

## Fuel Cell Buses - Worldwide

Location	Year	Details	Project	Vehicle Details	Range	Max. Speed	Picture
Perth, Australia	2006-2009	Extension of the 2004-2006 STEP (Sustainable Transport Energy for Perth) deployment - 3 fuel cell buses, project operated in conjunction with HyFLEET:CUTE	STEP/ HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 300 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Perth, Australia	2004-2006	STEP project operated in conjunction with CUTE - 3 buses were deployed in regular transit service	STEP/ CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 250 kW PEM fuel cell engine - Compressed hydrogen	124 mi/ 200 km	48 mph/ 80 km/h	
Belgium	Deployed in 2007	UTC Power/Van Hool - Hybrid Fuel Cell Bus continuously deployed in various locations	N/a	- Bus manufacturer and model: Van Hool 43-ft - Fuel cell manufacturer: UTC Power - Fuel cell/battery hybrid - 120 kW PEM fuel cell - Compressed hydrogen @ 5,000 psi	250-300 mi/402-483 km	70 mph/ 113 km/h	
Brussels, Belgium	Shown in 1994	Ansaldo Fuel Cell Bus demonstration, fuel cell and components were housed in a trailer behind the bus	EUREKA	- Bus manufacturer and model: Van Hool 59-ft - Fuel cell manufacturer: Elenco Co. - Fuel cell/battery hybrid - 80 kW AFC	N/a	N/a	
Rio de Janeiro, Brazil	Deployed in 2009	Urban transit use, additional fuel cell buses will be added	UNDP	- Bus manufacturer and model: Padron 40-ft - Fuel cell/battery hybrid - 210 kW fuel cell	186 mi/ 300 km	N/a	
Sao Paulo, Brazil	Deployed in 2009	First bus deployed in 2009 by transit agency EMTU, Ballard to supply 25 more FC modules	UNDP/GEF	- Bus manufacturer: Daimler/ Evobus - Fuel cell manufacturer: Ballard - Fuel cell/battery hybrid - 58 kW PEM fuel cell - Compressed hydrogen from electrolysis	186 mi/ 300 km	44 mph/ 70 km/h	
Burnaby, British Columbia, Canada	1993-1995	Ballard P2 Fuel Cell Bus commercial prototype	N/a	- Bus manufacturer and model: New Flyer 40-ft - Fuel cell manufacturer: Ballard - Fuel cell/battery hybrid - 200 kW PEM fuel cell - Compressed hydrogen	250 mi/ 402 km	N/a	
Burnaby, British Columbia, Canada	1991-1992	Ballard P1 Fuel Cell Bus proof of concept	N/a	- Bus manufacturer: New Flyer - Fuel cell manufacturer: Ballard - 100 kW PEM fuel cell engine - Compressed hydrogen	100 mi/ 161 km	N/a	
Vancouver, British Columbia, Canada	1998 – 2000	Coast Mountain Transit - 3 buses deployed in regular transit service	N/a	- Bus manufacturer and model: New Flyer 40-ft - Fuel cell manufacturer: Ballard - 205 kW PEM fuel cell engine - Compressed hydrogen	N/a	N/a	
Whistler, British Columbia, Canada	2008-2009	BC Transit-Fuel Cell Bus Fleet 20 bus purchase for transit service in Whistler and at 2010 Olympic Games	CHIC	- Bus manufacturer and model: New Flyer H40LFR - Fuel cell manufacturer: Ballard - Fuel cell/battery hybrid - 150 kW PEM - Compressed hydrogen @ 350 bar	249 mi/ 400 km	56 mph/ 90 km/hr	
Winnipeg, Manitoba, Canada	Deployed in 2006	Natural Resources Canada - Fuel cell bus deployed by Winnipeg Transit	N/a	- Bus manufacturer and model: New Flyer 40-ft - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - 180 kW PEM fuel cell	249 mi/ 400 km	N/a	
Prague, Czech Republic	Deployed in 2009	Fuel Cells Czech Hydrogen Bus Project	FCZ H2-BUS	- Bus manufacturer and model: Skoda Electric Pilsen trolley bus - Fuel cell manufacturer: Proton Motors - Triple hybrid: fuel cell/battery/ultra-capacitor	N/a	N/a	
China	2007	Made under the co-operation with WanXiang automobile company	N/a	- Bus manufacturer: WanXiang - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell engine	N/a	N/a	
China	2007	Demonstrated at 2nd China International Hydrogen Forum, under co-operation with Shanghai Shenglong automobile company	N/a	- Bus manufacturer: Shenglong - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell engine	N/a	N/a	
China	Shown in 2006	Prototype - shown at Busworld Asia in 2006 – Developed in conjunction with Shanghai Jiao Tong University	UNDP/ GEF	- Bus manufacturer and model: Suzhou King Long City Bus - Fuel cell manufacturer: Shen-Li High Tech. - 100 kW PEM fuel cell engine	N/a	48 mph/ 80 km/h	

