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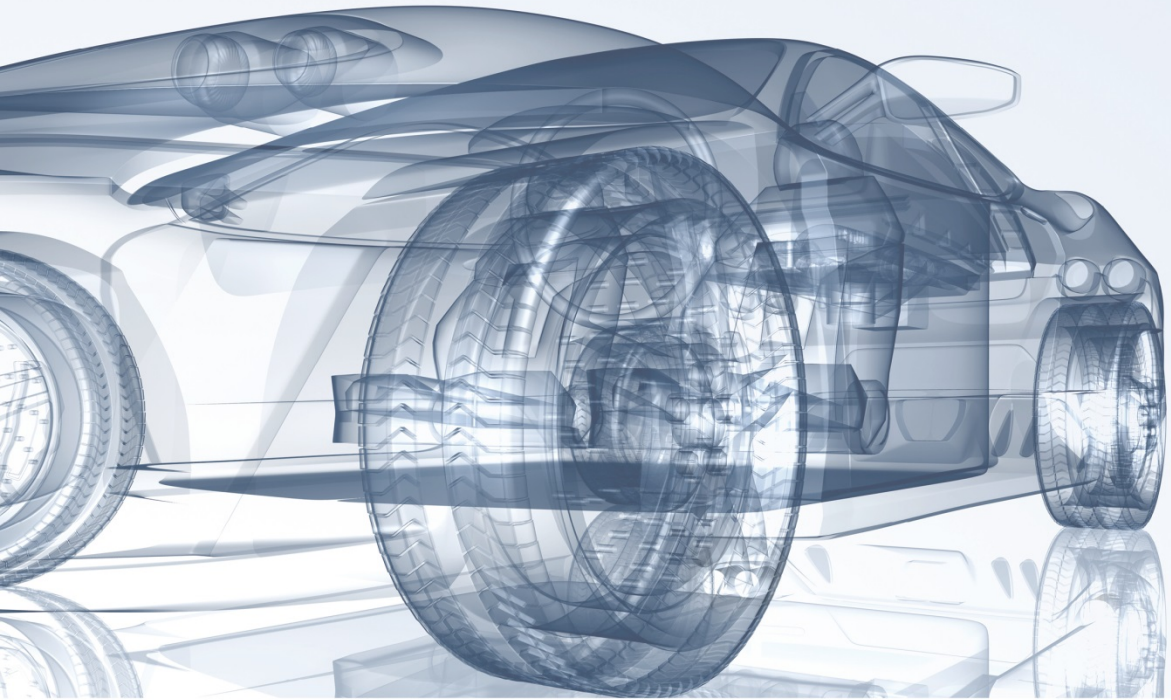

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Mode 2 Charging – Testing and Certification for an International Market Access

