E-mobility Roadside Electrification Solutions

Electrification - Packaging and Solutions
Agenda

- Market size and growth
- Charging infrastructure basics
- ABB e-mobility infrastructure solutions by application
  - Roadside stations
- Other considerations
- Digital options
- Value of ABB offering
- Detailed solutions by application
Market size and growth

Trends in the industry
Growth of e-mobility market

The e-mobility market is growing at a record pace

Global EV outlook

Drivers for consumers to buy electric vehicles

- Environmental - consumers desire to change to electric cars charged by clean, renewable energy
- Electric vehicles are approximately 3X-5X cheaper to charge/fuel
- Electric vehicles have 25% lower maintenance costs than internal combustion engine vehicles
- Electric vehicles can last 2.5X longer than internal combustion engine vehicles
- Initial cost of electric vehicles has decreased as battery costs have decreased

Drivers for retail, industrial, municipals and private companies

- Attract people to their stores, companies and cities
- To serve their customers, employees, and consumers
- Increase store sales as consumers spend time in their stores while their cars are charging
- Environmental stewardship
- New business models for petrochemical industry and store fronts
- To decrease traffic and parking within cities (buses, light rail)
Industry trends driving growth

Lower battery pricing and tighter emission regulations continue to drive the trend towards EVs

**Battery prices keep falling**

**Emission regulations getting tighter and tighter**

- **Global Electric Vehicle (EV) and Internal Combustion Engine (ICE) share of long-term passenger vehicle sales**

**Source:** BloombergNEF
Power requirements are increasing
Increasingly more electric commercial vehicles and truck models coming

**DC high-power CCS (≥ 150 kW @800V)**

**DC high-power CCS (≥2150 kW @400 V)**

**DC fast charging CCS (50-150 kW @400 V)**

**DC fast charging CHAnE MO (50-150 kW @400 V)**

**AC 11 kW OnBoardConverter**

Only AC slow (3.6-7.2 kW)

**DC charging CCS < 50 kW @ 400V**

**StreetScooter**

**Mercedes Vito E-cell**

**Renault Kangoo ZE**

**Honda Fit**

**MAN eGT**

**BYD**

**VW (ABT) e-Caddy**

**Opel Vivaro e-Cargo**

**200 km**

**200 km**

**360 km**

**300 km**

**370-450 km?**

**200 km? 300 km**

**225-370 km (NEDC)**

**Citroen Jumpy/Vauxhall Vivaro-e**

**BYD**

**VW T7**

**300 km**

**200 km?**

**300 km**

**Jan 2020**

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Trends toward faster charging times and higher power

As electric vehicles increase in use, quicker and higher power charging infrastructure is needed.

- **Bus Depot**
  - Medium Voltage
  - Typically 3-8 hrs overnight

- **eBus En-route Charging**
  - Medium Voltage
  - Typically 3-6 mins

- **Industrial Fleet**
  - Medium Voltage
  - Varies significantly by application

- **Commercial Fleet**
  - Medium Voltage
  - Typically 3-8 hrs overnight

- **Road-Side Fast-charging Station**
  - Medium Voltage
  - Typically 10-20 min

- **Public Commercial Parking**
  - Medium Voltage
  - Typically 20-90 min

- **Office / Apartment Charging**
  - Low Voltage
  - Typically 8 hours

- **Residential Charging**
  - Low Voltage
  - Typically 8 hours overnight
Trends in electrical infrastructure

Movement towards higher power chargers and faster charging times = MV grid connection

Ever-increasing # of electric vehicles + Bigger cars, higher power needs, longer ranges + Faster charging times

Different electrical infrastructure is needed to support the load:
- Leading to more MV grid connection installations
- Energy storage to allow fast charging in LV grid connection
- High safety requirements for equipment in public installations
- Relocatable energy storage allows site locations to be evaluated without premature permanent infrastructure costs

Overnight charging 8+ hours
High power charging 10-20 mins

2007
Only AC slow
(3.6-7.2 kW)

Honda Fit
100 km

2019
DC high power charging CCS
(≥150 kW @400 V)

Audi e-tron SUV
>400 km
The future of mobility is electric

Now is the time to future-proof your electrical infrastructure

The key to future-proofing is investing in the right combination of traditional and smart solutions, ensuring the infrastructure can be scaled in close alignment with growing demand

