

# CHAdemo Certification

14 January, 2011

CHAdemo Association



# CHAdemo Manufacturers in North America

- Aero Vironment
- Aker Wade
- EATON
- eTec

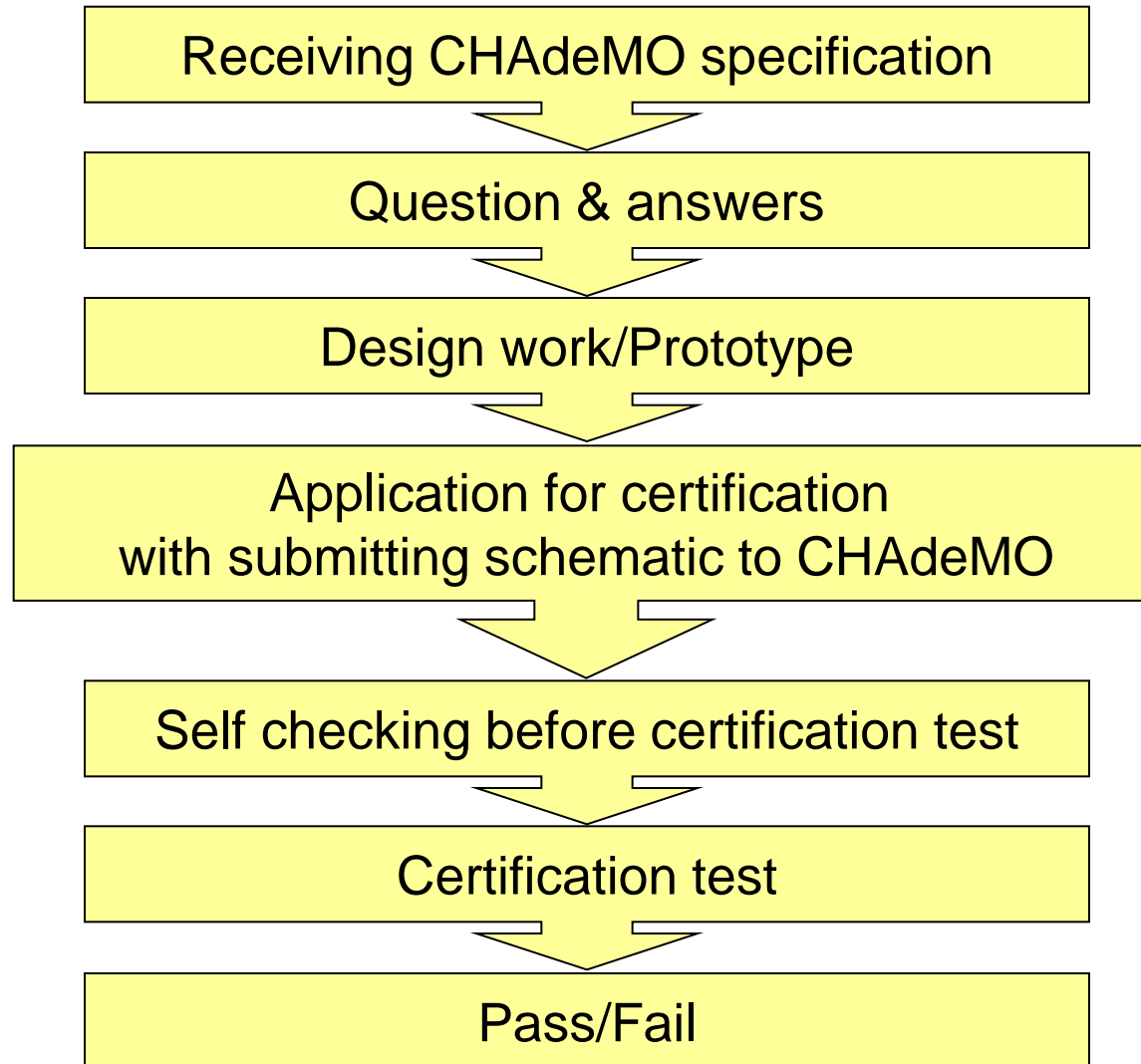


# Manufacturers in Europe

- SGTE
- EFACEC
- EVTRONIC
- ABB
- EPYON



# Procedure for certification



# Application form

Date													
To TEPCO	Company name												
	Address												
Application for CHAdeMO certification procedure													
	Department/Job title												
	Name												
	TEL												
	FAX												
<p>We hereby apply for the certification procedure of the DC quick charger developed based on CHAdeMO protocol, that is required by the CHAdeMO association.</p> <p>1. We pay for the cost related to our certification. (transport cost, test cost, etc)</p> <p>2. The quick charger certified by this application is the one described below. If we make any improvement or introduce a new model, we will apply for another certification procedure.</p> <p>3. We never dispute the result of the certification test authorized by the CHAdeMO association.</p> <p>4. We never claim for the damage caused by the certification.</p> <p>* Mandatory field</p> <table><tr><td>*Name of product</td><td></td></tr><tr><td>*Make</td><td></td></tr><tr><td>*Serial number</td><td></td></tr><tr><td>*Identification number</td><td></td></tr><tr><td>*Manufacturer</td><td></td></tr><tr><td>*Country of manufacture</td><td></td></tr></table>		*Name of product		*Make		*Serial number		*Identification number		*Manufacturer		*Country of manufacture	
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# Self checking items

	Major check points	Check sheet