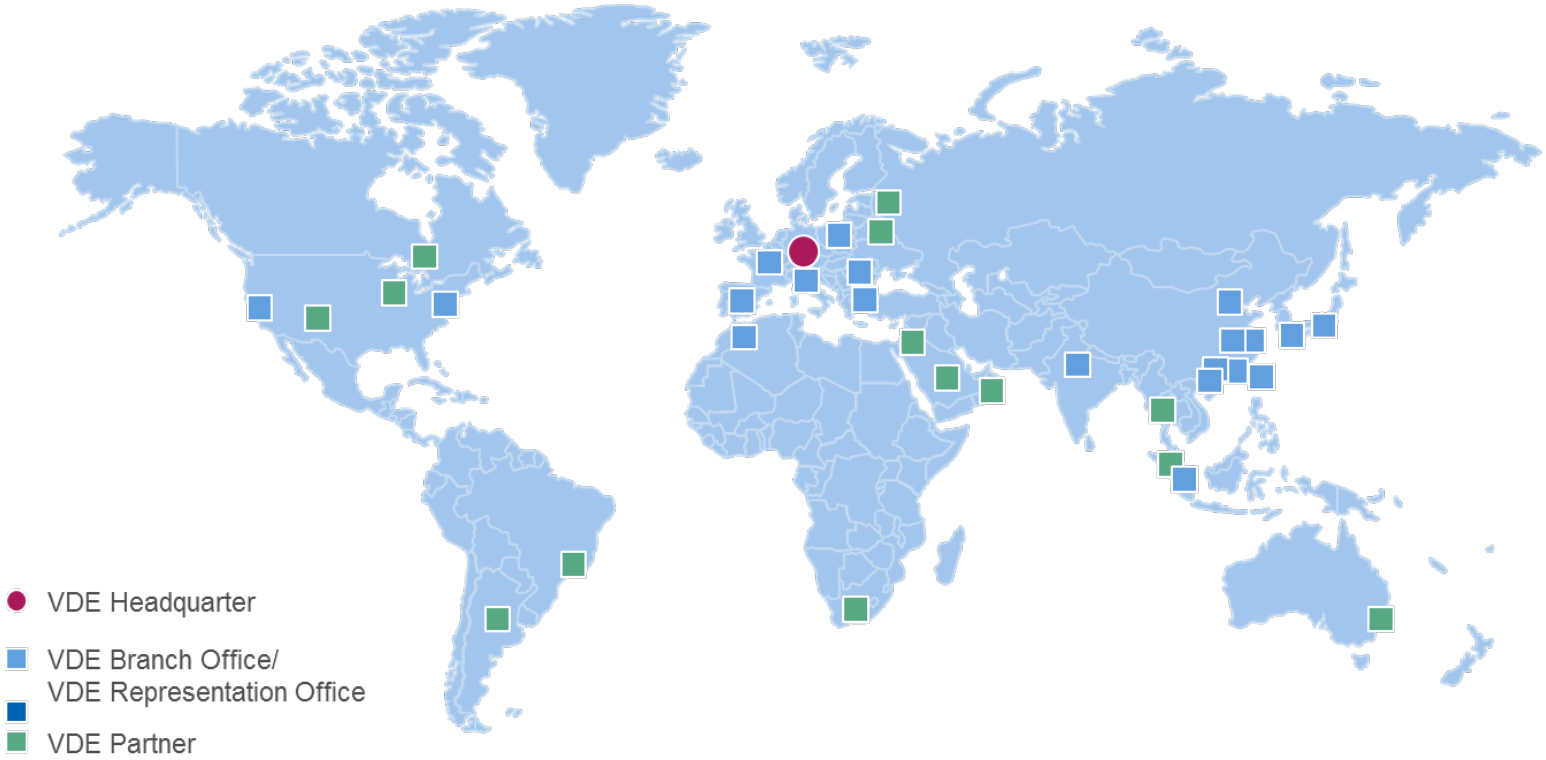
Author
Dipl.-Phys. Dieter Hanauer
Session E2 “Charging standardization”
October 10th, 2017

Who we are

- *The VDE Testing and Certification Institute is part of the*

  VDE: Association for Electrical, Electronic & Information Technologies
- Founded in 1893 on the initiative of Werner von Siemens and others
- 1906 VDE was one of the few founders of IEC Standardization Organization
- VDE Headquarters is in Frankfurt,
  For standardization issues VDE has representations in Berlin and Brussels
- VDE has branches and representations in Europe, North Africa, Asia and America
- 36.000 members – thereof 1.300 enterprises, 8.000 students
- 60.000 participants at 1.500 VDE events every year
- Support of young engineers within 60 university groups
- 1.200 employees

Worldwide presence



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- is the specialist for testing and certification of electrical and electronic components, appliances and systems since 1920
- provides comprehensive service portfolio for manufacturers and retailers
- gives full support from product design phase to global market entry
- neutral and independent testing resulting in reliable and reproducible test results
- VDE Marks and VDE test reports enjoy high recognition on international level

