CONNECT e-MOBILITY

els spelsberg

# E-mobility connected by Spelsberg


safe. inspiring. **green.**

Testing and certification
UL and VDE -accredited test laboratory


Customised packaging

Development and design

Customised accessories

Prototyping + sample

Testing DIN EN 61439

Tool design

Assembly electrical components

Injection moulding of enclosures

Assembly mechanical components

Drilling + Milling

Printing + labelling

# Tailor-made solutions and certified functionality

## From the first sales conversation to the delivery - Spelsberg is the competent partner at your side

- 5.000 junction boxes, distribution boards and enclosures everywhere available
- Individual customising
- Tailor-made and functional solutions
- In-house and certified test laboratory
- Products certified for international markets
- Consultation, solutions, assembly and inspection from one source.
- More than 115 years of experience and market leadership status

CONNECT e-MOBILITY

# Electric bike charging stations

## LEV (Light Electric Vehicle) market environment

Light Electronic Vehicles (LEV): Segways, e-scooters, e-mopeds ... and e-bikes

- Germany has 82 million people and approx. 73 million bicycles
- Almost 2 million electric bikes were sold in Germany in 2020
- Bosch market analysis:
  - E-bikes are expected to occupy 30% of the market in 2025
  - By 2027 every other bike in Germany will be electric

**7 million electric bikes in Germany**

**By the end of 2020 approx. 10% of bikes on German roads will be electric**

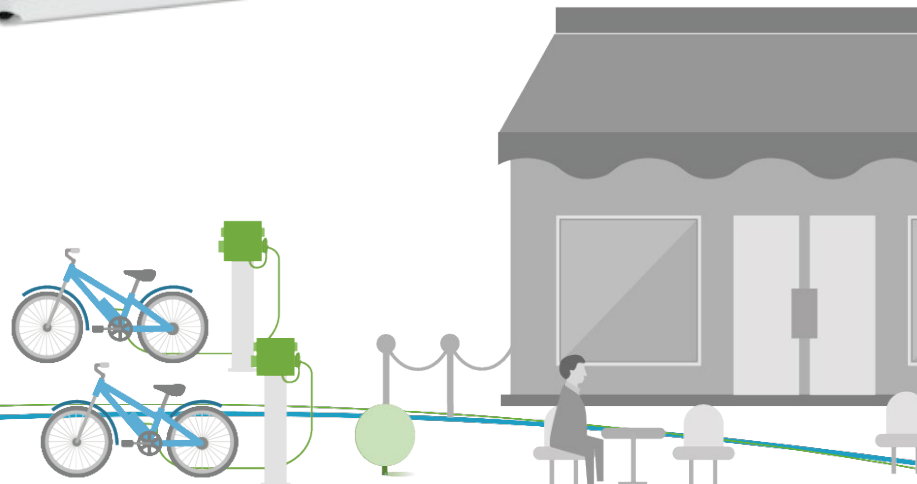
# Modular electric bike charging station

## BCS Pure and BCS Smart


- Based on GEOS enclosure (customisable)
- SCHUKO sockets and fixed cables with charging plugs
- Supports Bosch, Shimano and more
- No need to carry own charger
- Integrated cable management
- Supplied ready to connect
- LED status display
- Management portal and BCS app
- Spelsberg's high quality

**The smart charging solution for:**

- Utilities and local authorities
- Chains (hotels, discount stores, chemists, etc.)
- Cafés, bars and restaurants
- Businesses (SMEs and industry)
- Tourism sector



# Electrification

## in the (electric) bike sector

# Manufacturer's claim versus practical experience

## Battery range

**100 km → 20 km**

**Depending on the conditions, an electric bike battery with 100 km range can be reduced to 20 km!**

Battery range depends on the following factors:

- Weather (heat, cold)
- Weight (bike, rider, bag)
- Nature of route (gravel, mountains, gradients, headwind)

