

# CHAdeMO ANALYZER/SIMULATOR



# DC charging analysis and simulation for CHAdeMO charging standard.

## New challenges ...

Developments in e-mobility confront manufacturers of vehicles and charging systems with new challenges. The relatively new standard CHAdeMO describes the requirements for the DC charging system, the electrical waveforms and the communication for controlling the charging process. The combination of electric vehicles and charging systems from different manufacturers can result in different system tolerances and disturbing influences. The causes of charging faults are very difficult to locate due to the long charging process and different interactions.

## ... meet new solutions.

The comemso CHAdeMO Analyzer / Simulator measures and verifies both the communication and the load circuit for standard conformity over the entire charging period and records all deviations. This way, not only the causes of charging failures can be identified, but also the causalities of events can be displayed and visualized.

Additionally, a full EV simulation or charger simulation is provided. Semi-automated tests and full automated test libraries as well as fault injection and robustness tests are available on customers selection.





### Monitoring

- ▶ Communication analysis according to CHAdEMO Rev. 0.9, 1.X, 2.0
- ▶ Synchronous DC Voltage and Current measurement
- ▶ Quality analysis of CAN physical layer
- ▶ Quality analysis of communication circuit (12V signals)
- ▶ Protocol analysis:
  - Timings of communication, signals and charging
  - Communication and signal order
  - V2X
- ▶ Measurement and analysis data via CAN provided to PC

### EV test

- ▶ Fully configurable EV tests
- ▶ Full EV test libraries, specified by comemso and provided to CHAdEMO association

### Charger test

- ▶ Fully configurable Charger tests
- ▶ Full charger test libraries

### Graphical user interface (GUI)

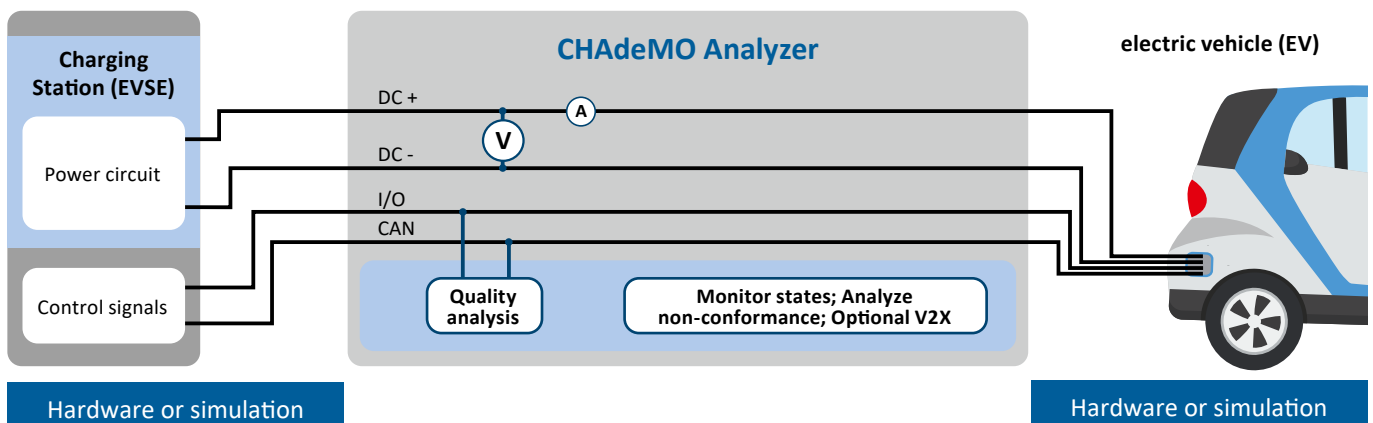
- ▶ Ready GUI for Vector CANoe Software, with detailed visualisation

### DC load circuit

- ▶ Connectors for 500 V / 120 A or 500 V / 200 A (limited by CHAdEMO connector)
- ▶ Measurement up to 1000 V / 200 A or higher current