VDE is the premium brand in the entire field of electro technology

Introduction

Standardization, Regulation and Certification

Mode 2 charging

Possible failure modes in household installations

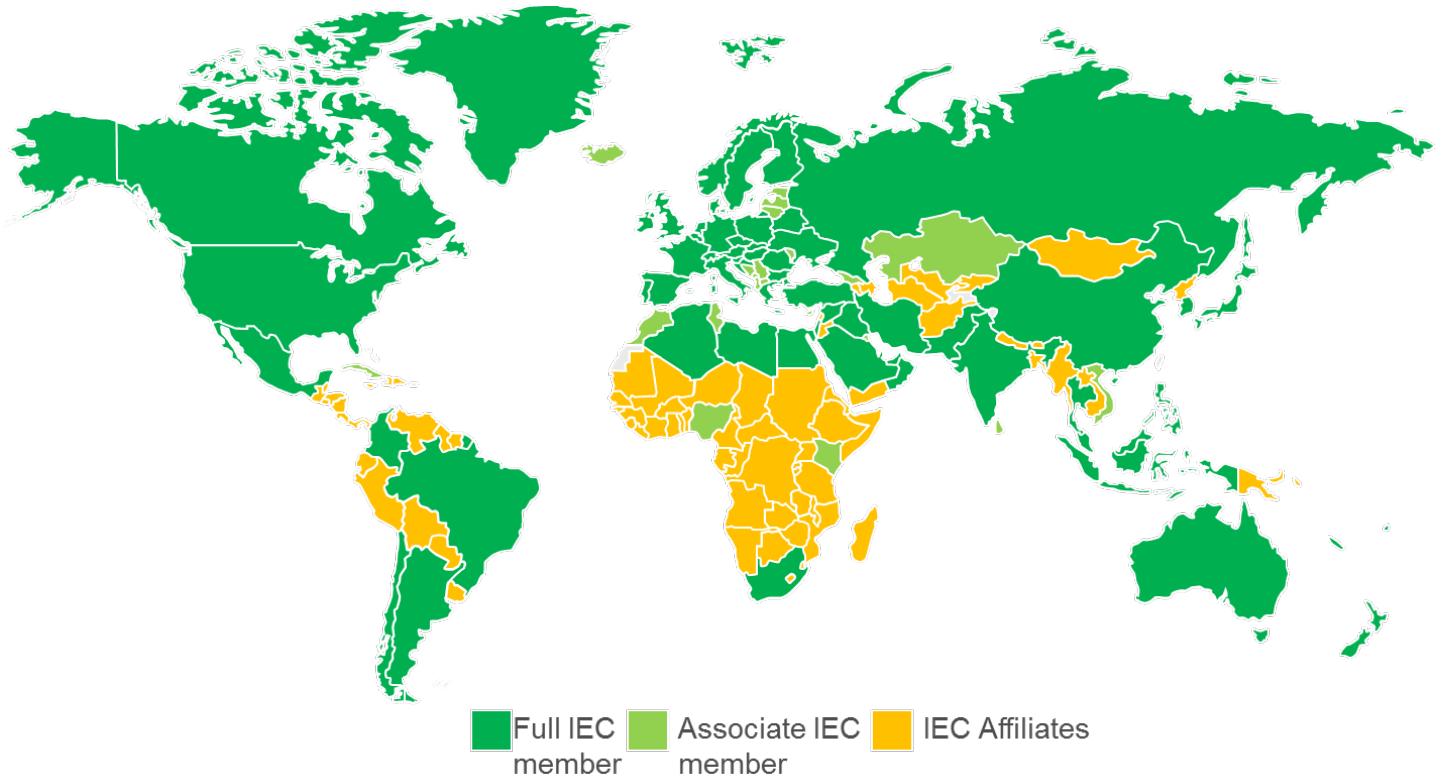
Tests for mode 2 charging - examples

Summary

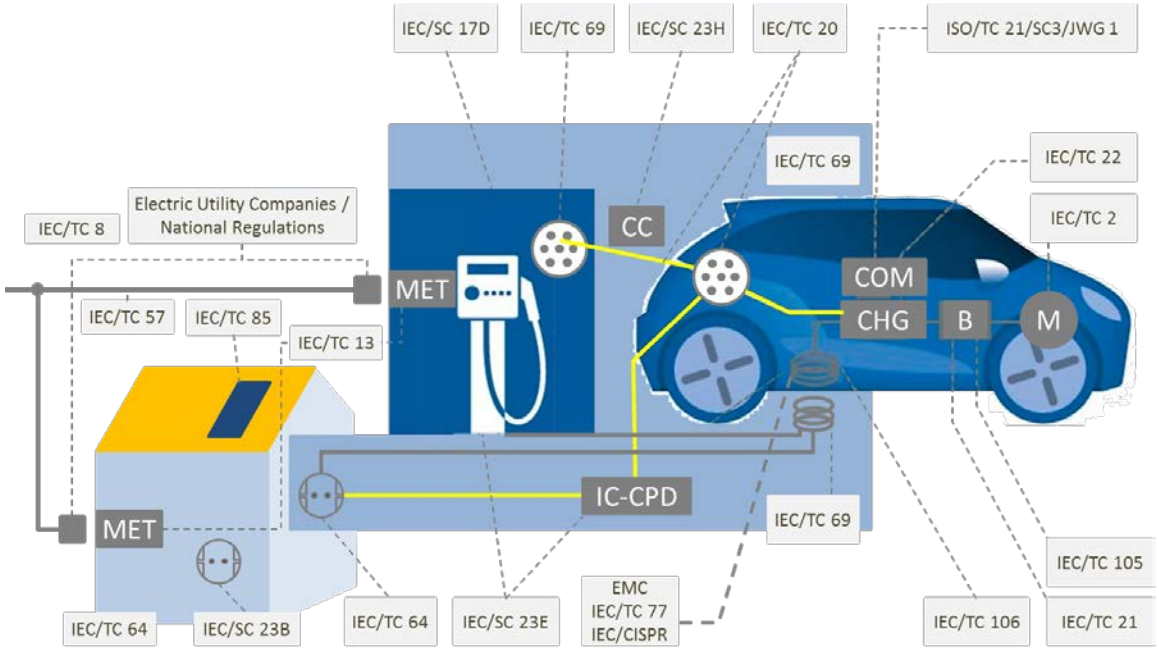
Standardization an regulations

	Standardization			Regulation
	General	Electrotechnic Electronic Application	Telecommuni-cation	
International Standardization	ISO	IEC	ITU	
European Standardization	cen	CENELEC	ETSI	
National Standardization (Example Germany)	DIN	DKE VDE DIN	DKE VDE DIN	National Regulations

IEC membership countries (2016)