- E-mobility is coming, and its **tipping point will arrive much sooner** than most people expect
- Experts predict that just a couple of decades from now, **there will be more than 540 million electric vehicles crowding our roads** – and their energy needs will be much more intense than today’s first generation of electric vehicles.
- To make your investment count and to earn the full ROI on the electrification of transport, the technology you install has to be both **scalable and futureproof**
- New long-range EVs demand fast-charging at higher power levels. Make sure that your e-mobility solution is **ready to grow both in size and sophistication**.
- Smart, connected technologies, such as energy management or battery energy storage, provide a means of **utilizing current electrical infrastructure** and avoiding or delaying costly grid expansions in markets where e-mobility is still in early stages.
- Fleet operators and transportation authorities are facing challenges, such as technological uncertainty, large up-front investment, and need for new capabilities. ABB’s holistic approach provides a **complete e-mobility solution** helping fleet operators effectively outsource many of these uncertainties.
Charging infrastructure basics
Types of charging infrastructure and application
# E-mobility solutions landscape for cars and fleets

## Applications, charging times and power options

### Public and commercial EV Charging

<table>
<thead>
<tr>
<th>AC destination</th>
<th>DC destination</th>
<th>DC Fast</th>
<th>Depot Charging</th>
<th>DC High Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-22 kW</td>
<td>20-25 kW</td>
<td>50-180 kW</td>
<td>50-150 kW+</td>
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<tr>
<td>4-16 hours</td>
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- **Office, workplace**
- **Home**
- **Multi-family housing**
- **Hotel and hospitality**
- **Overnight fleet**
- **Supplement at DC charging sites for PHEVs**
- **Retail, grocery, mall, big box, restaurant**
- **High turnover parking**
- **Convenience fueling stations**
- **Highway truck stops and travel plazas**
- **OEM R&D**
- **Fleet depots for bus, truck and light commercial vehicle (LCV), and industrial vehicles charging**
- **Private campus**
- **Central bus depots and bus-line turning point**
- **Bus, truck and LCV, and industrial vehicles**
- **Highway corridor travel**
- **Metro “charge and go”**
- **Highway rest stops**
- **Truck stops**
- **Petrol station areas**
- **City ring service stations**
- **OEM R&D**
ABB’s portfolio of EV chargers span across multiple charging applications

EV charging experts can help identify the right solution for your charging operation

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<td>For car (*350 kW)</td>
<td>For bus</td>
<td></td>
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Alternate use-cases for depots

For car (*350kW)

For bus
# E-mobility solutions landscape for cars and fleets

Applications, charging times and power options

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- Office, workplace
- Home
- Multi-family housing
- Hotel and hospitality
- Overnight fleet
- Supplement at DC charging sites for PHEVs

- Office, workplace
- Hotel and hospitality
- Parking structures
- Dealerships
- Urban fleets
- Public or private campus
- Sensitive grid applications

- Retail, grocery, mall, big box, restaurant
- High turnover parking
- Convenience fueling stations
- Highway truck stops and travel plazas
- OEM R&D

- Fleet depots for bus, truck and light commercial vehicle (LCV), and industrial vehicles charging
- Private campus
- Central bus depots and bus-line turning point
- Bus, truck and LCV, and industrial vehicles

- Highway corridor travel
- Metro "charge and go"
- Highway rest stops
- Truck stops
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- City ring service stations
- OEM R&D

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Our focus for this presentation
ABB e-mobility electrification infrastructure solutions

Overview
ABB Electrification has the complete line of charging infrastructure solutions

Your one-stop shop for e-mobility infrastructure

- E-bus chargers
  - HVC
- AC chargers
  - DC fast chargers
  - Terra systems
- Service
  - Asset management
  - Upgrades & retrofits
  - Installation & commissioning
- Energy storage
  - ESM
- Integrated solutions
  - Energy storage
  - eHouse with chargers
- Electrical power
  - Electrical only
- Distribution Solution
  - Components
    - MV & LV Switchgear
    - Relay
- Charging network software services
  - ABB Ability
- Energy Management
  - EV Site Solutions
- Residential
  - Distribution boards/panels
  - Home automation

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Electrical systems supporting chargers get more complex
As power levels rise charging locations may need to bolster their electrical infrastructure as well

