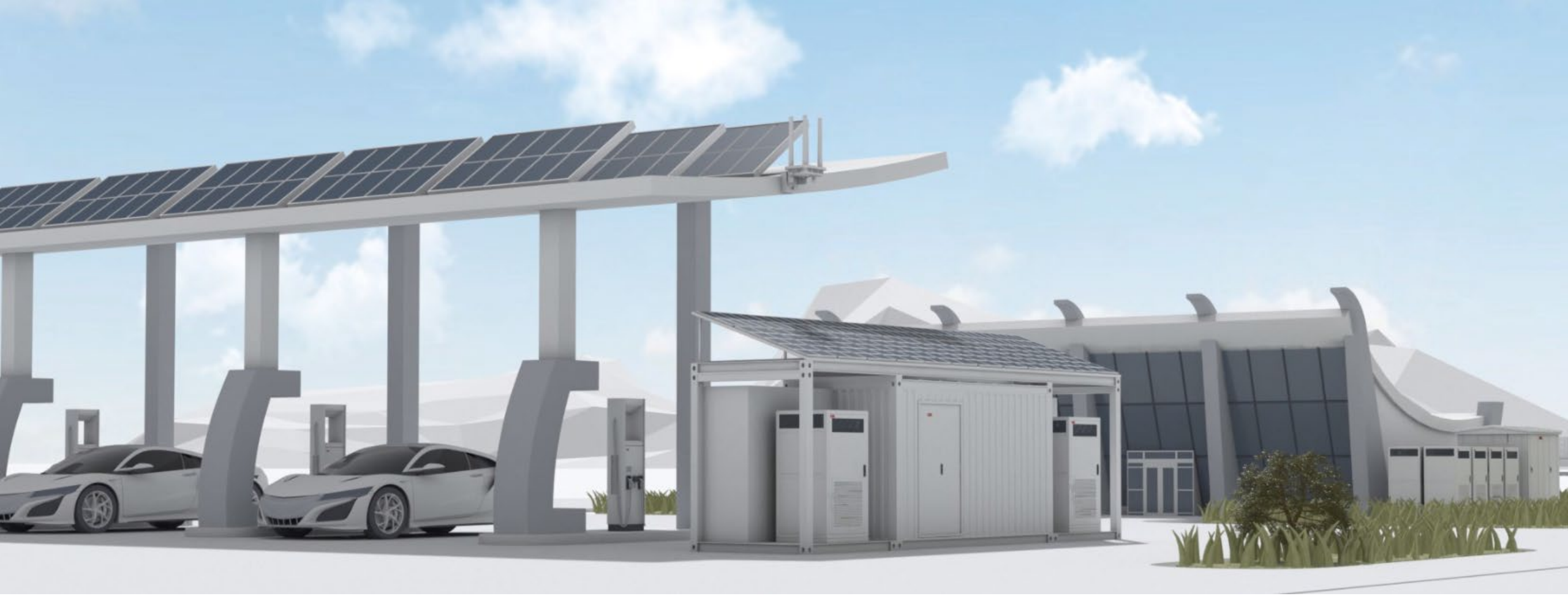


ARCHITECTURES FOR E-MOBILITY ROADSIDE / HIGHWAY APPLICATIONS

All-in-one solution limits site works & ensures smooth startup

IEC Skidded CSS w/ Integrated Chargers 8x175 kW

EM13 EM_eCar_Roadside/Highway_IEC_Skid + CSS_1MW_MV

Electrification for roadside/highway rest areas

Skid-mounted HP chargers and CSS

ABB's all-in-one plug-and-play solution meets the demands of roadside charging facilities

- Integrated solution with chargers, electrical infrastructure and digital communication for control and optimization
- Ability to charge multiple cars within minutes
- Quickly establish electrical charging points with minimal site and civil works
- Lower risk, ensure a smooth startup and immediate return on investment with pre-engineered, pre-fabricated and pre-tested solution

Solution architecture

ABB's pre-engineered solutions meet the speed and reliability requirements demanded by roadside charging facilities

