Xcelsior *CHARGE™*
On-Route Charging

January 2019

NEW FLYER®

xcelsior CHARGE™

XE60
Long Range &
Rapid Charge

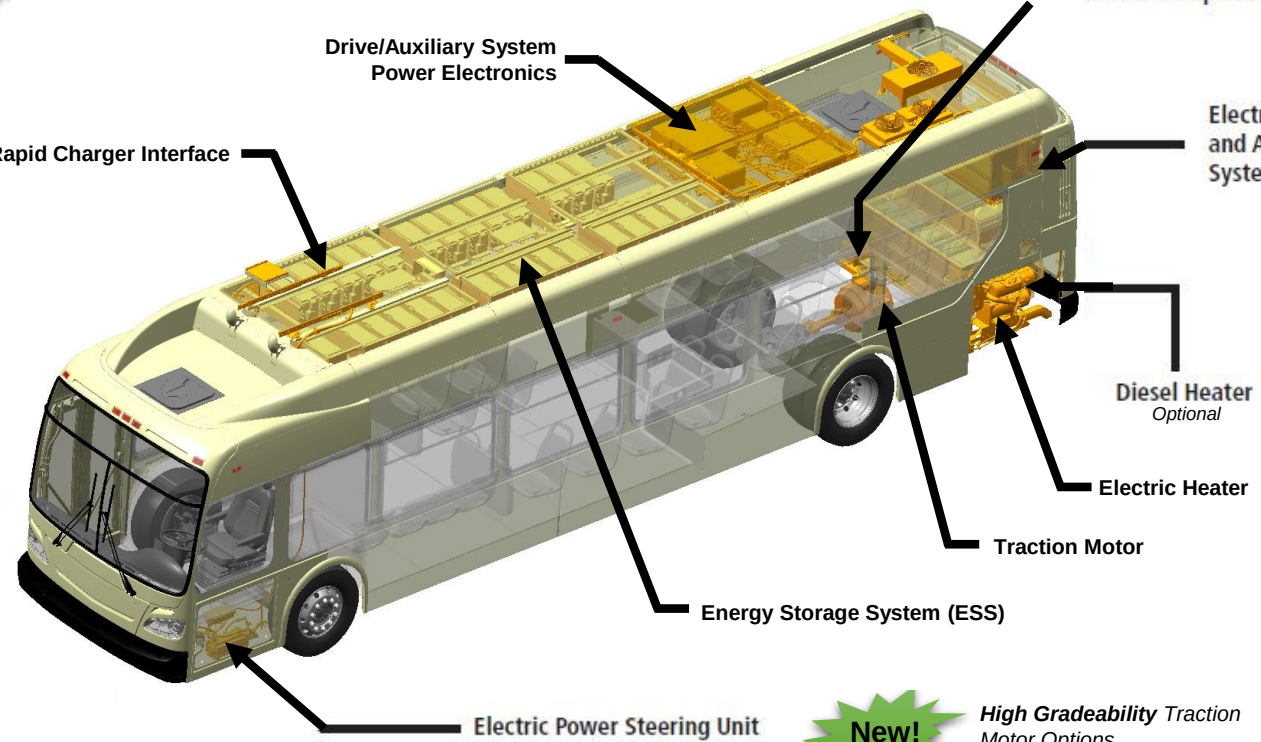
XE35/XE40
Long Range &
Rapid Charge

NEW FLYER®

xcelsior CHARGE™

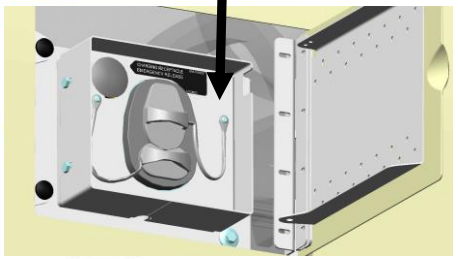
Design Highlights

New! *On-Route Charging Compliant with Oppcharge* ***Interoperable*** *with multiple charger and vehicle OEM's.*



New! *Plug In Charging Compliant with SAE Standards* ***Interoperable*** *with multiple charger and vehicle OEM's.*