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<td><strong>Electrical Infrastructure</strong></td>
</tr>
<tr>
<td>– Circuit protection</td>
</tr>
<tr>
<td>– Residual current protections</td>
</tr>
<tr>
<td>– Smart meters - optional for facility energy management</td>
</tr>
</tbody>
</table>

| **DC destination**               |
| 20-25 kW                         |
| **ABB Charger**                  |
| – DC charger                     |
| **Electrical Infrastructure**    |
| – Cable pillars                  |
| – Circuit protection             |
| – Residual current protections   |
| – Energy management solutions    |

| **DC Fast**                      |
| 50-180 kW                        |
| **ABB Charger**                  |
| – AC or DC charger               |
| **Electrical Infrastructure**    |
| – Switchboards                   |
| – Cable pillars                  |
| – Energy management solutions    |

| **Depot Charging**               |
| 50-150 kW+                       |
| **ABB Charger**                  |
| – AC and DC charger(s)           |
| **Electrical Infrastructure**    |
| – LV Switchgear                  |
| – MV Switchgear                  |
| – Switchboards                   |
| – Distribution transformers      |
| – Enclosures or skids            |
| – Battery Energy Storage System  |
| – Energy management solutions    |

| **DC High Power**                |
| 150-350 kW+                      |
| **ABB Charger**                  |
| – DC charger(s)                  |
| **Electrical Infrastructure**    |
| – LV Switchgear                  |
| – MV Switchgear                  |
| – Switchboards                   |
| – Distribution transformers      |
| – Enclosures or skids            |
| – Battery Energy Storage System  |
| – Energy management solutions    |
Electrification offering

**Customized Solutions**

**Description**
Customized solution for a specific project. Offering for complex, non-standard, jobs requiring multiple ABB products and services.

**Offerings**
- Custom designed product packages
- Customized eHouses, skids and mobile substations

**Solution Architectures**

**Description**
A pre-engineered solution development with digital applications. Packages ABB products into a turnkey digital solution for specific applications.

**Offerings**
- Offerings by segment and specific application
- Digital offering with key benefits for user application

**Productized solutions**

**Description**
Productized solution that is pre-engineered, pre-fabricated, and type tested for rapid deployment.

**Offerings**
- Standardized eHouses and skids; ex. EcoFlex
- Compact Secondary Substations (CSS)
- Energy Storage Modules (ESM)
Electrification offering – Productized solutions
Building blocks for e-mobility

**Electrical infrastructure**
- Built as modular or expandable solutions for future-proofing
- Aesthetically pleasing enclosures to help hide necessary infrastructure in plain sight

**Integrated charger solution**
- Ideal for turnkey charging solutions that can be commissioned quickly on-site
- Bridges the gap of connecting charging and electrical infrastructure
- Provides flexible solutions from reliable vendor with common products

**Battery energy storage**
- Available with synchronized charging and is especially important where grid constraints limit charging power
- Ideal for peak shaving especially for fleets where multiple cars charge
- Ideal way to connect solar to local chargers reliably

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Integrated load management across all building blocks provides fast deployment and reliable operation
Productized solution

Electrical infrastructure

- **Modular solution** reduces complexity – 60% faster to deploy
- **Arc tested solution** – safe for installation in public areas
- **Factory assembled, pre-wired and pre-tested** - reduces risk by over 90%
- **Transportable provides flexibility to move between sites**
Productized solution
Integrated charger solution

- Factory assembled, pre-wired and pre-tested - reduces risk by over 90%
- Integrated chargers simplify space constraints, connections and prevent start-up delays
- Transportable - provides flexibility to move between sites
- Arc tested solution – safe for installation in public areas
- Optimized charging through intelligent energy management
- Modular solution reduces complexity – 60% faster to deploy

Integrated charger solution provides:
- 60% faster to deploy
- Factory assembled, pre-wired and pre-tested - reduces risk by over 90%
- Integrated chargers simplify space constraints, connections and prevent start-up delays
- Transportable - provides flexibility to move between sites
- Arc tested solution – safe for installation in public areas
- Optimized charging through intelligent energy management
- Modular solution reduces complexity – 60% faster to deploy
Productized solution

Energy storage

- Factory assembled, pre-wired and pre-tested - reduces risk by over 90%
- Transportable - provides flexibility to move between sites
- Modular solution reduces complexity – 60% faster to deploy
- Critical power operations digitally controlled for fastest response time
- Asset health and management for product longevity
- Energy management software for optimization and energy storage control
Solution architecture
Electrification and digital offering

Combines **products, pre-engineering** and **digital applications** to create scalable solutions to fit specific application requirements.

