Combined Charging
the universal charging system

Combined Charging System is Reality

Cornel Pampu, Carmeq GmbH
Birger Fricke, Ford
Thorsten Künzig, BMW Group
Ralf Milke, Volkswagen AG
Matthias Kübel, Volkswagen AG
Combined Charging System is:

INNOVATIVE RE-THINKING

FOR

FUTURE-PROOF SYSTEM APPROACH
Combined Charging System – Why?

Global e-Mobility: One system for all.

Start of e-Mobility
Regional, mutually incompatible solutions

Global e-Mobility
Combined Charging System with AC and DC charging

user friendly
safe
compact
future-proof
The Combined Charging System - A New System Approach

An open, standardized and future-proof charging system

- Integrated communication for charge control and value added services
- Common charge topology for AC and DC
- Single vehicle inlet for all charge scenarios
- Comprehensive safety measures for all charging scenarios

Coordination Office Charging Interface
c/o Carmeq GmbH
International Support for the Combined Charging System.

Strong commitment of international OEMs and infrastructure providers

USA
- Charging & Connector Suppliers
- Energy Providers

**
Chrysler Group LLC,
Ford Motor Company, and
General Motors

Europe
- „Commitment in EU (including European Commission directive proposal)
- All members of the European Association of Automotive Manufacturers (ACEA)*
- Charging & Connector Suppliers
- Energy Providers

*BMW, DAF, Daimler, Fiat, Ford of Europe, General Motors Europe, Hyundai Motor Europe, Jaguar Land Rover, MAN, Porsche, PSA, Renault, Scania, Toyota Motor Europe, Volkswagen, Volvo Cars, and AB Volvo

Coordination Office Charging Interface
c/o Carmeq GmbH
COMPELLING YET UNIVERSAL is:

Combined Charging System
Combined Charging System – Core Features

Enhancing existing, market proof technology

Safety features

1. Diagnosable lock
2. Proximity and control pilot

Combined Inlet

Function

1. 1-phase AC charging with Type 2
2. Integration into smart grid
3. 3-phase AC charging with Type 2
4. High power DC charging via dedicated pins with Combo 2

Charging Time

- Basic: 8 h
- Speed of Charging: 1 h
- Ultra Fast: 15 min
Charging sequence with a simplified architecture
Proven technical design based on Type2.

Coordination Office Charging Interface c/o Carmeq GmbH
Combined Charging System is:

SAFE & ROBUST
WITH
MATURE STANDARDS
UNDERLYING
International Standards for the Charging Interface

Standards are validated – national and international.

1. Connector
   - IEC 62196-1
   - IEC 62196-2
   - SAE J1772
   - ISO/IEC 15118
   - SAE J2931
   - IEC 61850
   - IEC 61851-1
   - IEC 61851-21
   - IEC 61851-22
   - IEC 61851-23
   - IEC 61851-24

2. Communication
   - IEC 62196-3
   - IEC 62196-2
   - SAE J2847
   - SAE J2931
   - IEC 61850
   - IEC 61851-22
   - ISO 6469-3
   - SAE J1766
   - ISO 17409

3. Safety
   - IEC 60529
   - IEC 60364-7-722
   - SAE J1772
   - ISO 6469-3
   - SAE J1766
   - ISO 17409

4. Charging topology

Coordination Office Charging Interface
c/o Carmeg GmbH
Combined Charging System is:

VALIDATED

AND

ON THE MARKET
Ideas Turned into Reality

VW ERL - Belmont, CA
VW operating an Eaton DC 50 kW unit

BMW of NA – Woodcliff Lake, NJ
BMW i3 operating an ABB DC 50 kW unit

GM ATC – Torrance, CA
GM operating an AkerWade DC 50kW unit

EVS26 - Los Angeles, USA
07.05. – 09.05.2012

eCarTec - Munich, Germany
22. – 24.10.2012

Angela Merkel charging an VW e-up!
International Conference E-mobility Berlin
E-Mobility for Europe
Electric Vehicles and Infrastructure

Announced EVs

Chevy Spark EV  i3  e-up!

Infrastructure

Launch of EU „clean fuel strategy“ earlier this year:
- "Type 2" and "Combo 2" as common standard for the whole of Europe
- Strategic course of Parliament and Council
EVSEs Supporting the Combined Charging System

The CCS standard is implemented by major EVSE manufacturers

50 kW DC charger
50 kW DC charger
Compact and transportable Combo charger

Coordination Office Charging Interface c/o Carmeq GmbH
Infrastructure Rollout Started

Launch of EU „clean fuel strategy“ earlier this year:

- "Type 2“ and "Combo 2“ as common standard for the whole of Europe
- Strategic course of Parliament and Council
Evolution towards a global universal system

**Europe**
- ACEA fully committed to the Combined Charging System
- EU directive proposal

**Germany**
- Infrastructure:
  - „Schaufensterprojekte“
  - Nationale Plattform Elektromobilität
  - Internationale Konferenz E-Mobilität

**USA**
- SAE fully committed to the Combined Charging System

**Japan**
- Harmonizing Infrastructure

**China**
- Sino-German Work Group
- close collaboration of Europe and China
Combined Charging System is:

OPEN STANDARD

FOR

GLOBAL E-MOBILITY
The Combined Charging System - The SUNRISE of e-Mobility

It is on the market - worldwide

SAFE, UNIVERSAL, OPEN, ROBUST, INNOVATIVE SYSTEM for ELECTRIC VEHICLES

Mature Standards

Compelling Design

Nationally & Internationally Validated

One System For All

Future-proof
Ideas Turned into Reality

Coordination Office Charging Interface
c/o Carmeq GmbH

Bild mit VW Fahrzeugen vor Festspielhaus

"Eine aktuelle Ladestation in Baden Baden

Fahrzeuge der Marken VW, AU, MB, PAG, BMW in Bewegung
Q & A