

EV Charging Infrastructure eMobility Solution

Bosch Software Innovations



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Customer benefits

- ▶ Robust, secure, and proven infrastructure
- ▶ Highly scalable and flexible software architecture
- ▶ Open interfaces for third-party charging stations and software systems
- ▶ Support of different business models via seamless integration and adaptation of business rules
- ▶ Convenient and affordable Software as a Service “eMobility Starter Packages” or license models available
- ▶ High-quality user experience based on web-portals and smart phones
- ▶ Customized views for utilities, cities, fleet operators, and automotive OEMs

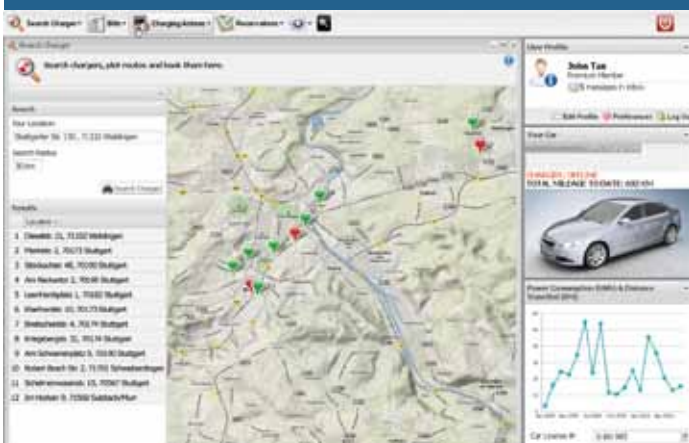
Characteristics

The Bosch eMobility solution is the foundation of an advanced internet-connected, electric vehicle charging infrastructure. It is based on proven software and hardware components for large-scale distributed infrastructure projects. The open business approach and use of the proven Visual Rules business rules management technology foster the development of a vibrant and profitable eMobility ecosystem.

Target Users

- ▶ Electric vehicle (EV) drivers
- ▶ Utilities
- ▶ Location-based service providers
- ▶ Fleet operators
- ▶ Communal authorities
- ▶ Charging station operators
- ▶ Automotive OEMs

Various Customizable Portals, e.g. for EV Drivers



The Bosch eMobility solution supports all the basic processes for the eMobility infrastructure

- ▶ Charging electric vehicles
- ▶ Billing of energy consumption and services
- ▶ Finding and reserving charging spots
- ▶ Navigating EV drivers to charging spots
- ▶ Managing load of charging station groups (demand management)
- ▶ Collecting vehicle data for business analysis purposes
- ▶ Operating and maintaining charging infrastructure
- ▶ Providing the basis for advanced eMobility services such as sales of mobility packages, intermodality, location-based services or dynamic routing

Scalability – the economic starting point

- ▶ Start small and develop as the market grows and new business models emerge

Security and reliability – key factors in critical infrastructure solutions

- ▶ Proven solution for user authentication and authorization
- ▶ Public key infrastructure from server to each charging station
- ▶ Encrypted communication
- ▶ State-of-the-art backup scenarios
- ▶ Management of software provisioning
- ▶ Online charging stations with reliable offline capabilities ensure charging and billing in offline mode

Ease of use & customized portals ensure a premium user experience

- ▶ Attractive user interfaces provide the playground for a premium user experience
- ▶ Specific web portals for different stakeholders
- ▶ Customizable portals allow for detailed and targeted data analysis
- ▶ Dynamic applications based on Visual Rules technology enable business process owners to deploy innovative business models



Billing Portal

Search Criteria	Car	Date	Price [EUR]	Charged Amount
From: 01/12/2009	1	2010-03-15	9.20 €	46 kWh
	2	2010-03-20	8.80 €	43 kWh
To: 01/04/2010	3	2009-12-11	10.80 €	54 kWh
	4	2009-12-20	6.00 €	25 kWh
	5	2009-12-04	7.80 €	39 kWh
	6	2009-12-26	4.20 €	21 kWh
	7	2009-12-03	3.00 €	15 kWh
	8	2010-02-20	4.20 €	21 kWh
	9	2010-05-18	2.40 €	12 kWh
	10	2010-05-20	4.60 €	23 kWh

Flexibility – a major advantage for investment in large scale infrastructure

- ▶ Integration of third-party charging stations
- ▶ Open interfaces to connect a range of devices like cars, smart phones, etc., from various vendors
- ▶ Customizable portals for each stakeholder in the eMobility ecosystem like drivers, fleet operators, location-based service providers, utilities
- ▶ Visual Rules supports convenient implementation of diverse business rules
- ▶ Third-party infrastructure solutions, e.g. billing systems are easy to implement based on web-services

Our differentiators – enabling a vibrant and profitable eMobility ecosystem

- ▶ The Visual Rules approach fosters the development of new business models in the eMobility market
- ▶ Flexible integration scenarios empower cost beneficial sourcing strategies, such as for charging stations
- ▶ System is component-based and ready to use in a short time frame
- ▶ An advanced set of functions has already been implemented to ensure minimum level of customization
- ▶ Benefit from continuous and agile development, continuous system upgrades guaranteed

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