- Manufacturer's claim under ideal conditions:
- Temperature 20 to 25°C
- Speed 20 km/h on dry asphalt
- Correct air pressure, equipment in perfect condition
- Body weight ~ 70 kg
- Minimal use of the electric power unit

# Overview of the LEV sector

## Small and lightweight electric vehicles

- Mobility services
- Scooters and other LEVs
- Mobility infrastructure

| Scooters | Two-wheeled vehicles |
| --- | --- |
|  |  |
| **Three-wheeled vehicles** | **Four-wheeled vehicles** |
|  |  |

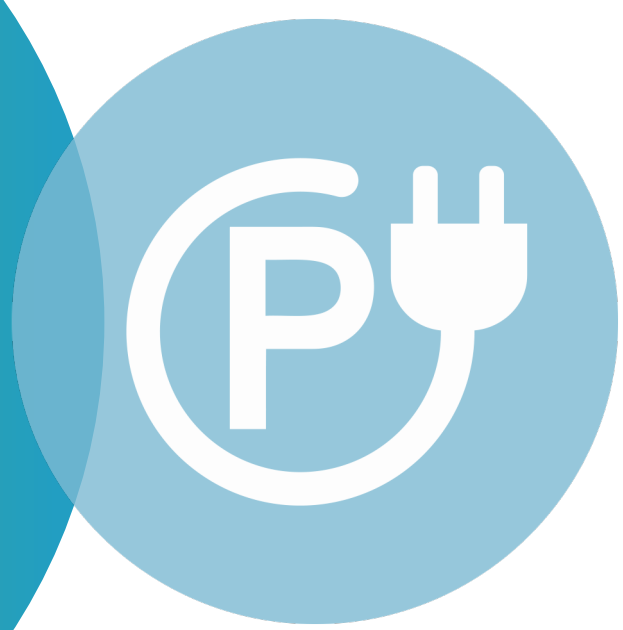
## Market environment

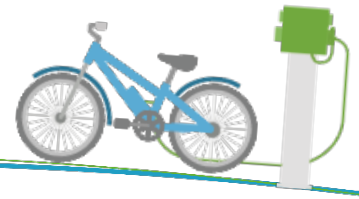
**80%**
of the time a private car is parked at home
16% somewhere else

