

North Sea Electric Mobility Network

Testing of Fast Chargers – Where do we stand?

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An Extensive Global Network

Intertek

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- FTSE 100 company in the Support Services sector
- Market capitalisation at £3.7 billion
- Revenue generation of over £1.7bn in 2011

More than
100
countries

More than
1,000
laboratories
and offices

30,000
people

Our Industries



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Our organisation	Industries we operate in	What we do
Consumer Goods	Aerospace & Automotive	 Testing
Commercial & Electrical	Building Products	 Inspection
Commodities	Chemical	 Certification
Chemicals & Pharmaceuticals	Consumer Goods & Retailers	 Auditing
Industry & Assurance	Electrical & Electronic	 Outsourcing
	Energy	 Advisory
	Food & Agriculture	 Training
	Government & Institutions	 Quality Assurance
	IT & Telecom	
	Industrial	
	Medical & Pharmaceutical	
	Minerals	
	Petroleum	
	Toys, Games & Hardlines	
	Textile, Apparel & Footwear	

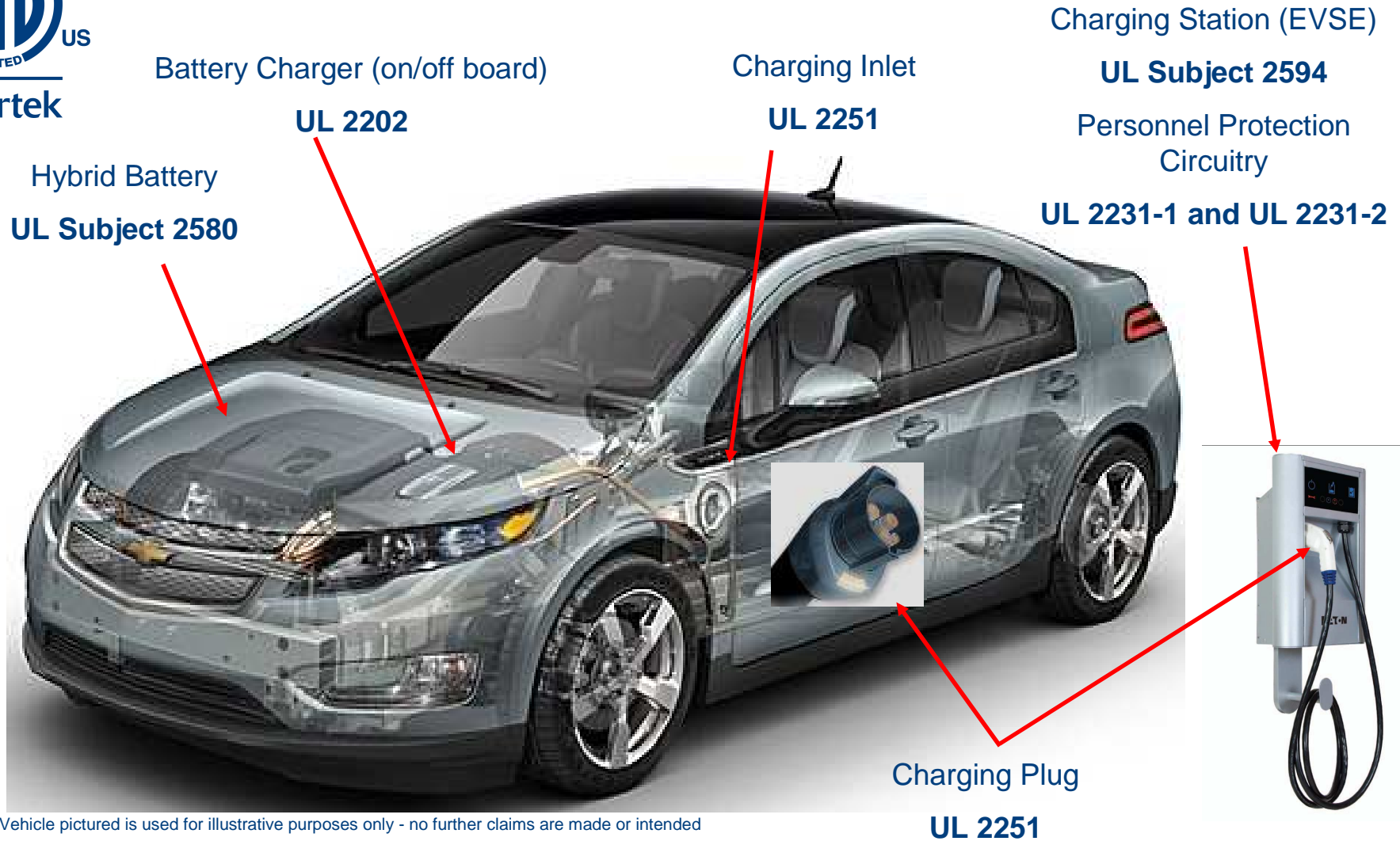
Intertek Applies EV UL Safety Standards



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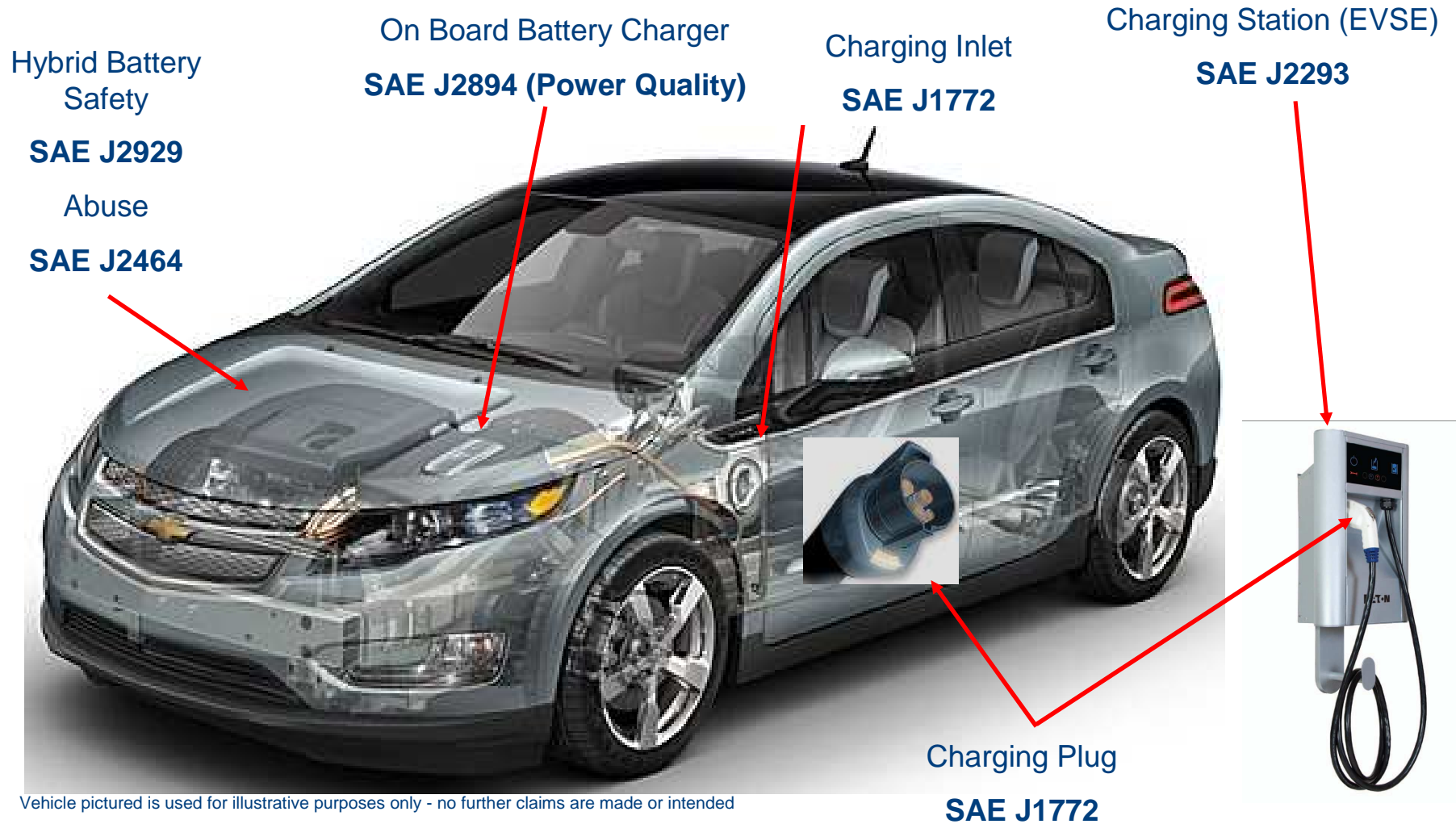