- Repeatable building block designs provide the standardization for multi-site roadside facilities
- Pre-engineered digital packages for a variety of monitoring, control and optimization options
- Modular architecture enables easy expansion and ability to add Energy Storage Modules (ESM)
- Eliminate fencing and security with a completely internal arc tested solution ideal for public applications

Example

Solving today's e-mobility roadside challenges

Architecture composition

Skid mounted CSS w/HP chargers

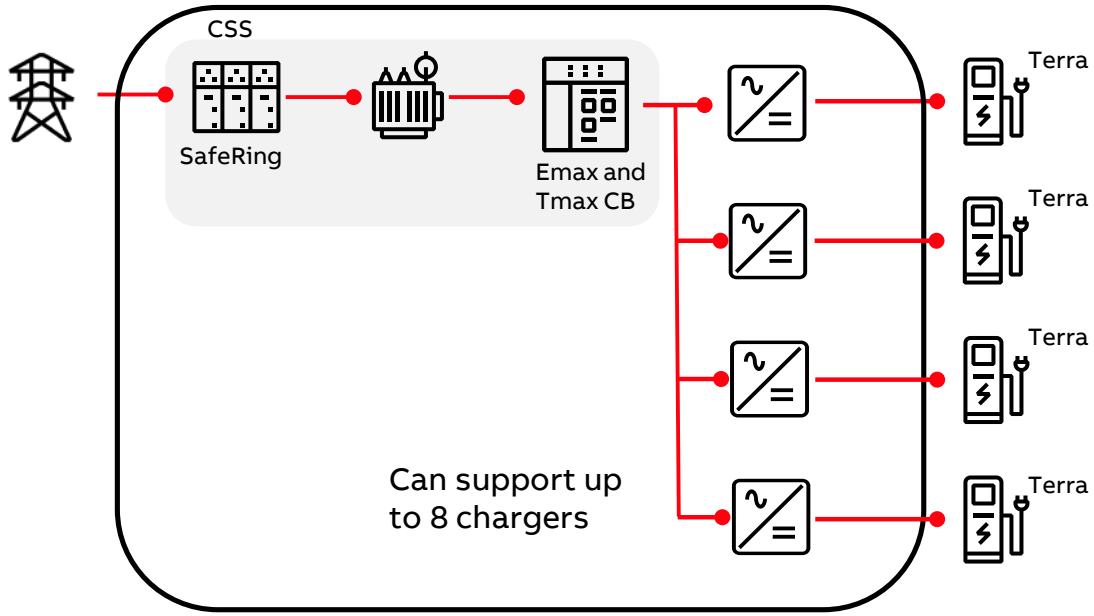
- This skidded solution features all the power and control connections, from medium voltage grid connection to the power cabinets, already routed in the base frame
- Site works are minimized thanks to the pre-wired solution
- Solution available from 2 to 8 x 175kW chargers, and scalable for future expansion
- Just connect the MV grid and the charge post and start operation

Challenge	Solution	Benefit
Integration	Electrical infrastructure and charger package	Assures interoperability with integrated communication for optimized operation
Scalability	Modular design	Provides for a scalable solution that can be expanded as capacity changes
Risk	Factory assembled, pre-wired and pre-tested	Assures smooth startup and reduces schedule risk and maximizes reliability
Asset monitoring	Digital options	Digital solutions available for energy mgt., asset health and utilization information
Speed	Plug-and-play solution	Allows for quick connection to the grid – up to 60% faster installation and startup time with minimal site and civil works
Safety	Internally arc tested to IEC 62271-202	Safe to install in public areas – no fencing or security required saving 30% on installation costs

