Offboard Charging Technology

Charging systems from a single provider – efficient, safe and conforming to standards

In offboard charging technology, IAV attends to communication between OEMs, energy providers and manufacturers of charging technology and develops testing strategies as well as charging infrastructure for AC and DC.

IAV is also involved in defining the requirements for standard-compliant and safe charging in various standardization bodies. For electric mobility to be a success, charging must conform to the standards. To produce efficient charging systems, we specify the requirements for you and develop safe solutions conforming to standards.

Testing strategies are a further key aspect: This includes determining voltage quality in currently available charging systems, specifying the requirements on charging systems conforming to standards and testing the interoperability of vehicles and charging stations (powerline communication – PLC). Developing charging systems and defining test cases and test processes for systematically testing new vehicles and charging systems complement our portfolio.

IAV offers development and design services for conductive and inductive charging. This includes defining concepts for AC and DC charging points as well as wall boxes, developing them, adapting their designs and constructing prototypes, developing components for the plug systems (for CCS, CHAdeMO and GB/T) and integrating the charging interface into the vehicle.

References and benefits

- Interoperability tests on charging stations as well as electric and plug-in hybrid vehicles
- Experience from many projects on charging infrastructure
- Test systems and testing processes available for interoperability tests and voltage quality
- Active involvement in various standardization bodies
- Broad expertise and experience in connection with CCS, CHAdeMO and GB/T
- In-house seminar on norms and standards at the charging interface
- In-house seminar on charging communication (PWM and PLC in compliance with ISO 15118)
Concept, Development and Testing

Charging concepts and their development and realization
- Concepts and ideas for mobile charging and innovative charging capabilities
- Autonomous charging capabilities
- Developing innovative charging capabilities, such as inductive charging

Developing and designing charging infrastructure
- Defining the concept for a charging point
- Design and prototyping
- Developing and designing AC and DC charging points and wall boxes
- Developing plug-system components (for CCS, CHAdeMO and GB/T)
- Integrating the charging interface into the vehicle

Communication within the charging infrastructure
- Communication and coordination between OEM, energy provider and manufacturers of charging technology
- Active participation in various standardization bodies
- Gathering the requirements on safe charging conforming to standards

Testing strategies
- Charging infrastructure testing (national / international)
- Charging point tests using established tools, methods and processes
- Determining voltage quality in currently available systems
- Measuring and evaluating voltage quality and developing solutions for minimizing grid disturbances
- Specifying requirements on charging systems conforming to standards
- Defining test cases and processes for systematically testing new vehicles and charging systems
- High-voltage safety at the charging interface, including process expertise: defining specification, implementation and testing
- Communication (PLC und PWM) between charging station and vehicle: testing the interoperability of charging stations and vehicles
- Verification of charging infrastructure conformance to standards
- Consulting on developing e-mobility systems in projects at customers

For offboard charging technology, IAV uses existing tools (such as CANalyzer, CANoeIP, PLC protocol tester, grid analyzer, measurement adapter) as well as methods for analyzing / evaluating faults and the fault elimination process.

In this domain, we are fully committed to deploying qualified staff, such as electrically skilled persons for “live line working”, electrically skilled person for defined activities and autonomous international project management.