Vehicle pictured is used for illustrative purposes only - no further claims are made or intended

Intertek Applies EV SAE Standards



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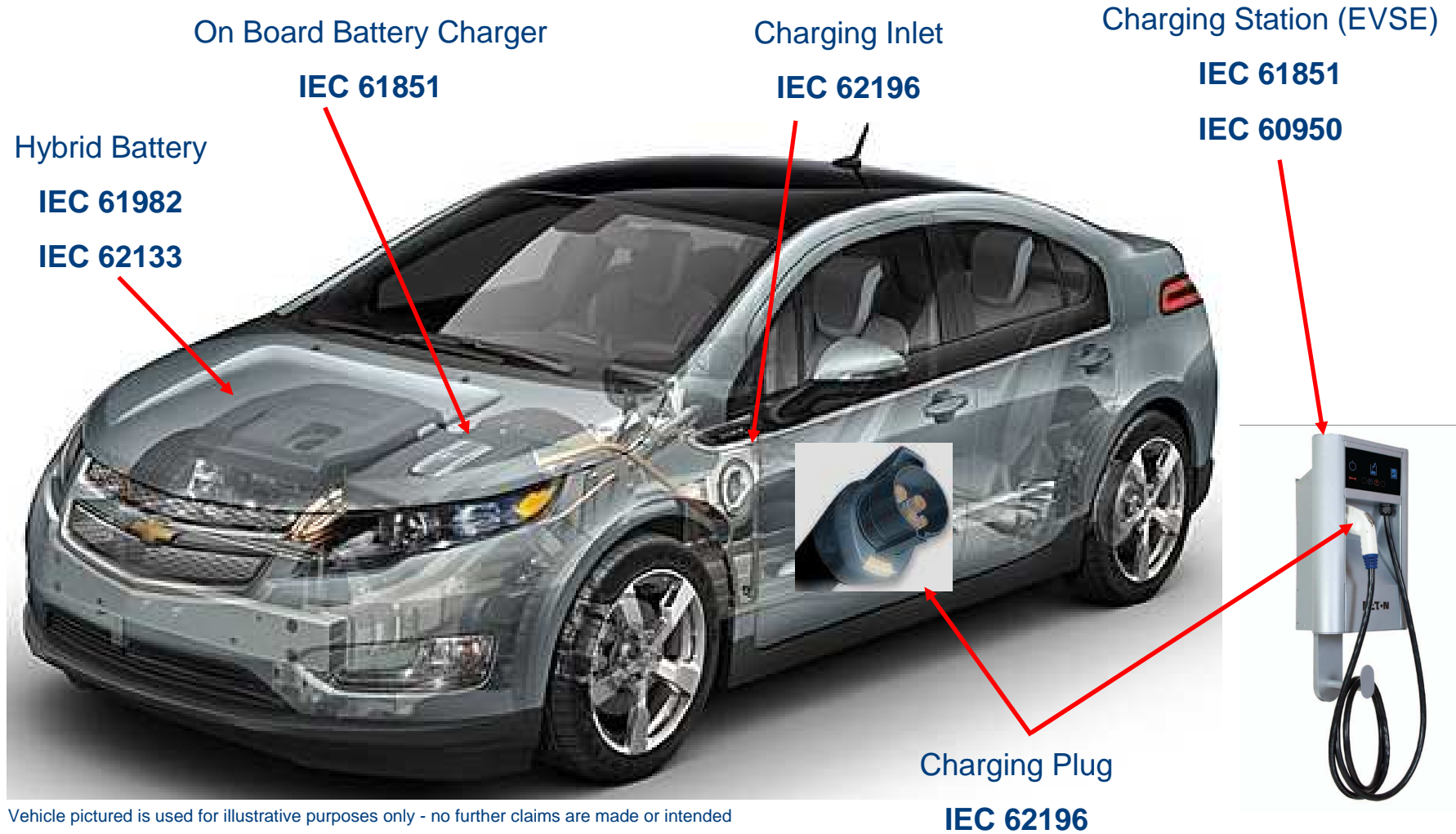


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Intertek Applies EV International (IEC) Standards



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Why international harmonization is so important...