Shop Plug-in Charging Port



New! ***High Gradeability*** *Traction Motor Options*

New! ***Extended Range*** *and* ***Rapid Charge*** *Energy Storage Configurations*

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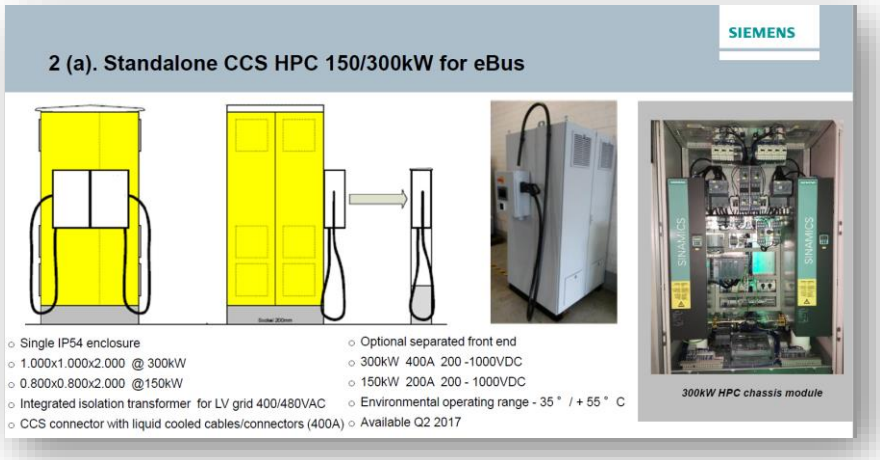
Charging Solutions



Depot Plug-in Charging
100 - 150 kW

Overhead On-Route Charging
300 - 450 kW

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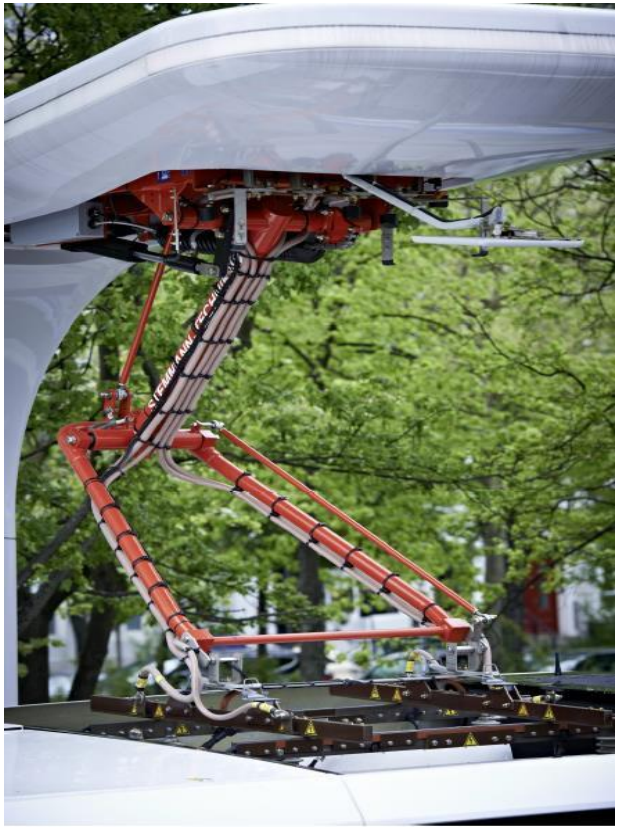
OPPcharge

On-route Charging

- Siemens or ABB Equipment
- 650V DC nominal voltage output (750V max)
- Continuous charge current 400A (increasing to 600A)
- ~ 6 min charge per hour of driving (reducing to ~4 min charge per hour of driving)
- Wireless communications bus to charger
- Ground fault and high voltage isolation monitoring
- NEMA Type 3R (Outdoor) enclosures
- Multiple redundant fail safes and fault checks
- Easy alignment of vehicle to charger (2’ x 2’ alignment tolerance)
- >91% efficiency in power transfer
- Ambient temperature operating range -40C to 50C
- Full UL and CSA certification
- OppCharge Compliant