**4%**
of the time it is on the road - incl. in traffic jams

**20%**
of e-bikers use their pedelecs for leisure

**80%**
of e-bikers use their pedelecs as
a proper means of transport





# Market environment

**40%**

of journeys by electric bike are for work

Around one half of the

**20 million**

in Germany ride a single route of less than **10 kilometres**

On trips of up to

**10 kilometres**

the e-bike is the quickest means of transport in urban areas

**51%**

of motorised delivery trips could be transferred to bikes and cargo bikes

## Market environment

**5.4 g**
Electric bike

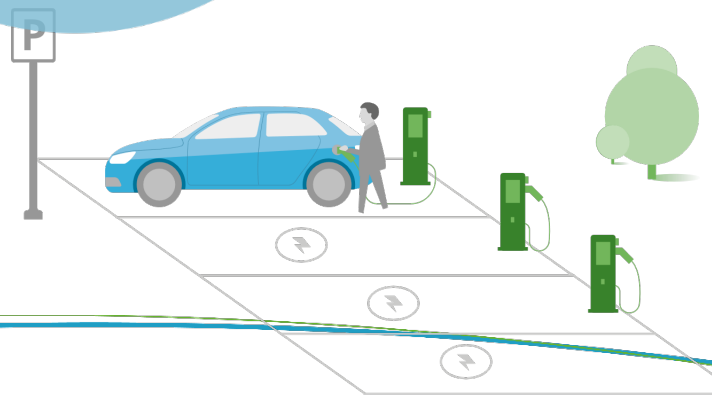
**53 g**
Public transport

**52 g / 95 g**
Train (long-distance / local)

**124 g / 200 g**
Private car (diesel / petrol)

**369 g**
Plane

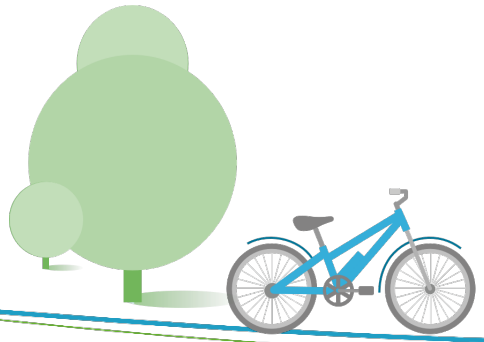
$CO_2$



# Types of battery fittings on electric bikes

## Trend in electric bike systems

- There is a definite trend towards batteries integrated into the frame.
- This leads to restrictions in terms of battery pack size and weight.

# Current e-bike charging infrastructure solutions on the market

**Cabinets** with lockers and sockets

**Socket distribution boxes** with fuses

**Bike racks** with sockets

**Hire systems,** app-based

**Electric bike garages** with sockets

**Charging station** with additional adapter cable

# Market survey

## Types of electric bike charging stations

### Benchmarking electric bike charging stations

- Predominantly Schuko socket solutions
- Combination of bikes and sockets or cabinets
- Lockable bike garages with sockets
- Charging electric bike only possible with home charger/adapter cable
- Chargers must not be used outdoors. Message from manufacturer!
- Risk of theft: charger (+battery) lie around unsecured!

**BCS Pure/Smart**

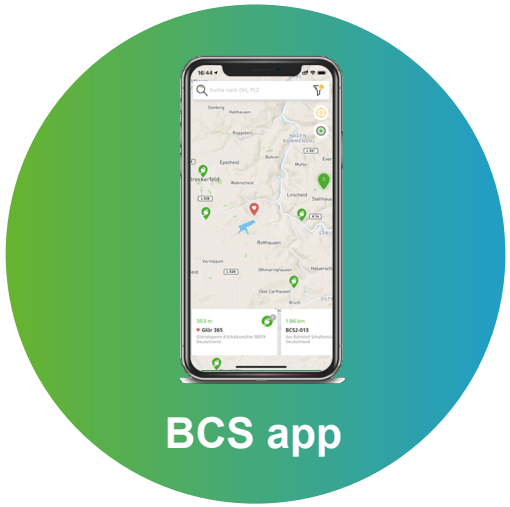
The first electric bike charging station that doesn't require the rider to carry a charging cable or charger.


- **A socket does not constitute charging infrastructure**
- Manufacturers' specifications cannot be adhered to!
- The risk of use is transferred to the e-bike rider