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HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)

SITUATION:
THERE ARE
14 COMPETING
STANDARDS.

14?! RIDICULOUS!
WE NEED TO DEVELOP
ONE UNIVERSAL STANDARD
THAT COVERS EVERYONE'S
USE CASES.

YEAH!

SOON:

SITUATION:
THERE ARE
15 COMPETING
STANDARDS.

Why standards?



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- To secure mass-market adoption of technology
- To secure interoperability between different systems
- To avoid different proprietary systems on the market
- To create customer trust
- To establish a proper level of safety

Standardisation, how hard can it be???



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In fact, quite tricky!

There are many interest groups involved and there can exist a lot of politics

- National interest groups
- Industrial conglomerates
- Different standardisation groups/committees
- How much, and what to test

Who are involved in developing EV charging standards?

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It is handled within the IEC, ISO, SAE, UL...

- Within IEC a group called TC69 is responsible for developing the EV charging standards
- 26 countries are members and involved in developing the EV charging standards
- TC 69 has two WG (Work Groups) who has the responsibility to physically write the standards
- WG3 are responsible for Motors and Control Systems (Small group)
- WG4 are responsible for Power Supply and Chargers (Large group)
- It typically takes 36 months to develop a new std

SAE *International*[®]



CHAdeMO



International
Organization for
Standardization

Which different interests are involved in standardisation?



Which are the EV charging standards and sub-standards within IEC?



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- IEC/EN 61851-1
General requirements
- IEC/EN 61851-21
Electric vehicle requirements for conductive connection to an AC/DC supply
- IEC/EN 61851-22
AC electric vehicle charging station
- IEC/EN 61851-23
DC electric vehicle charging
- IEC/EN 61851-24
Digital communication between a DC charging station and an electric vehicle for control of DC charging

IEC/EN 61851-1

General requirements



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The Main Standard for EV conductive charging systems – How is it built up?

IEC/EN 61851-1 Consists of roughly six main parts:

- Electric Safety
- EMC
- Connectors
- Cabling
- Mechanical Strength & Environmental durability
- Communication

It also refers to a number of EV charging sub-standards and other product standards which you need to fulfil in order to show compliance



IEC/EN 61851-1

General requirements



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- Was first released as an IEC std in 2001
- The new IEC edition of this std was published in 2010
- The work with the new revision has not started yet
- One of the planned changes in the new revision is that it amongst others will point to the std IEC/EN 61439-7 "*Assemblies for specific installations at public sites such as marinas, Camping sites, market squares and similar applications and for charging for Electrical Vehicles*" which will contain major requirements for charging stations. This std is planned to be published during Q3 2013

IEC/EN 61851-21

Electric vehicle requirements for conductive connection to an AC/DC supply



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- First published as an IEC std in 2001
- Adopted as an EN std in Jan 2002
- New revision is planned to 2012-04
- Above planned revision date will not be met
- Standard is still only on CD level within the responsible committee
- No new revision date is estimated

IEC/EN 61851-22

AC electric vehicle charging station



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- First published as an IEC std in 2001
- Adopted as an EN std in Jan 2002
- New revision is planned to 2012-04
- Above planned revision date will not be met
- Standard is still only on CD level within the responsible committee
- No new revision date is estimated

IEC/EN 61851-23

DC electric vehicle charging

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There is a massive interest to get this std published by the participating industry and countries. It currently only exists as a CD (2nd)

The main countries that are involved in driving the work to complete the std are:

- Germany
- Japan
- USA
- Preliminary publication date is planned to 2012-11
- This date will not be met due to the present amount of comments the latest CD received (85 pages!)



IEC/EN 61851-24

Digital communication between a DC charging station and an electric vehicle for control of DC charging



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- Currently only exists on CD level (1st)
- Planned publication date is 2013-06
- This preliminary time plan is heavily dependent on the number of comments it will receive from the committee



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