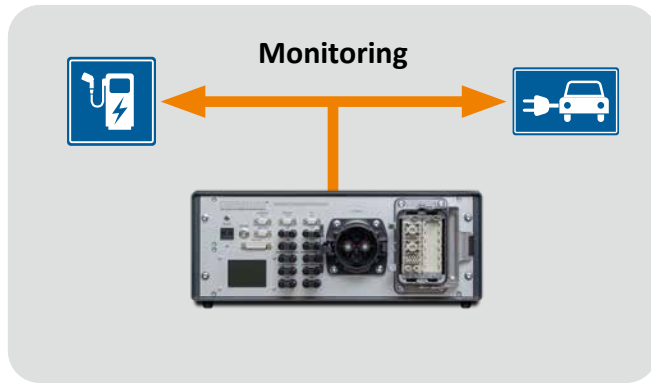
### More

- ▶ Robust casing for mobile outdoor use – IP67
- ▶ Power supply 85 V .. 240 V

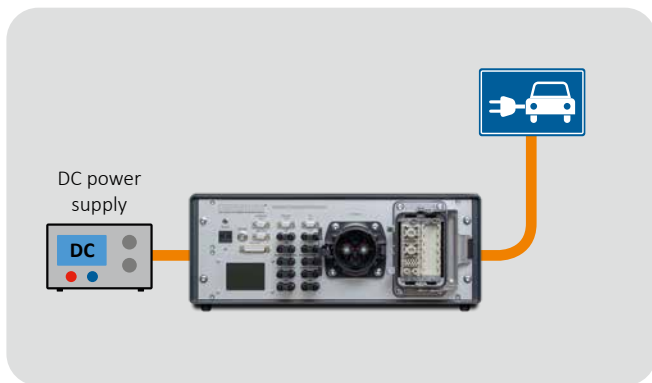


## Engineered for different kind of use.

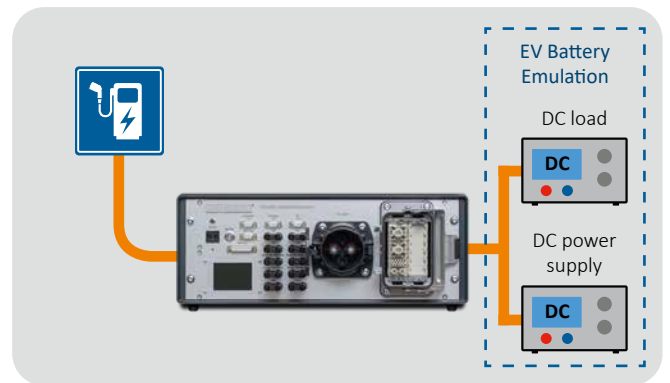
Charging verification (Measure only):



EV Test:



Charger Test:



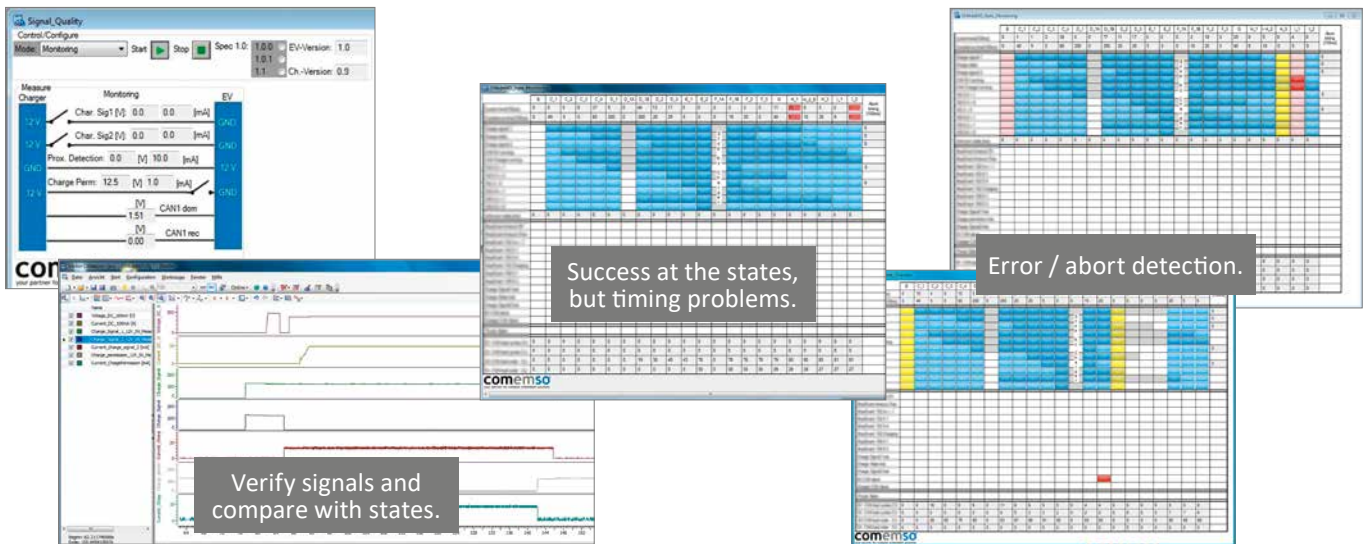
The DC power supply and the DC load can be controlled via CAN and have an integrated comemso interface.

Charging verification (Monitoring):



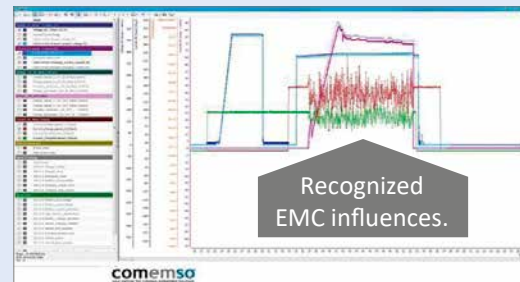


Monitoring charging states, signal quality etc. via CAN interface.



### Signal measurement.

- ▶ Verify state changes.
- ▶ Detect disturbances.
- ▶ Check DC voltage / DC current values.
- ▶ Compare signals and states with charging process.



## Summary

- ▶ Detect charge states.
- ▶ Detect stop events.
- ▶ Measure and check timings.
- ▶ Measure signal voltage and current.
- ▶ Measure DC voltage and DC current.
- ▶ Check of DC power with communication
- ▶ Measure CAN cycle time:
  - Statistics of good and bad cycle times.
- ▶ Measure CAN message order:
  - Statistics of good and bad order counts.
- ▶ Measure CAN signal quality:
  - Voltage of dominant and recessive level.
- ▶ Detect causes of charging issues.

### Also available:

- ▶ Full simulation of electric vehicle.
- ▶ Full simulation of charger.
- ▶ Test libraries.
- ▶ Robustness tests.
- ▶ Further hardware for fault injection.
- ▶ Different power supplies and loads available, integrated for control fitting to the charging process. On request integration of customer's power supply and load possible. (customization)

# Different CHAdEMO test systems according to your needs.



For your lab ...



... or mobile application.

