xcelsior® CHARGE H2™

Fuel cell-electric and zero-emission

NEW FLYER

Extended Range.

New Flyer fuel cell technology is a unique and innovative way to obtain extended-range operation similar to existing transit vehicles using a fully zero-emission solution.

Extended Range

The Xcelsior CHARGE H2™ can travel up to 350 miles on a single refueling and requires no off-board electric recharging.

Robust Design

Built on the proven Xcelsior® platform, the Xcelsior CHARGE H2™ utilizes the same robust electric propulsion system as the Xcelsior CHARGE™ battery-electric bus, featuring industry-proven Siemens and ZF components.

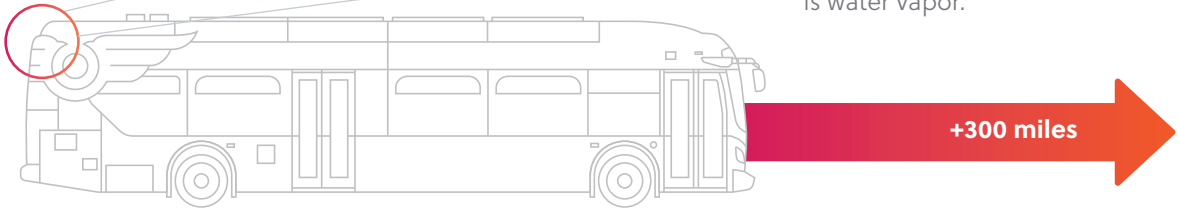
Eco Friendly

Hydrogen is clean, abundant, and can be reformed into hydrogen from natural gas (methane) or created from renewable sources such as wind or solar energy through electrolysis.

Save **85-135 tons of greenhouse gases per year** from tailpipe emissions per year compared to a diesel bus.

Clean
The only output from the tailpipe is water vapor.

Fuel Cell-Electric



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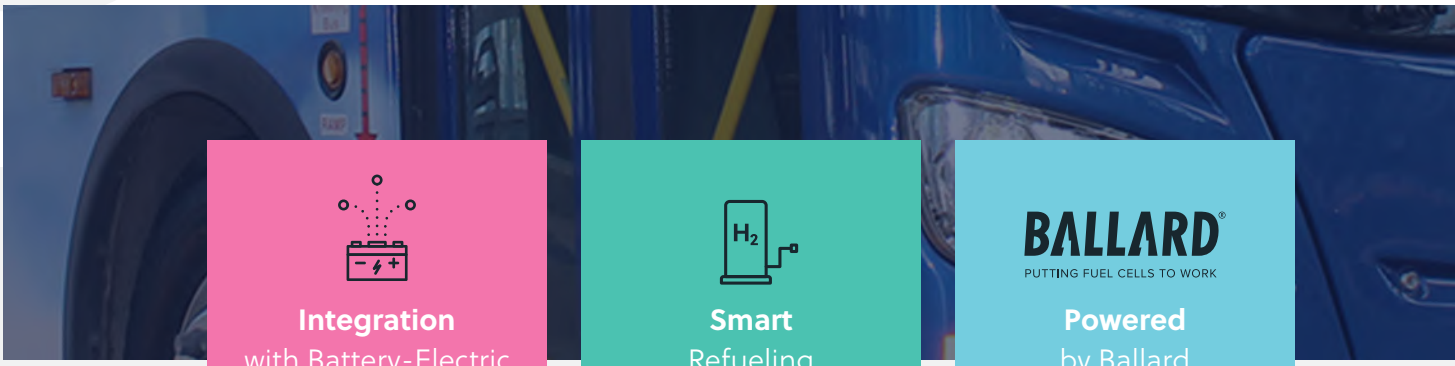
xcelsior CHARGE H2™

How it Works.

Xcelsior CHARGE H2™ is an electric vehicle that uses compressed hydrogen as an energy source.

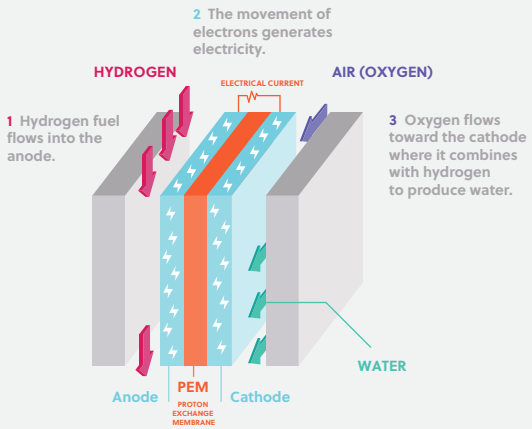


Integration with Battery-Electric Technology

Smart Refueling

Powered by Ballard Fuel Cells

BALLARD®
PUTTING FUEL CELLS TO WORK



What is a Fuel Cell?

It is a device that converts chemical energy into electric energy. A series of chemical reactions splits hydrogen into protons and a current of electrons and then combines them with oxygen, which produces water. The flow of electrons is the electric current. The electric current is used to power the batteries and ultimately power the bus.