# Parking places and garages for (electric) bikes


**All sites are in monitored areas (restricted access, company premises, under surveillance, etc.)**

# BCS Smart system overview



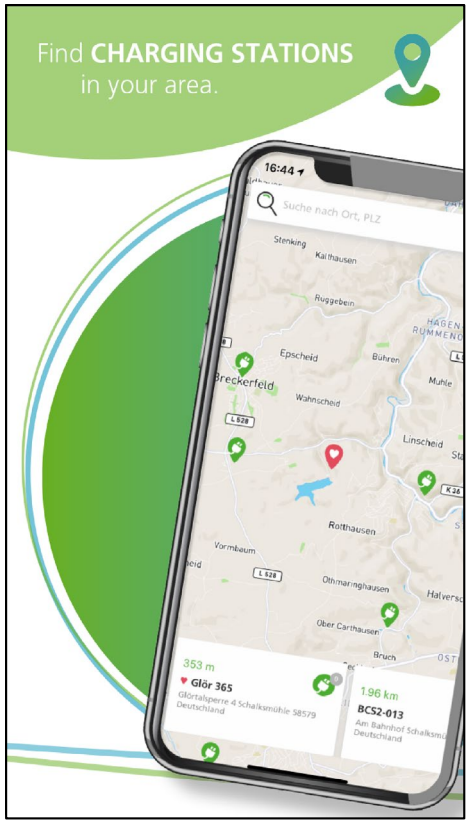


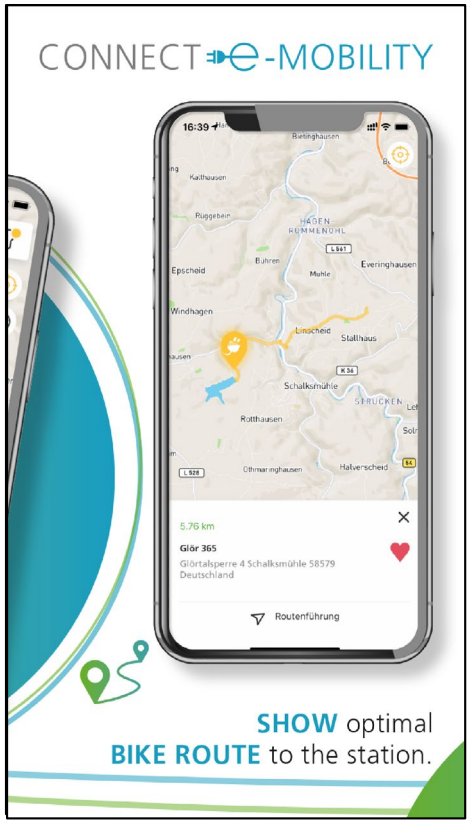

# BCS Finder app

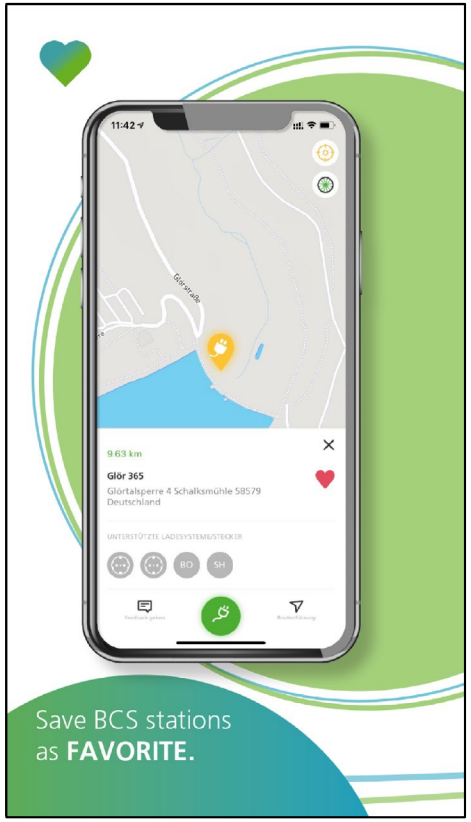
## Mobile app for e-bike user

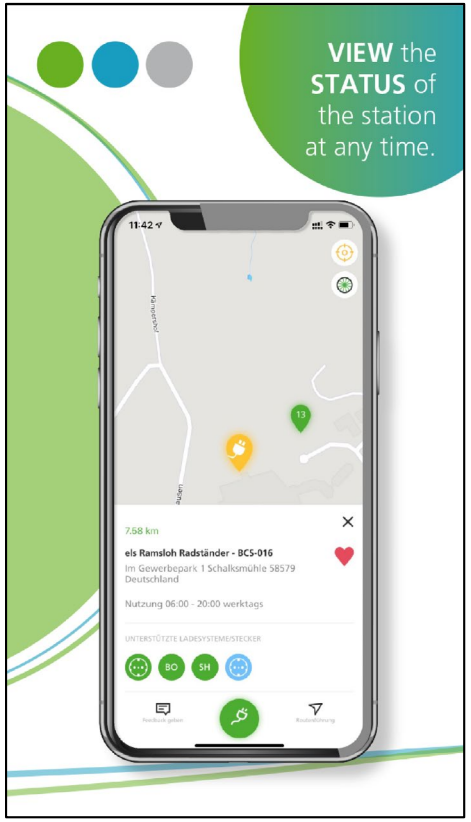
Download on the App Store

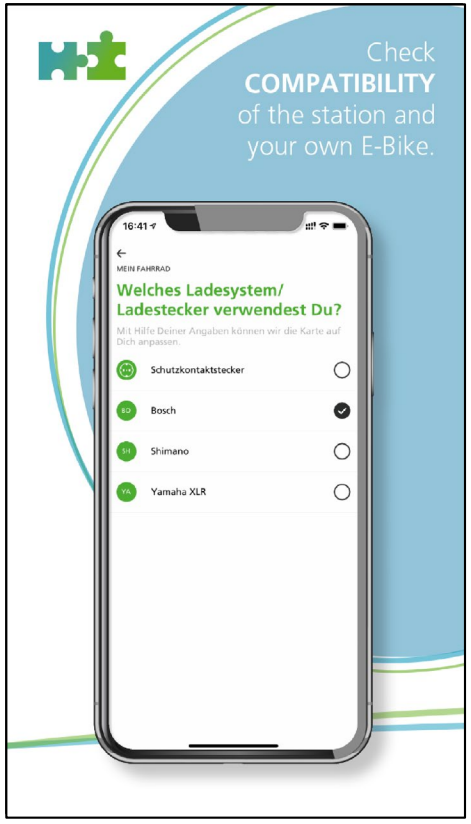
GET IT ON Google Play



# BCS Smart

## BCS portal for charging station operators

### Overview of functions

- Manage: overview/status of all charging stations
