



The importance of independent testing of charging stations

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Agenda



- ▶ Standardization on EV charging – Certification schemes
- ▶ EV charging standards
- ▶ How DEKRA tests EV charging stations
- ▶ Safety – Hazard based
- ▶ Safety: inspection, installation and maintenance

Standardization on EV charging

Certification schemes



Regulation
Worldwide/Regional/National



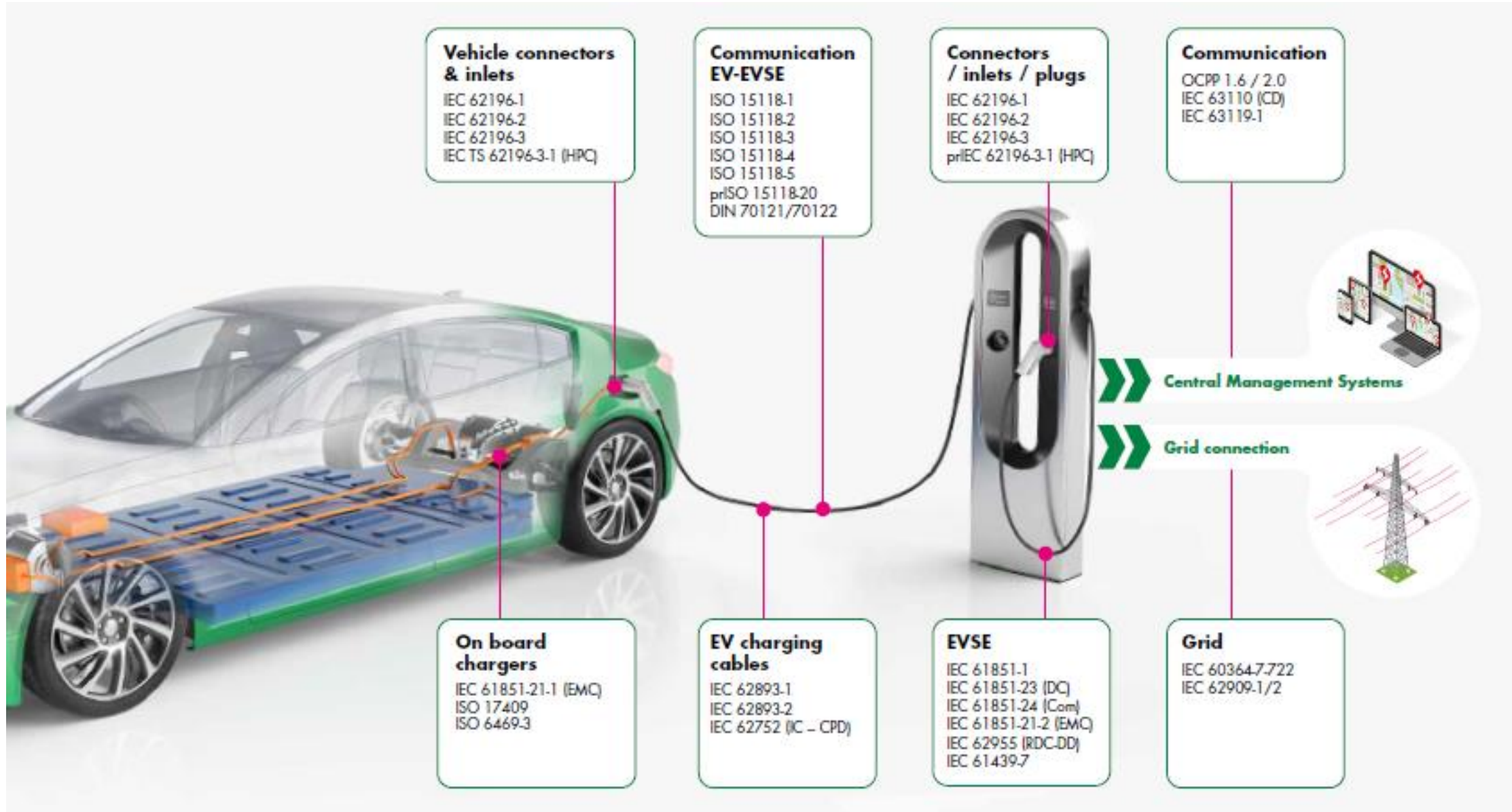
Standardization
Worldwide/Regional/National
(Regulated mandatory or voluntary Certification)



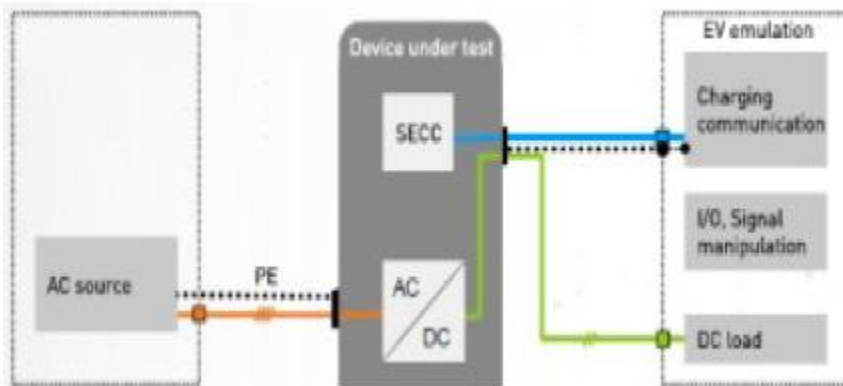
ChaDeMo (Voluntary Certification)
Charin (Voluntary Certification)
EV Ready (Voluntary Certification)
OCA (OCPP Voluntary certification)



