

World EV Standards & Pilot Projects

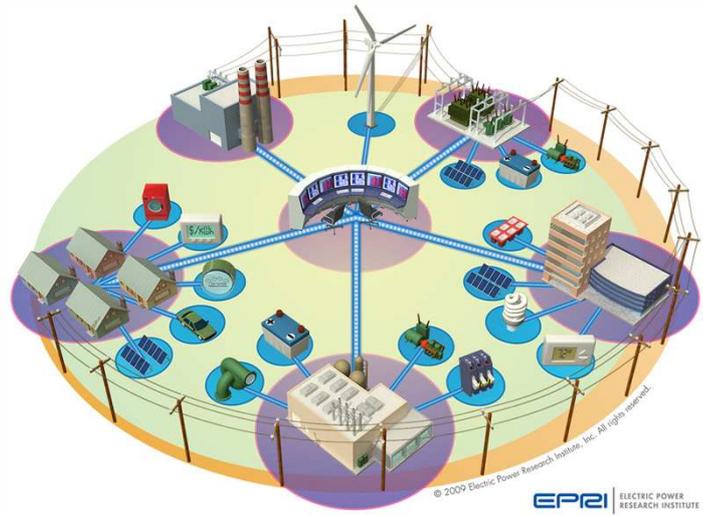
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Smart grids and EV/Renewable Energy - EPRI



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How could a bad EV system design result in?

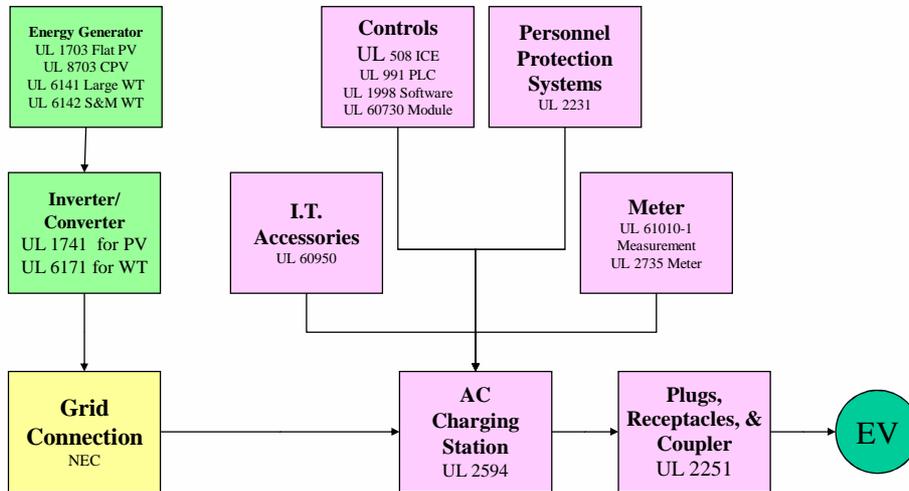
- Fire?
- Electric Shock?
- Explosion?
- Road accident?
- City black out?
- Airplane crash?



EV Standards and Regulatory Bodies

- On road (mechanical) safety – DOTs
- Infrastructure (electrical) safety – NEC/IEC
- EV (electrical) safety – UL/IEC/SAE
- EV (mechanical) safety – SAE/FMVSS
- EMC – IEC/FCC/NCC/?
- Information Security – ISO/NCC/?
- Green Incentives – DOE/EPA/?
- Batteries –
Production/Storage/Transportation/Waste/Recycling/Re
novation – ?
- Aftermarket parts – ?

Renewable Energy AC Charging Infrastructure

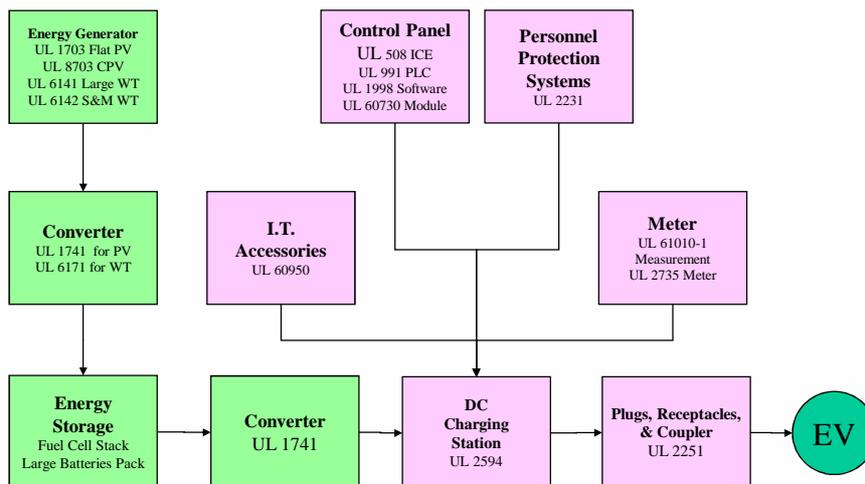


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Renewable Energy DC Charging Infrastructure