- Monitor: operating times, number of charging operations, systems used, maintenance
- Energy management: overview of power consumption, status of charge points, activate, disable, utilisation times
- Control: overview of user data (profile/behaviour)
- Display and analyse statistics
- …

# Pillar / wall

## BCS Pure/Smart pillar

- Mounted against a pillar
  (on both sides if required)
- Pillar can display customer’s logo etc.
- Can be wall mounted with fixtures supplied



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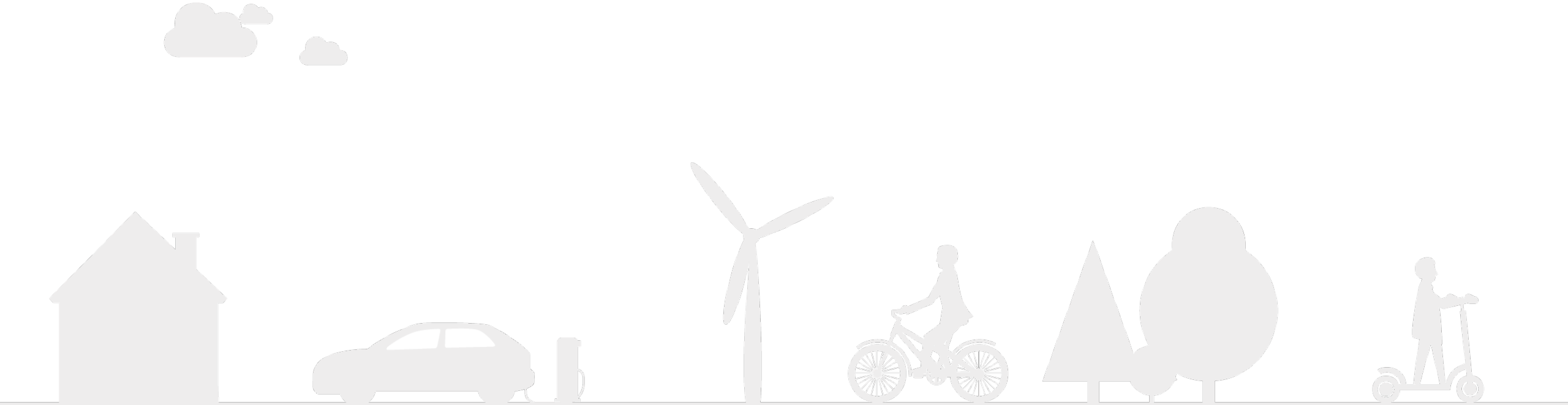

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# And what drives you?