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China	2006	Participated in the Industry Exposition 2006 in cooperation with Shanghai ShengWo automobile company	N/a	- Bus manufacturer: ShengWo - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell engine	N/a	N/a	
China	2006	Shen Li High Tech Co. - Higer fuel cell city bus	N/a	- Bus manufacturer: Higer - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell engine	N/a	N/a	
China	2006	Shen Li High Tech Co. - Sunwin fuel cell city bus	N/a	- Bus manufacturer: Sunwin - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell engine	N/a	N/a	
China	2005	Shen Li High Tech Co.- Qing Neng No.1 and No.3 buses have operated for over 60,000 km in China	High-Tech 863 Program Developed in conjunction with Tsinghua University	- Bus model: 36-ft shuttle bus - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell/battery hybrid - 60 kW PEM fuel cell	N/a	43 mph/ 70 km/h	
China	2005	Shen Li High Tech Co. - Qing Neng No. 3 fuel cell bus Qing Neng No.1 and No.3 buses have operated for over 60,000 km in China	High-Tech 863 Program Developed in conjunction with Tsinghua University	- Bus model: 36-ft shuttle bus - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell/battery hybrid - 100 kW PEM fuel cell	N/a	53 mph/ 85 km/h	
Beijing, China	2009	Tsinghua University - fuel cell bus demonstrated at Shanghai Expo	N/a	- 100 kW fuel cell	N/a	N/a	
Beijing, China	Deployed in 2008	2 buses transported Olympic athletes in Beijing, China, developed in conjunction with Tsinghua University	High-Tech 863 Program	- Fuel cell manufacturer: Shen-Li High Tech. - 100 kW PEM fuel cell engine	>186 mi/ >300 km	>53 mph/ >85 km/h	
Beijing, China	Operated 2008-2009	Tsinghua University - fuel cell bus demonstrated in Olympic Games and along Beijing Bus routes	N/a	- Fuel cell/battery hybrid - 100 kW PEM fuel cell - Compressed hydrogen	124 mi/ 200 km	48 mph/ 80 km/h	
Beijing, China	2006 - 2009	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents, 3 buses deployed in Beijing	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 300 kW PEM fuel cell engine - Compressed hydrogen @ 350-405 bar	124-186 mi/ 200-300 km	N/a	
Beijing, China	2005	Tsinghua University fuel cell bus	N/a	- Fuel cell/ battery hybrid - 130 kW fuel cell - Compressed hydrogen	N/a	N/a	
Beijing, China	2004	Shen Li High Tech Co. - Preliminary fuel cell city bus shown at 2 <sup>nd</sup> Int'l H2 Forum in Beijing, China	UNDP/GEF and MOST FC City Bus Demo Program	- Bus manufacturer and model: Tsinghua University B-Type City Bus - Fuel cell manufacturer: Shen-Li High Tech. - 120 kW PEM fuel cell engine	N/a	N/a	
Beijing, China	2004	Shen Li High Tech Co.- Number 863 fuel cell city bus operated more than 5,000 km in China, developed in conjunction with Tsinghua University	High-Tech 863 Program	- Bus manufacturer and model: Tsinghua University Platform City Bus - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell/battery hybrid - 50 kW PEM fuel cell	93 mi/ 150 km	40 mph/ 65 km/h	
Beijing, China	2004	Tsinghua University fuel cell bus	N/a	- Fuel cell/battery hybrid - 100 kW fuel cell - Compressed hydrogen	N/a	N/a	
Beijing, China	2003	Tsinghua University fuel cell bus	N/a	- Fuel cell/battery hybrid - 60 kW fuel cell - Compressed hydrogen	N/a	N/a	
Beijing, China	2002	Tsinghua University fuel cell bus	N/a	- Fuel cell/battery hybrid - 50 kW fuel cell - Compressed hydrogen	N/a	N/a	