- **Digital connectivity** provides greater flexibility and information.
- **Strong digital solutions** for improved asset and energy management.
- **Pre-engineering** reduces project complexity.
- **Application based ABB products** for seamless integration.
Customized Solutions
Packaging & eHouses

Custom engineering – unique product engineering requirements to specific specifications

Enclosures can vary depending on job demands; eHouse, skids or mobile substations

Complex projects that require a custom or tailor-fit solution

Project that requires design, engineering, integrated components, manufacturing and project management
ABB’s e-mobility integrated solutions
Benefits of integrated electrical and charging infrastructure

- Modular and scalable, plug-and-play solutions reduce complexity and are 60% faster to deploy, helping customers turn ideas about sustainability into quick action.

- Factory assembled, pre-wired and pre-tested solutions assure a smooth startup reducing risk by over 90% that modifications will be required on site.

- Internally arc tested unit offers the highest safety for people and equipment, with solutions tested according to IEC requirements for public installations.

- The ability to place this solution in public spaces can save 30% on installation costs — no fencing or security required.

- Relocatable solution provides means proposed site locations are evaluated temporarily without disruptive and costly grid connection expansions. The permits required for temporary solutions are also often easier and faster to obtain.

- Transportable solution provides flexibility to move between sites with simplified logistics.

- Energy storage can easily be added in the future to cover higher peak demand and/or resolve grid limitation issues.

- Easy to transport and handle or relocate; many designs are stackable, reducing land space requirements; some designs fit into standard parking space.

- Digital connectivity, intelligent energy management, predictive maintenance, and deep insights and statistics at the charger, the site, and the network level optimize e-mobility charging operations.
Roadside stations
Roadside stations

The fastest car charging application

- Addresses consumer concern about range anxiety requires the introduction of fast charging stations
- Consumers want to charge as fast as possible in the shortest amount of time in these locations
- Typical charging power is between 50kW to 350kW.
- In 10 minutes time:
  - A 50 kW charger can add typically 40-60km
  - A 350 kW charger can add typically 290-350km
- These applications typically require a MV connection to the grid
- Relocatable battery energy storage solutions typically reduce the amount of time needed for permits, offering the fastest deployment for establishing a loyal customer base
# Roadside stations

## Integrated solution

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage rating</th>
<th>Power rating</th>
<th>Applicable standards</th>
<th>Standard components</th>
<th>Key solution features</th>
</tr>
</thead>
<tbody>
<tr>
<td>EcoFlex with HP chargers</td>
<td>Up to 1kV</td>
<td></td>
<td>IEC, ANSI</td>
<td>LV protection equipment, energy management system, high power charging posts</td>
<td>Expandable uses with ES and HP chargers, quick start from LV connection, movable</td>
</tr>
<tr>
<td>CSS with HP chargers</td>
<td>2.4 – 40.5kV</td>
<td>Typical rating (kVA): up to 1250 kVA</td>
<td>IEC, ANSI</td>
<td>MV switchgear, transformer, LV switchboard, HP chargers</td>
<td>Quick setup solution for plug-and-play charging requirements</td>
</tr>
<tr>
<td>Unisub with HP chargers</td>
<td>Low voltage connection</td>
<td></td>
<td>IEC, ANSI</td>
<td>LV switchboard, HP chargers</td>
<td>For plug-and-play charging requirements with only LV connection, visually appealing</td>
</tr>
<tr>
<td>CSS with fast chargers</td>
<td>2.4 – 40.5kV</td>
<td>Typical rating (kVA): up to 1250 kVA</td>
<td>IEC, ANSI</td>
<td>MV switchgear, transformer, LV, fast chargers</td>
<td>Skid mounted, fast installation, ideal for small public or private charging</td>
</tr>
<tr>
<td>CSS with HP chargers</td>
<td>2.4 – 40.5kV</td>
<td>Typical rating (kVA): up to 2000 kVA</td>
<td>IEC, ANSI</td>
<td>MV switchgear, HP charger LV switch board, transformers</td>
<td>Skid-mounted, ideal for highway rest areas, immediate charger installs</td>
</tr>
<tr>
<td>EcoFlex w/ LV distribution &amp; HP chargers</td>
<td></td>
<td></td>
<td>IEC, ANSI</td>
<td>LV distribution, 8 power modules or 4 power modules and 2 charging posts</td>
<td>Quick setup; plug-and-play solution, reduced site works, standard connection interfaces</td>
</tr>
</tbody>
</table>
# Roadside stations