Charger or  
EV simulation



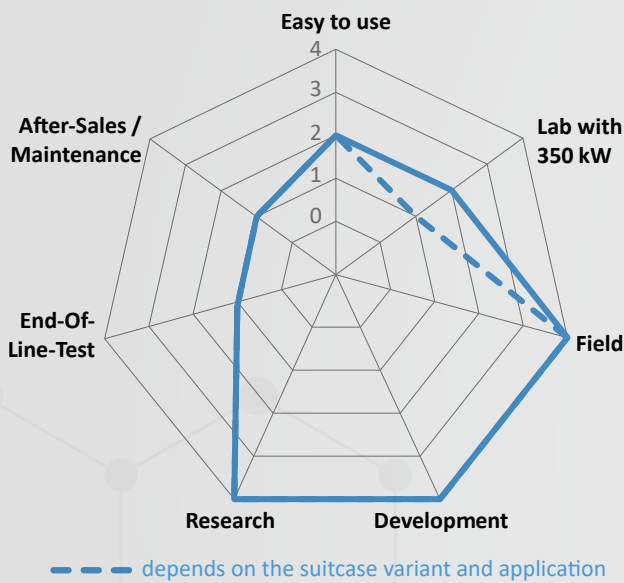
# Product categorization matrix.

The product categorization matrix from comemso gives you an overview of the features and possibilities of the system presented in this brochure. This

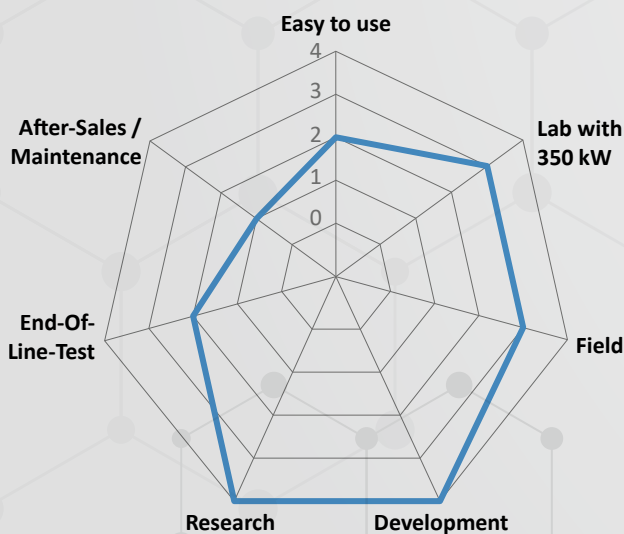
helps you to find the right comemso system for your application.

## General

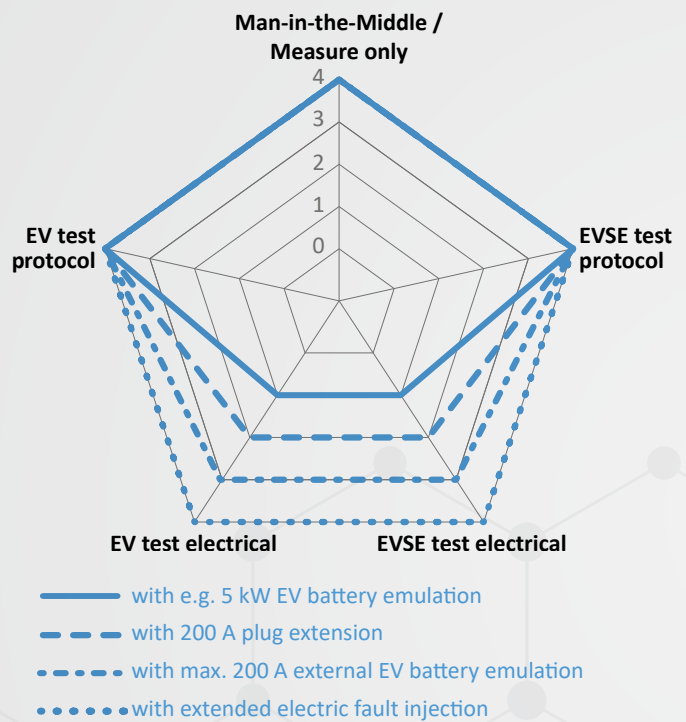
### Mobile suitcase version



### Mobile rack version



## Applications



comemso GmbH  
 Karlsbader Str. 13  
 D - 73760 Ostfildern  
 Mail: sales@comemso.de  
 Phone: +49 711 500 900 40  
 www.comemso.com