Technology

Fuel cell buses combine the best of battery electric bus technology with an on-board power generator (fuel cell).

Fuel cell buses use a battery-dominant hybrid architecture, where the batteries are large enough to handle all vehicle performance needs while the fuel cell acts like a continuous battery charger to extend the range of the vehicle.

Fueling

40-foot: 6 - 10 min

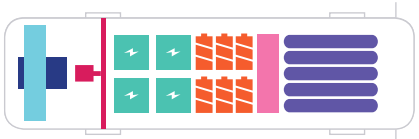
60-foot: 12 - 20 min

**depending on operating conditions*

Equipped with either or both TN1 or TN5 fill receptacles or a multi-fill port configuration. Receptacles can also be equipped with IR transmitters or hardwired communication ports to support fast filling at smart fill stations.

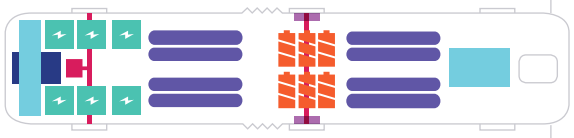
Lightweight Type 4 HGV2 tanks with 95% usable capacity.

- Energy Storage System (ESS)
- Drive Auxiliary System/Power Electronics
- Electric Drive Motor
- Battery Thermal Management
- Electric Heating, Venting & Air Conditioning (HVAC)
- Center-Driven Axle
- H2 Tank Modules
- Fuel Cell



40′

batteries are placed on the roof



60′

batteries are placed inside the bus

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	xcelsior CHARGE H2™ 40′	xcelsior CHARGE H2™ 60′
Measurements		
Length	41′ 0″ (12.50m) over bumpers; 0′ 2″ (12.24m) over body	60′ 10″ (18.54m) over bumpers; 60′ 0″ (18.29m) over body
Width	102″ (2.6m)	102″ (2.6m)
Roof Height	11′ 1″ (3.3m)	11′ 1″ (3.3m)
Step Height	14″ (356mm)	14″ (356mm)
Front step height (kneeled)	10″ (254mm)	10″ (254mm)
Interior height – floor to ceiling	79″ (2m) over front and rear axle; 95″ (2.4m) mid-coach	79″ (2m) over front and rear axle; 95″ (2.4m) mid-coach
Tire Size	305/70R22.5	305/70R22.5
Wheelbase	283.75″ (7.2m)	229″ (5.8m) front / 293″ (7.4m) rear
Propulsion		
Motor	Siemens ELFA2 Electric Drive System Optional High Gradeability Motor	Siemens ELFA2 Electric Drive System ZF AVE130 In-Wheel Motor Center Drive Axle Optional High Gradeability Motor
Rated Power	160 kW	210 kW
Rated Torque	1,033 lb-ft	1,475 lb-ft
Passenger Capacity (*Based on 150kWh ESS configuration)		
Seats	Up to 40*	Up to 52 (with one exit door)*
Standees	Up to 42*	Up to 73 (with one exit door)*
Accessibility		
Doors	2	2 or 3 (option for up to 5 doors)
Wheelchair Accessibility	32″ (813mm) wide, 1:6 slope Flip out NFIL ramp, front door	32″ (813mm) wide, 1:6 slope Flip out NFIL ramp, front door
Wheelchair Locations	2 - front location, rear location also available (other options available)	2 - front location, rear location also available (other options available)
Weight		
Curb Weight* *for high-grade packages add 500 lb (227 kg)	32,250 lb (14,628 kg)	49,900 (22,634 kg)
Approach Angle		
Approach/departure/breakover angles	9°/9°/9°	9°/9°/12° (front) 9° (back)
Turning Radius (body, with aluminum wheels; *varies with wheel type)		
Turning Radius	43.5' (13.3)*	42'(12.8m)*
Main Components		
Floor	Marine Grade Plywood Floor Optional Composite Floor Composite Rear Interior Step Tarabus, Altro, RCA Floor Covering	Marine Grade Plywood Floor Optional Composite Floor Composite Rear Interior Step Tarabus, Altro, RCA Floor Covering
Electrical System	Parker Vansco	Parker Vansco
Cooling System	Electric cooling fans	Electric cooling fans
HVAC	Thermo King TE15 (rear)	Thermo King RLFE (front) TE15 (rear)
Axles	MAN VOK 07 front disc brakes MAN HY-1350 rear disc brakes, single reduction axle	MAN VOK 07 front disc brakes, ZF AVN 132 center disc brake MAN HY-1350 rear disc brakes, single reduction axle
Energy Storage System		
Fuel Cell	Ballard FCvelocity-HD85	Ballard FCvelocity-HD85
Equivalent Battery Energy	700 kWh	1100 kWh
Hydrogen Storage Volume	37.5 kg	60 kg
Net Power	85 kW	85 kW

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Learn more about this technology at New Flyer's
Vehicle Innovation Center

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