EV charging standards

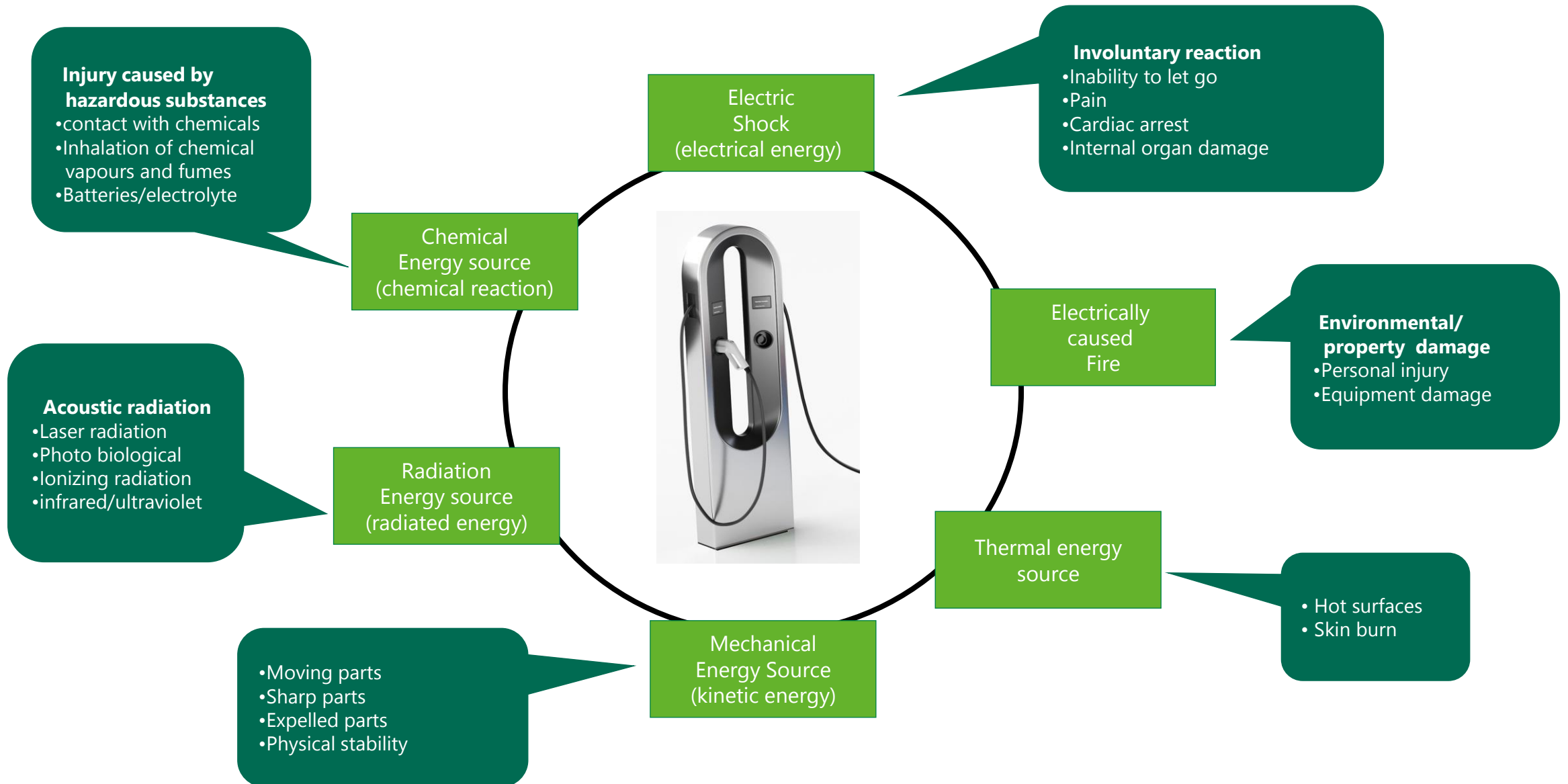


How we test charging stations



- Safety testing
- Charging performance testing
- Interoperability and conformance testing
- EMC testing
- Durability and performance at extreme conditions

Safety testing – Hazard based



Example: Electrically caused fires



Reduce the likelihood of ignition

- Equipment is so designed and 'tested for compliance' that under normal operation and single failure conditions no part shall ignite

Control of fire spread

- Equipment design includes the selection and application of components, wiring, materials and constructional measures that reduce the spread of fire including application of a fire enclosure.



Current situation




- **Existing regulations** and the current set of safety standards for charging stations, electric vehicles and the connection between them, **support a safe charging infrastructure.**
- Charging stations that are tested and in compliance with the current set of applicable **NEN/EN/IEC standards are safe.**
- Charging stations and Electric Vehicles that are tested and comply with communication standards **support a higher degree of interoperability.**

Are there no issues/challenges ?

Issues/challenges ?



- Developments and innovations go fast. Risks of not being state of art.
Standardization stays behind.
- For manufacturers **difficult to find their way** in the maze of standards, risk assessment and risk management.
- Some **examples**; DEKRA experienced during safety evaluations:
 - Safeguarding against fire related hazards not/insufficient addressed
 - Abnormal operation and single fault condition not/insufficient addressed
 - Touch temperatures too high (because of higher powers in combination with high ambient temperatures)
 - Problems with RCD's and 6mA dc leakage detection (home chargers)
 - Charge current limitation when using regular domestic sockets
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A safe EV charging infrastructure starts with developing and manufacturing a safe EV charging station, with state of art technologies, that is independently tested and certified for compliance !

Supplemented with:

A specific inspection, installation and maintenance scheme that ensures safe operation during its lifetime.

Example of an inspection scheme





Thank you!