and electric cars
Literally dozens of Technical Committees and thousands of engineers work on the global IEC platform on the electric and electronic infrastructure that allows cars to operate as expected and connect safely to the grid.

IEC work includes:

- Thousands of components, switches, connectors, wires; lighting and displays that are built into any modern car
- Audio, video, in-vehicle communication & connection
- Batteries, capacitors and fuel-cells (safety, connectors, dimensions)
- Connectors and charging infrastructure, electric accessories, inductive charging, and more
- Functional safety of charging stations and vehicles
- Overall electrical safety and protection from shocks, overvoltage and fires
- Electromagnetic compatibility (EMC)
- Interfaces & protocols for vehicle-to-grid communication, IT security and data protection
| TC 8: Systems aspects for electrical energy supply | TC 15: Electrical insulation materials | TC 20: Electric cables and fire hazard testing |
| TC 21: Safety of batteries | SC 22E: Power supplies | TC 23: Electrical accessories, circuit breakers, protection against electric shocks, etc. |
| SC 23H: Plugs, Socket-outlets and couplers for EVs | TC 32: Fuses | SC 34D: Car dashboards, backlights for small displays, headlights for cars |
| TC 40: Capacitors and resistors for electronic equipment | TC 46: Cables, wires, connectors for transmission systems and communication networks | TC 48: Connectors and connecting devices |
| TC 64: Requirements for installations or locations – supply of electric vehicle. Protection against electric shock | TC 65A: Functional safety | TC 69: Control communication protocol between off-board charger and EV; overvoltage and lightning protection |
| TC 73: Short-circuit currents | TC 77: EMC (electromagnetic compatibility) | TC 91: Electronics assembly technology |
| TC 100: Terminals, audio, video, multimedia, data systems | TC 108: Safety of electronic equipment | TC 110: Electronic display devices |
| TC 111: Environmental standardization for electrical and electronic products and systems | TC 112: Evaluation and qualification of insulating materials and systems | JTC1: Vehicle to grid communication, interconnection of ICT equipment, user interfaces, data management & security, etc. |
| ACOS: Advisory Committee on Safety | MSB: Strategy on energy storage, generation, distribution. High-voltage wireless charging. | SG3: How to cope with peak demand/Smart Grid |

IEC e-mobility efforts are coordinated by IEC SG 6.
EVs and safety are inseparable

The IEC has over 100 years of expertise in electrical safety.

No room for trial & error
EVs use high-voltage electrotechnical systems. Whenever electricity is involved, there is no room for trial and error... because every error is potentially fatal.

EVs need to be designed, built, operated and repaired safely... from the start.

Standards for EVs need to draw on the knowledge of electrotechnical experts, particularly with regard to the safety of humans, animals and the environment.

IEC = electrical safety
Over the past 100 years, the IEC has accumulated an unmatched level of expertise in electrical safety. Electric utilities and manufacturers of electrical equipment traditionally participate in IEC work. Many of the world’s top experts share their know-how on the global IEC knowledge platform.

For electrical safety, the IEC is therefore the natural resource for car manufacturers who must satisfy public safety regulations and want to limit their own liability.
Reducing liability

Designing cars with help of IEC International Standards provides evidence that state-of-the-art safety considerations were taken into account and this in turn reduces liability.

Globally recognized expertise

IEC International Standards draw on the world’s leading technical expertise in electrical safety and take into account all potential risks and safety considerations. They are globally recognized as providing the highest guarantee of quality and completeness.

Evidence for safety

Compliance with IEC International Standards provides powerful evidence that a product design is safe for use and for the environment.

The use of IEC International Standards from design, through manufacturing and operation, allows automotive manufacturers to demonstrate that they have applied state of the art expertise.

Reducing liability risks

This in turn permits car manufacturers to reduce the liability risks associated with electric vehicles.
Car manufacturers and utilities need to work closely together – the IEC has the expertise to support the development of the EV and network infrastructures.

Different mind-set needed

The car industry considers EVs as one of the key solutions for maintaining sustainable individual transportation...and their business. But EVs require a different mind-set compared to ordinary cars. They are not stand-alone products; they don’t simply “pump” and roll. They are part of a much bigger system.

Governments increasingly push for electrified transportation – today motor vehicles emit over 900 million tons of CO₂; roughly 15% of global fossil fuel emissions.

Today only approximately 1% of electricity produced is used in transportation.

Infrastructure investment required

An increase in electrified transportation will massively impact existing electricity networks. The broad roll-out of EVs will require significant investment into energy and charging infrastructures.

Cooperation needed

That’s why it is so important that car manufacturers and utilities work closely together.

IEC know-how & expertise

Here again, the IEC provides the necessary know-how and expertise to support the development of new infrastructures for the electric car and help improve and strengthen today’s electricity networks.
Making electrotechnology work for you.

World’s top technical & safety expertise
More than 100 years of experience in electricity
Internationally recognized and globally relevant

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