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OPPcharge

On-route Charging

Arrival: 0 min

- Driver stops at parking reference
- Parking brake is activated
- Safety checks
- Pantograph lowered onto bus rails
- If the bus is in the correct position wireless communication between the bus and the charging station begins.
- Bus then initiates charging

Charging

- Driver notified that charging session started
- Main circuit of charger switched on
- Bus batteries are connected to charger
- Continuous monitoring of charging begins
- At the end of the charging session the driver releases the parking brake to stop power transfer

Departure: 6 min

- The pantograph is raised and charger notifies bus when complete
- The bus is able to depart the parking zone

NEW FLYER®

xcelsior CHARGE™ Interoperability

- **Xcelsior CHARGE™ is Interoperable, conforming to emerging industry standards**
  - **SAE J3068 and SAE J1772 compliant** depot charging equipment can be used to charge buses, coaches, trucks and cars from other manufacturers
  - Opportunity charging accomplished with **OppCharge compliant fast** charging equipment. Efforts to align with the forthcoming **SAE J3105** (Overhead Fast Charge – Standard under development)
- New Flyer charging equipment available from globally recognized suppliers

chargepoint ABB SIEMENS OPPcharge CUTRIC FASTER • SMARTER • GREENER CRITUC RAPIDE • INTELLIGENT • VERT

SAE INTERNATIONAL EPRI ELECTRIC POWER RESEARCH INSTITUTE APTA Member AMERICAN PUBLIC TRANSPORTATION ASSOCIATION Federal Transit Administration

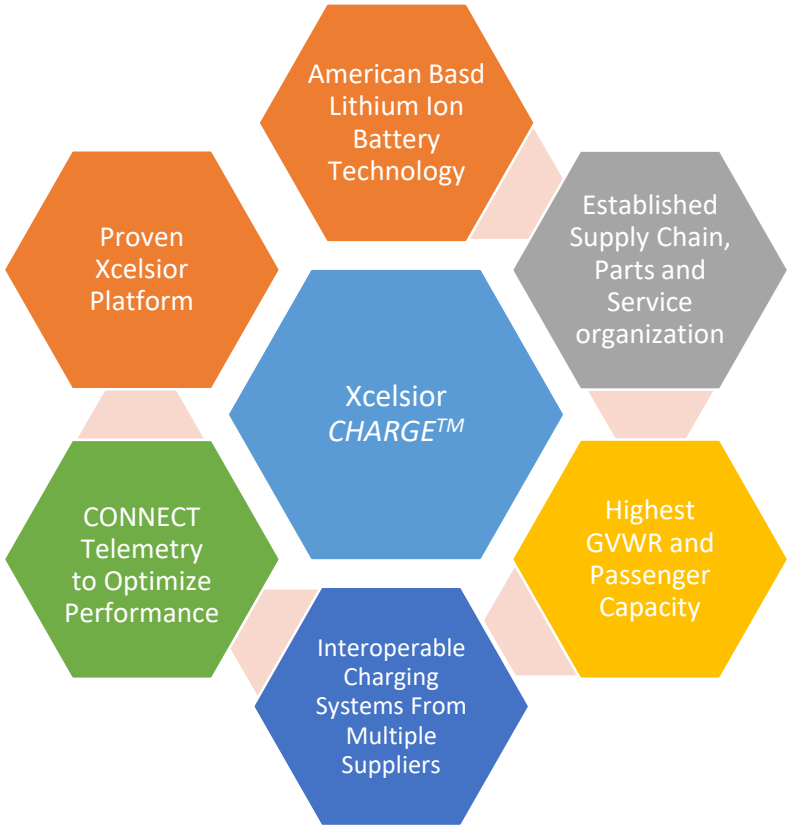
New Flyer – Siemens Charger
M42 Route (by East River)

Charger Enclosure

Overhead Mast – Charger in Background

xcelsior CHARGE™

The Complete Solution.



NEW FLYER®

NEW FLYER®

Built to **RELY ON.**