Battery energy storage building blocks

<table>
<thead>
<tr>
<th>EcoFlex with energy storage</th>
<th>Voltage rating</th>
<th>Power rating</th>
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<tbody>
<tr>
<td></td>
<td>2.4 – 40.5kV</td>
<td>Up to 1800kW/1800kWh</td>
<td>IEC, ANSI</td>
<td>MV switchgear, transformers, LV switchboard, energy storage</td>
<td>Easy to ship and install, BESS for reliable power and peak power demand control</td>
</tr>
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| EcoFlex with energy storage & fast chargers | Up to 1kV | 200kWh/200kW - 900kWh/900kWh | IEC, ANSI | LV switchboard transformers, energy storage, solar, fast chargers | Solar roof, energy storage for fast charging with LV grid connection, relocatable |

| EcoFlex w/ energy storage & HP chargers | 2.4 – 40.5kV | Up to 400kW/400kWh | IEC, ANSI | MV switchgear, transformer, LV switchboard, energy storage | Easy to ship and install, BESS for reliable power and peak power demand control |

| EcoFlex Energy Storage Module | Up to 1kV | Up to 500kW/500kWh | IEC, ANSI | LV switchboard, energy storage | Plug-and-play low voltage energy storage solution, easy to ship and set up |
## Roadside stations

Electrical infrastructure building blocks

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<th>Voltage rating</th>
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</table>
| Compact Secondary Substation (CSS) | 2.4 – 40.5kV  
Typical rating (kVA): up to 3150 kVA | IEC, ANSI | MV switchgear, transformer, LV switchboard | Versatile configurations and functions with quick setup and pre-engineering |
Other considerations
Things to consider when selecting the proper electrical infrastructure

Enclosures are specific to power requirements and site considerations. Below you will find detailed information on selecting the right enclosure.

**Solutions**

**CSS family:** Internally arc tested to meet IEC62271-202 standard making it ideal for public spaces

**EcoFlex eHouse:** Internally arc tested and easy to transport and relocate

**Open-air skid:** Ideal pre-assembled, pre-tested solution for quick installation and simple maintenance

<table>
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<th>Site considerations</th>
<th>CSS</th>
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<th>Open-air skid</th>
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<tr>
<td>Public space</td>
<td>+++</td>
<td>++</td>
<td></td>
</tr>
<tr>
<td>Environmental (moisture, salt, fog, etc.)</td>
<td>+++ (GRP)</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Seismic</td>
<td>++</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Wind</td>
<td>++</td>
<td>+++</td>
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</tr>
<tr>
<td>Arc containment</td>
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<td>+++</td>
<td></td>
</tr>
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<td>Transportability</td>
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<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Relocatable</td>
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<td>+</td>
</tr>
<tr>
<td>Compactness</td>
<td>++</td>
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Advantages of integrated skid-mounted, complete solutions

Eliminate time and cost

For simple, quick installation consider placing high power chargers on the same skid with the enclosure to eliminate:

- Placing the enclosure behind a fence
- Cabling and cable trays costs
- Installation costs

Integrated solution provides simple, quick installation

versus

Individual product delivery

Extra cabling and installation costs
Digital options
Grid constraints can often limit placement of eV charging locations or require long permitting times and infrastructure improvements. However, with the addition of a Battery Energy Storage Systems (BESS) performing peaking capacity and the eV site controller performing load management, customers are able to synchronize charging for optimized energy flows in order to:

- Keep the grid under the capacity limit
- Provide maximum power to the eV customers
- Deploy eV charging infrastructure more quickly and to test possible locations before investing in costly grid capacity and electrical distribution expansions
Energy storage and synchronized charging digital solutions

Advantages

The energy storage and controlled synchronization allows customer to charge more than their existing power limit on the grid, this is specifically important when facing grid limitation issues.