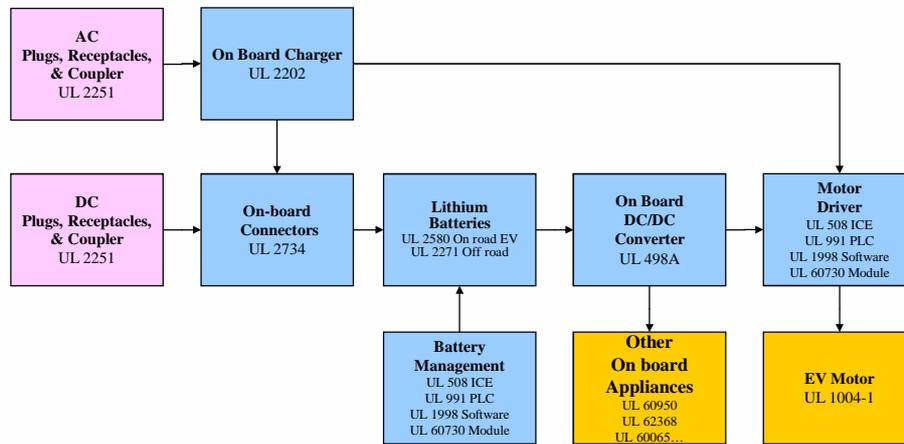


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On board Electronics examples



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EV Safety Standards & Regulations by Region

Regions	NA	Japan	International
Charger/ Charging Station	UL2202 (DC) UL 2594 (AC)	DENAN Technical Standards , Ordinance of METI, Article 1	IEC 61851-1 IEC 61851-21 IEC 61851-22 IEC 61851-23?
Plug/ coupler	UL2251	N/A (under investigation)	IEC62196-1
Meter	UL 2735/ UL 61010-1/ ANSI C12	?	IEC 61010-1?
ITEs in Charging Station	UL 60950/ UL 62368?	?	IEC 60950/ IEC 62368?

Certifications to Safety Standards
 Safety Regulations
 N/A

Source: UL-Japan

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EV Safety Standards & Regulations by Region – cont.

Regions	NA	Japan	IEC
Li-Ion rechargeable battery Packs	Subject 2580	N/A (under investigation)	N/A (under investigation) Note: To the information brought by NEDO, actions for standardization are being taken at IEC TC69
Electric vehicle safety equipment (EVSE; EV Equipment for protection of human body)	UL2231-1 UL2231-2 1-general requirement 2- Requirement for Protection Device for use in Charging System	N/A (under investigation)	N/A (under investigation)
Electric cable	UL 1581	N/A (under investigation)	N/A (under investigation)
Electric cable system	UL 2734	N/A (under investigation)	N/A (under investigation)
EV Motor	UL 1004-1	?	IEC 60349-1?
EV Motor Driver	UL 498A	?	IEC 60349-2/3?



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World Pilot Projects

- US
- Japan
- EU
- China
- Taiwan



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US

- The EV Project
 - <http://www.theevproject.com/partners.php>
- Project Get Ready
 - <http://projectgetready.com/category/partners>
- Solar City
 - <http://www.solarcity.com/default.aspx>



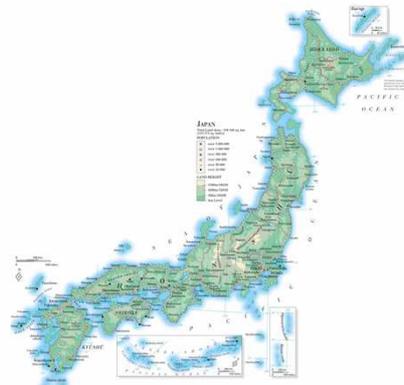
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Japan

- Smart Network Project
 - <http://www.nttdocomo.com/pr/2010/001490.html>
- ChaDeMo
 - <http://www.chademo.com/>



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EU

- French
 - EV Charging Plan
 - <http://jcwinnie.biz/wordpress/?p=5832>
- Italy
 - E-Moving
 - <http://www.automotiveworld.com/news/powertrain/81281-italy-renault-nissan-and-a2a-finalise-ev-agreement>
- Germany
 - E-Mobility Berlin
 - <http://www.daimler.com/dcom/0-5-7153-1-1125767-1-0-0-0-0-9293-7145-0-0-0-0-0-0-0.html>
- Spain?
 - <http://www.thegreencarwebsite.co.uk/blog/index.php/2010/04/07/spain-invests-590-million-into-electric-cars/>
- UK?



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Greater China

- Taiwan
 - Flora Expo
 - Government Fleet
 - 坪林、澎湖...
 - EPA LEV Battery Swapping
- HK
 - 中電
- China
 - 十城千輛



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Others

- Betterplace
 - <http://www.betterplace.com/>
- Electric Avenue
 - <http://green.blogs.nytimes.com/2009/06/10/giving-new-meaning-to-electric-avenue/>
 - The Israeli Project
 - Korea

Questions

- How do Pilot Projects live with standards?
- Which standards are voluntary?
- Which standards are mandatory?
- Any compromise?

Summary

- EV Systems needs safety regulations
- There are more and more EV Pilot projects worldwide setting up
- EV Systems might drive new electric systems and a lot more new business



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Thanks for your attention!!

Let's seek a better future with EV!!