IEC Standardization groups for eMobility products and systems

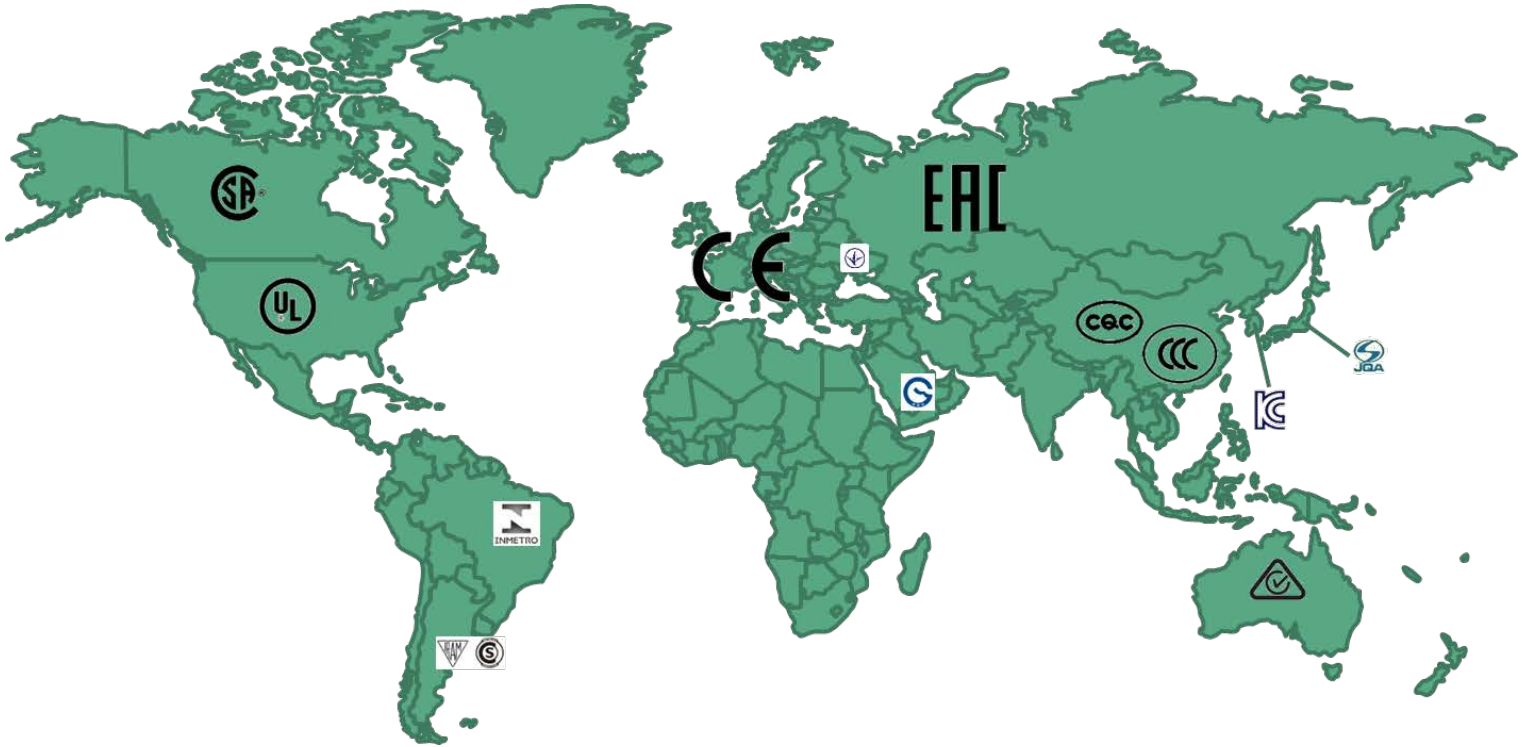


B	Battery	IC-CPD	In Cable Control and Protection Device