It can take up to 1 year to obtain permits needed to deploy permanent charging infrastructure. The permits needed for a temporary installation are easier and faster to obtain. This allows a charge station to be deployed quickly and buys more time for the necessary permits to be collected for the permanent charging station. The temporary solution can then be relocated to the next planned site.

The solution allows a possible location to be tested before investing in costly grid capacity and electrical distribution expansions.

This solution prevents undervoltage issues and nuisance trips.

The synchronization and voltage control helps prevent frequency excursions.

The system can automatically detect load and synchronize.
Why choose ABB for your e-mobility needs?
ABB Electrification is your total solution for e-mobility

A one-stop-shop

- **EV chargers for cars, buses and fleets**
- **E-mobility infrastructure solutions**
- **Financing for e-mobility solutions**

ABB can help make your investments scale with needed capacity

ABB can help install your electrical vehicle infrastructure in over 80 countries

ABB will service and maintain the infrastructure for optimal use and availability

We will help you design, install and service your investment
ABB Packaging and Solutions for your e-mobility infrastructure needs

The perfect partner

**Trustworthy partner**
ABB is a global partner with a focus on advanced technologies

**Ensure operability**
Pre-engineered, pre-assembled and pre-tested solutions reduces risk

**High reliability**
Our solutions have undergone extensive risk and failure mode analysis

**Flexible modular concept**
Modular concept allows for ease of scalability in power and capacity

**Safe, easy to install and operate**
Pre-assembled and tested at ABB premises to ensure personnel safety and reduce time on-site

Maximize your ROI with highly reliable, scalable and safe solutions
Consider ABB Packaging & Solutions for your e-mobility solution needs

The perfect partner

**Trustworthy partner**
- World leader in digital industries to serve customers
- Pioneering technology leader focused on digital industries
- Strong global team

**Ensure operability**
- Pre-engineered and industrialized products with reduced project engineering
- Reduced installation and transportation costs
- Maximize uptimes with factory assembled and pre-tested solutions
- Ensures immediate operability
- Can be dropped in parking space – ready to work

**High reliability**
- Protect equipment from environmental influences
- Factory tested solution
- Designed to withstand severe environmental conditions
- Undergone extensive risk and failure mode analysis
- Advanced and efficient temperature control provided for the inverter and battery system.
- IEC compliant
Consider ABB Packaging and Solutions for your e-mobility solution needs
The perfect partner

**Flexible**

- Modular concept to allow ease of scalability in power and capacity
- From low-voltage to a wide range of AC medium-voltage levels
- Engineered footprint to optimize customer’s requests
- Different options of MV switchgear from ABB’s SF₆ gas-insulated secondary switchgear portfolio (also available with air-insulated switchgear)

**Safe and easy to install and operate**

- Internally arc tested for public and service personnel
- No live parts accessible
- Locking system for all enclosure doors prevents unauthorized entry of personnel
- Local and remote monitoring and control, easy integration to customer SCADA and ABB Ability™
- Ease of transportation due to standardize solutions
- Pre-assembled and tested at ABB premises to reduce on-site times
- 24/7 service support available to ensure uptime
Partnering with an expert is critical to success

ABB is a leader in delivering EV charging and electrical infrastructure

The standards for EV charging infrastructure are evolving
- ABB is a founding member to CHAdeMO and CCS standards and are co-developing the next advancements, such as ultra-fast charging solutions.

Interoperability between EV charger and the electric vehicle is not universal
- ABB offers an interoperability consultancy, working directly with all of the major car and bus OEMs to ensure successful interaction between your chosen vehicle and ABB EV chargers.

ISO 15118 can be utilized for advanced services, such as preconditioning
- Allows the vehicle cabin to be brought to the perfect temperature prior to departure from depot, saving valuable battery capacity.
- On-site connectivity solutions can be used to integrate chargers in local control systems, such as for fleet scheduling and energy management.

Cloud-based connectivity is critical:
- To ensure chargers are always working with the latest electric vehicles, software updates are delivered remotely
- To extend charging to public use-case, such as setting up pricing for charge sessions, to accept credit card payments, to authorize new vehicles to use the chargers
- To analyze charging statistics for business insights, such as trends in charging schedule, energy usage, and for testing new business models
- For evaluating the health of the EV chargers, such as any alerts or warnings, and using predictive maintenance to prevent disruption to charging operations