Roadside solution

Architecture composition

Single line diagram



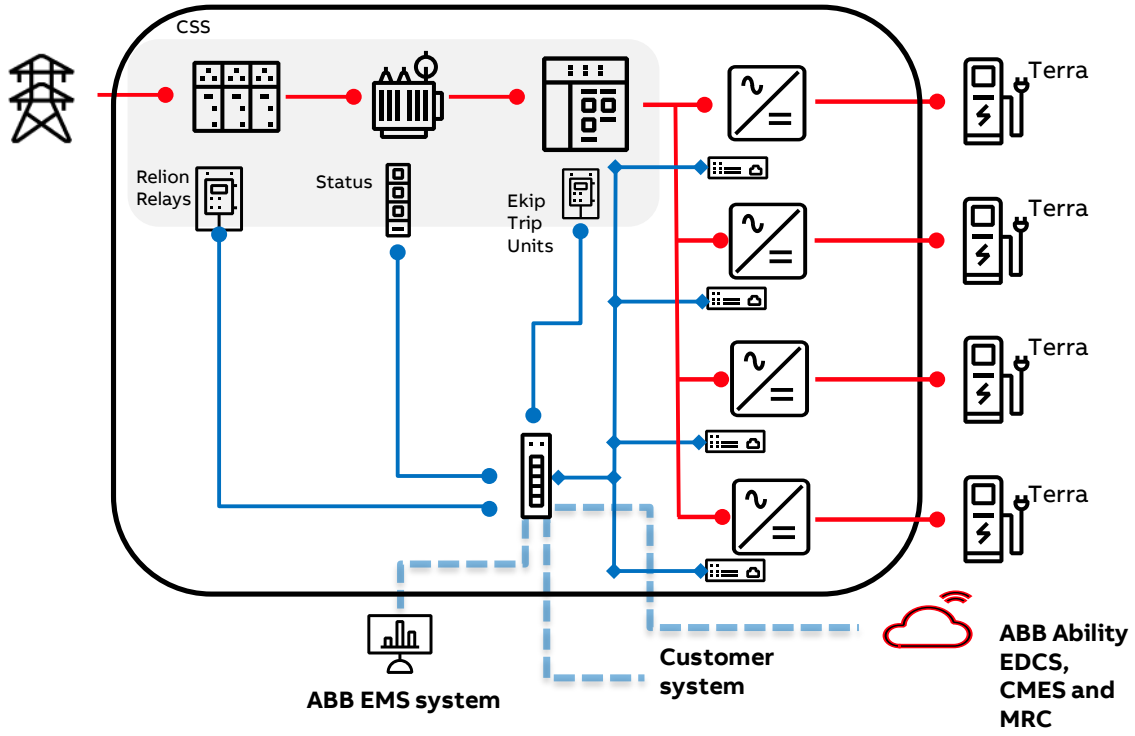
Features of architecture

- Scalable architecture with option to add Terra HP EV chargers
- Integrated solution of power, communication and EV chargers, assures coordinated operation and fast start-up
- Robust equipment provides reliable operation
  - ABB SafeRing MV gear with VD4 vacuum circuit breakers
  - Relion REF-615 relays
- Low voltage Emax 2 and Tmax XT circuit breakers with Ekip trip units to reliably protect and monitor
- Optional InLine II fuse disconnectors
- Internally arc tested design assures high safety standards for service personnel and public
- Compact design to reduce footprint

Roadside solution

Architecture composition

Digital single line diagram



Features of architecture

- Integrated chargers, equipment and communication provide monitoring, control and energy optimization
- Relion REF-615 relays provide reliable protection, control and monitoring of vacuum circuit breakers
- LV Emax 2 and Tmax XT breakers with Ekip trip units provide data that is seamlessly integrated with the control and monitoring systems
- High power ABB Terra EV charger stations communicate with monitoring and billing systems
- ZEE-600 or Optimax energy mgt. system provides monitoring and control of the electrical system
- ABB Ability asset health monitoring with CMES and MRC and energy mgt. with EDCS can help reduce energy bills, lengthen equipment life and reduce maintenance expenditures

Depot solution

The equipment

Typical Equipment

- Compact secondary substation (CSS) enclosure
- MV SafeRing equipment with Relion REF-615 relays
- Transformer (oil or dry type)
- LVS3 Low voltage switchboard with Emax 2 and Tmax XT circuit breakers with Ekip trip units and/or fused disconnectors
- Skid mounted Terra high-power chargers

Options

- ABB Ability and Energy and asset management options with ZEE-600, Electrical Distribution Control System (EDCS), Condition Monitoring for Electrical Systems (CMES), My Remote Care (MRC)
- Seismic certifications
- IP35 or IP45 protection for demanding locations
- Added ventilation for hot climates

Typical Equipment


ABB