Circuit requirements	<ul style="list-style-type: none"><li>- Installation of GFIs on AC and DC circuits</li><li>- Measuring point of the output voltage</li><li>- Monitoring device for the connector lock circuit's disconnection (breaking)</li><li>- Reverse current preventive diode</li><li>- Direct wiring of DC and AC ground terminals</li></ul>	"Electric circuit and performance data.xls"
Performance test	<ul style="list-style-type: none"><li>- Ripple current</li><li>- Rated power, current and voltage</li></ul>	"Electric circuit and performance data.xls"



# Test items

	Major check points	Check sheet
Pre-connection test	<ul style="list-style-type: none"><li>- d1,d2 operation</li><li>- Insulation test voltage</li><li>- Stationary characteristic of charging current control</li></ul>	"Pre-connection.xls"
Vehicle connection test	<ul style="list-style-type: none"><li>- Control / communication procedure and timing (6-test cases)</li><li>- CAN message items and installation</li><li>- Stability of CAN communication, existence of communication error, message transmission interval and etc.</li><li>- Charge control response</li></ul>	"Checklist.xls"

## **<6 test cases>**

- Normal charging
  - ✓ Case 1 stop by vehicle (full charging)
  - ✓ Case 2 stop by charger (stop button)
- Abnormal situation (during charge)
  - ✓ Case 3 stop by vehicle (shift lever off)
  - ✓ Case 4 stop by charger (front door open)
- Abnormal situation (before charging)
  - ✓ Case 5 stop by vehicle (shift lever off)
  - ✓ Case 6 stop by charger (front door open)



# Future of certification - Overview

- Benefit of introducing certification test bench
  - No vehicle for test
  - Measuring system integrated
  - Test bench provide “Graphic outcome” automatically
  - H/W and S/W modification can be done by manufacturer before certification test
- Expected outcome
  - Certification test completed within one day