CC	Charging Cable	MET	(Current) Metering
CHG	Charger	M	(Electric) Motor
COM	Communication		

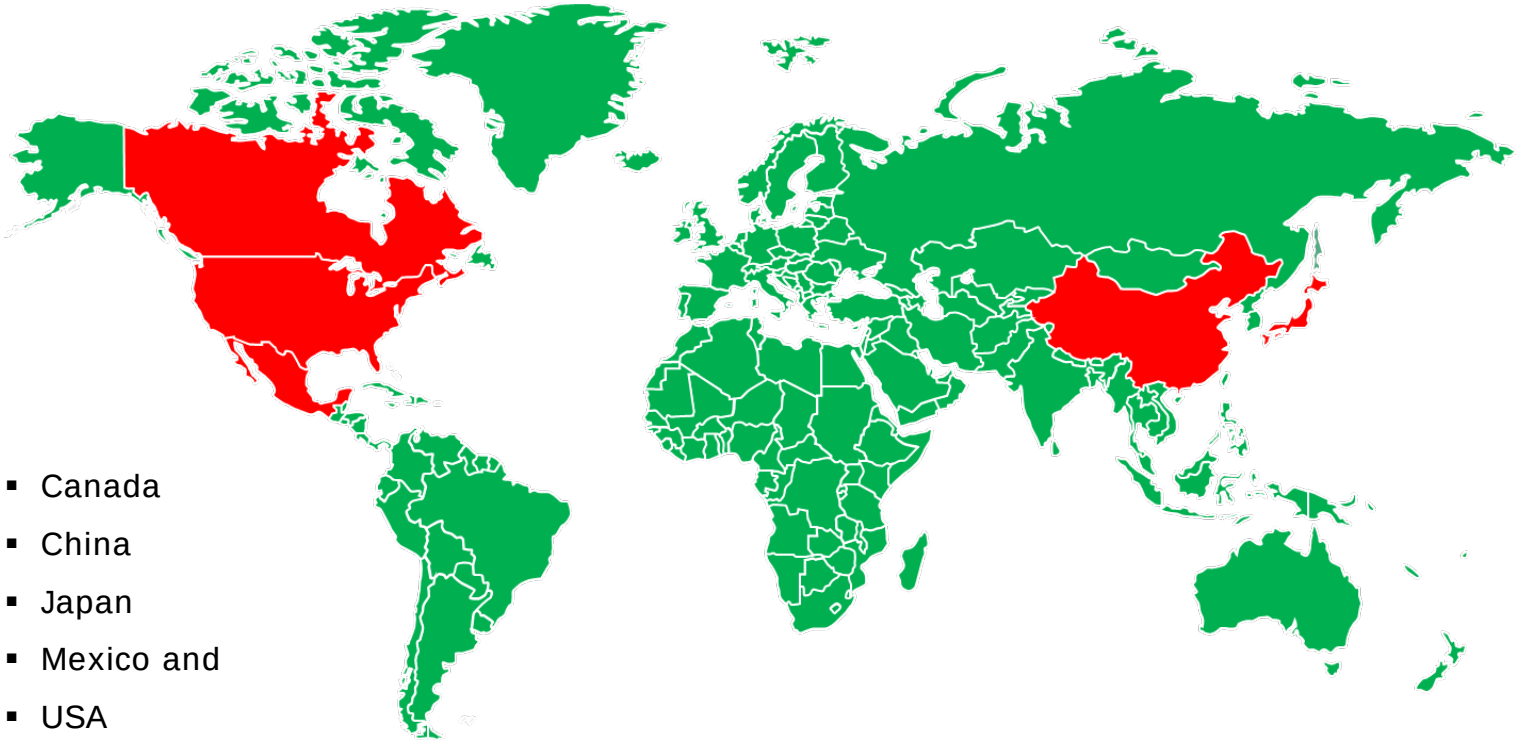
Examples for actual standardization work

- IEC 61851-1 ed.3 has become a system standard for charging Electric and Hybrid Electric Vehicles (published)
- Amendment of IEC 62752 standard to implement ongoing development
- EMC requirements for charging Electric and Hybrid Electric Vehicles (IEC 61851-21-1/-2) are going to get finalized
- Standardization for pluggable/portable EVSE has started
- IEC 61851-23/-24 [DC-charging (200A, 500V)] is in maintenance status
- Standardization for High Power DC-Charging (350A, 1000V) has been started.
- Standardization for wireless charging is going on
- Standardization for Bi-directional charging (load levelling) has been started
- Standardization for e-Bikes, e-Scooter and even Trucks and Busses has started.
- etc.

Certification Marks



Countries having national requirements not based on IEC standards

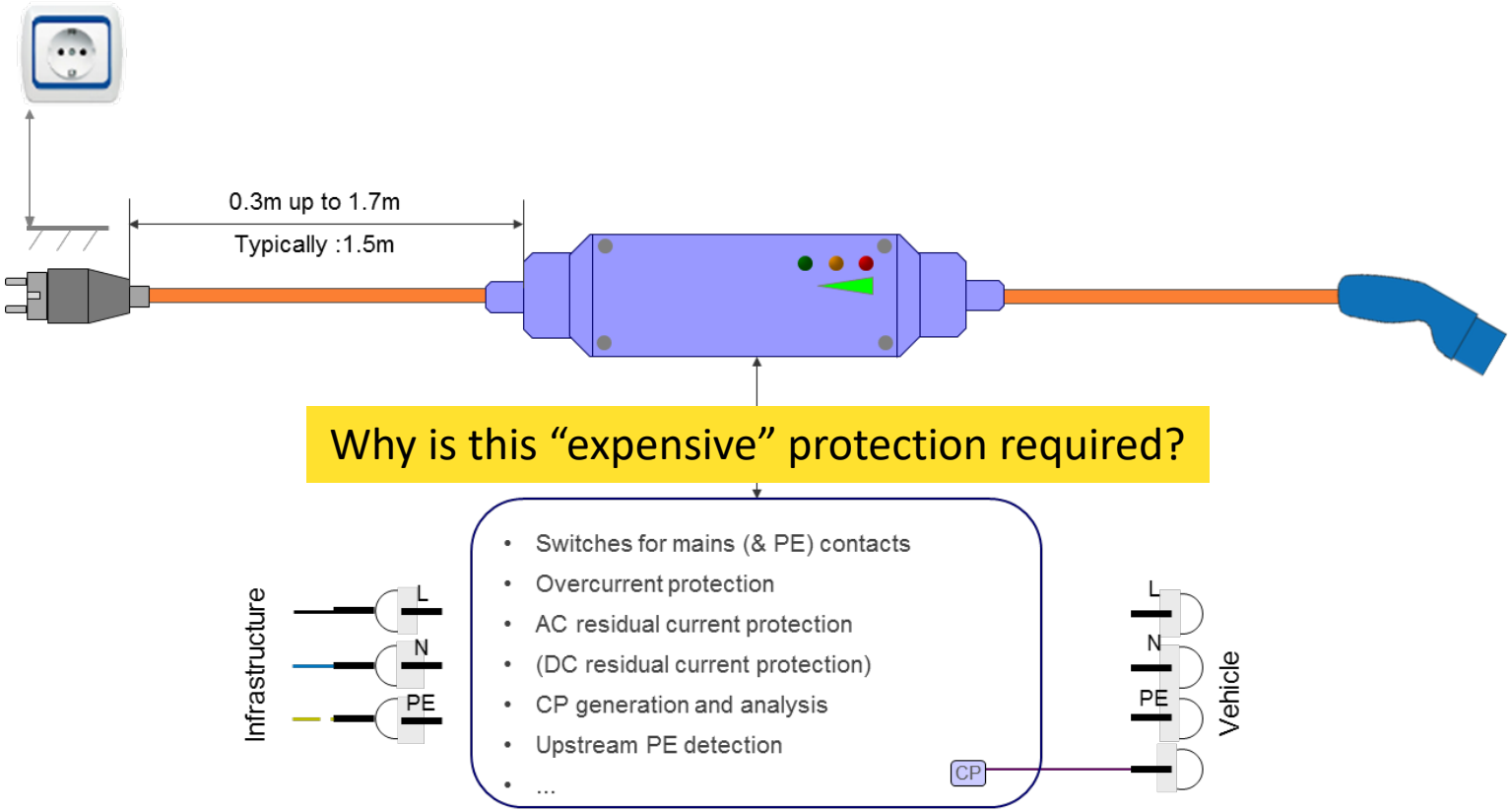


- Canada
- China
- Japan
- Mexico and
- USA

Examples: IC-CPDs for Mode 2 charging

Sources:
Kopp, Bender, Phoenix Contact,4EV, Mennekes, Aerovironment

Mode 2 charging (IC-CPD according IEC 62752)



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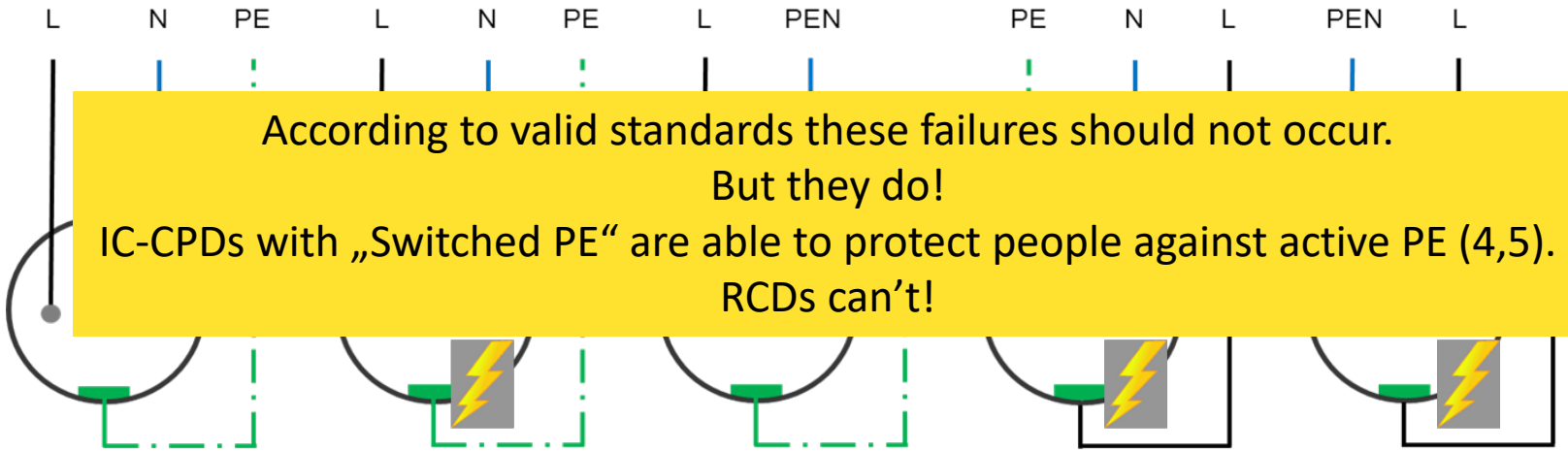
Possible failures within (private) power supply and possible risks

1)Interrupt [N] | 2) Interrupt [PE] | 3) Interrupt [PEN] | 4) Interchange [PE/L] | 5) Interchange [PEN/L]



According to valid standards these failures should not occur.
But they do!
IC-CPDs with „Switched PE“ are able to protect people against active PE (4,5).
RCDs can’t!

Class I appliances

not working | Danger in case of contact to housing | not working | Danger line voltage on housing

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Summery

Besides the technical requirements stated within IEC 62752:2016-03

- National requirements for IC-CPDs have to be fulfilled also and are not always listed as Note or national deviation within the IEC standard.
- Some examples:
  - Suspension system to prevent excessive forces by the function box to the wall socket outlet at the function box
  - limit in cable length between plug and function box of 30cm

The national requirements have to be fulfilled to get market access.

These information are part of VDE international certification service.

Customer gets the testing and the worldwide market access with the help of the VDE

Thank you

for your attention!

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is pleased to discuss your questions at our booth

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Your contact:

Dipl.-Phys Dieter Hanauer
Phone: +49 69 8306 145
Email: dieter.hanaue@vde.com