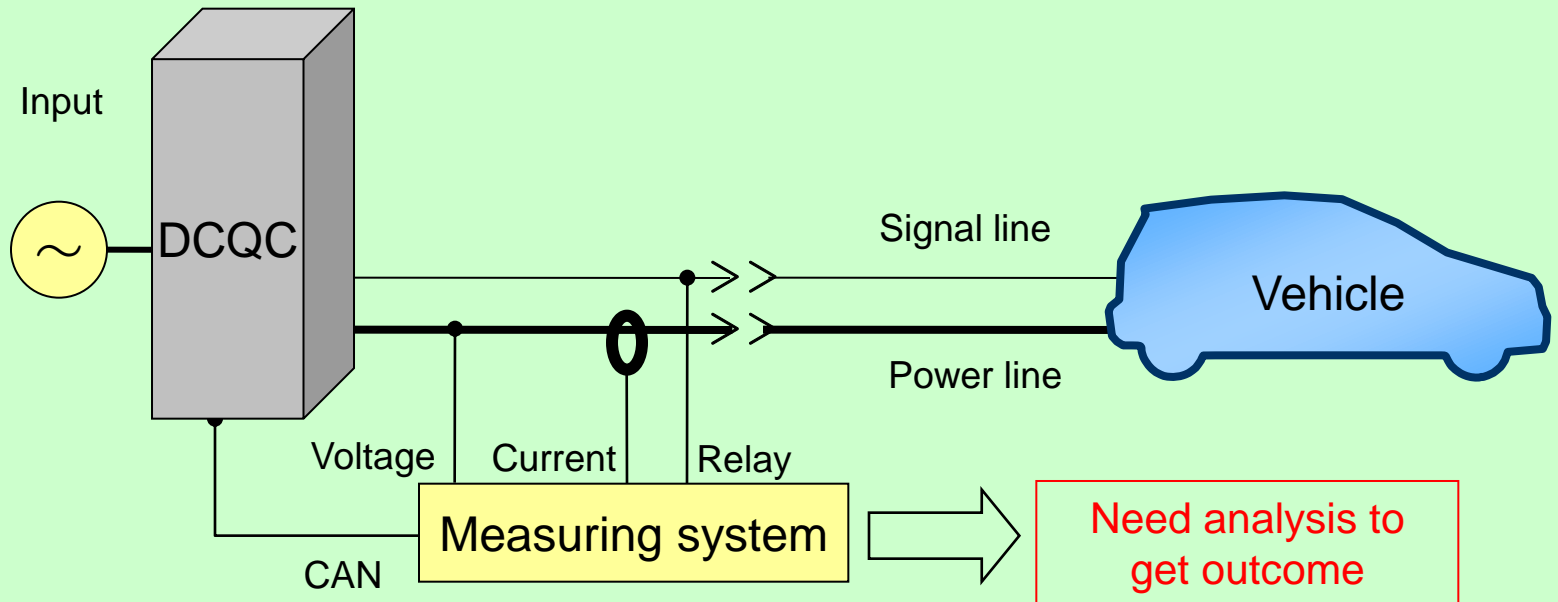
# Photos

Size : W1000\* H1550\* D950

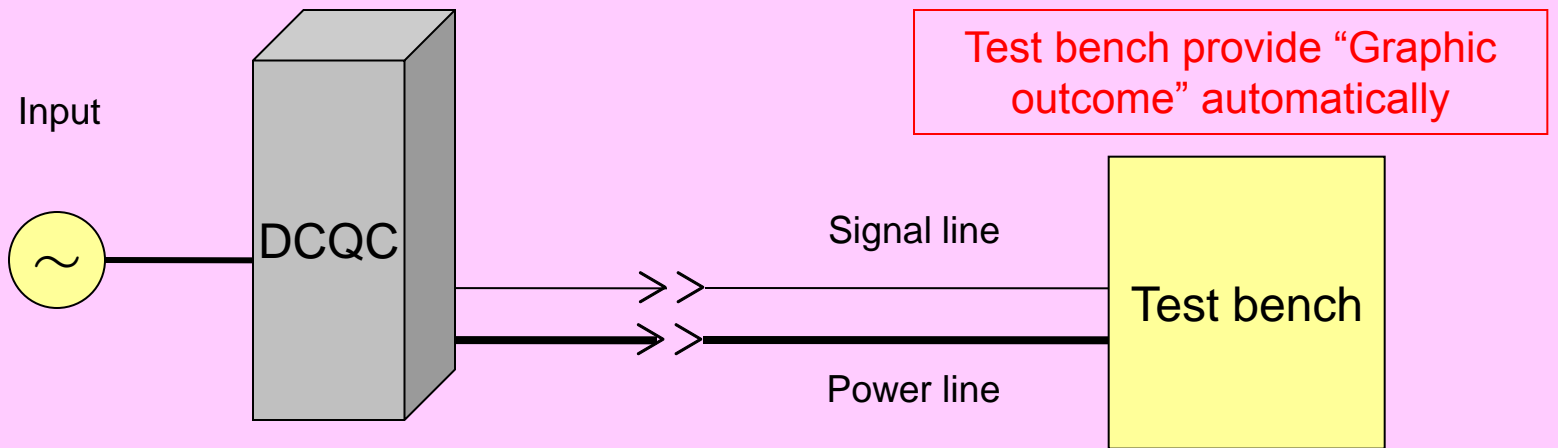


# Future of certification - System

Now



Future



# Future of certification – Operation/Organization

- Do we need new operation/organization?
  - Increasing application for certification
  - Limited workforce of CHAdeMO
- Vehicle certification