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Beijing, China	2001	Tsinghua University fuel cell light bus developed in conjunction with Beijing Green Power Co. (battery manufacturer)	N/a	- Bus manufacturer and model: Light bus 12-passenger - Fuel cell/battery hybrid - 15 kW PEM fuel cell - Compressed hydrogen	120 mi/ 193 km	48 mph/ 80 km/h	
Beijing, China	1999	Tsinghua University fuel cell bus	N/a	- Fuel cell/battery hybrid - 5 kW fuel cell - Compressed hydrogen	N/a	N/a	
Dalian, China	Shown in 2001	Dalian University - prototype fuel cell bus	N/a	- 30 kW PEM fuel cell engine	N/a	40 mph/ 65 km/h	
Guangzhou, China	Nov. - Dec. 2010	A fleet of more than 50 fuel cell buses shuttled athletes and government officials during the Asian Games	N/a	- Bus manufacturer: Clean Energy Automotive Engineering Centre (CEAEC) of Tongji University	N/a	N/a	
Hefei City, China	2006	Demonstrating in Ankai factory under the cooperation with AnHui Ankai automobile company	N/a	- Bus manufacturer: Ankai - Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell engine	N/a	N/a	
Shanghai, China	Deployed in 2010	6 fuel cell hybrid buses operate at the Shanghai World Expo Park	UNDP/GEF, Chinese government	- Fuel cell manufacturer: Ballard - Integrated by Shanghai Fuel Cell Vehicle Powertrain Corporation and Tongji University	N/a	N/a	
Suzhou City, China	2005	Shen Li High Tech Co. - Chuang Xin No.1 fuel cell city bus operated between Fengxian District and Suzhou City, China accumulating over 13,000 km	High-Tech 863 Program	- Fuel cell manufacturer: Shen-Li High Tech. - Fuel cell/battery hybrid - 75 kW PEM fuel cell	99 mi/ 160 km	>56 mph/ >90 km/h	
Wuhan Hubei, China	Shown in 2001	Dong Feng Motor Corp Prototype Fuel Cell Light Bus	N/a	- Bus manufacturer: Dong Feng light bus - 25 kW PEM fuel cell engine - Compressed hydrogen @ 25 MPa	N/a	40 mph/ 65 km/h	
Copenhagen, Denmark	Deployed 2002 – 2003	MAN- Fuel Cell City Bus deployed for 3 months	THERMIE	- Bus manufacturer and model: MAN NL223 40-ft - Fuel cell manufacturer: Nuvera - Fuel cell/battery hybrid - 120 kW PEM fuel cell - Liquid hydrogen	N/a	N/a	
European Countries	1 bus, deployed 2005	Hydrogenics FC Hybrid Midibus owned by Hydrogenics, deployed at major events Europe-wide	N/a	- Bus manufacturer and model: Tecnobus Gulliver, 18-ft, 22 passenger - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - 12 kW PEM fuel cell - Compressed hydrogen @ 200 bar	125 mi/ 200 km	21 mph/ 33 km/h	
Barth, Germany	2006 - present	Ostseebus Fuel Cell Midibus - 1 bus deployed	N/a	- Bus manufacturer and model: NeoPlan 26-ft midi-bus - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - Two 16 kW PEM fuel cells - Compressed hydrogen @ 200 bar	112 mi/ 180 km	43 mph/ 70 km/h	
Berlin, Germany	2006 - present	Deployed in regular transit service by transit agency, BVG	ZIP Program	- Bus manufacturer and model: Neoplan Artic 60-ft articulated - Fuel cell manufacturer: Proton Motor - Fuel cell/battery hybrid - 180 kW PEM fuel cell - Liquid hydrogen	N/a	N/a	
Berlin, Germany	2002 – 2003	MAN – Fuel Cell City Bus Bus deployed for 9 months	THERMIE	- Bus manufacturer and model: MAN NL223 40-ft - Fuel cell manufacturer: Nuvera - Fuel cell/battery hybrid - 120 kW PEM fuel cell - Liquid hydrogen	N/a	N/a	
Cologne, Germany	2011	Transit operator RVK is operating 2 buses	Hy-COLOGNE	- Fuel cell hybrid bus	N/a	N/a	

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Dresden, Germany	Debuted in 2005	Fraunhofer Institute for Transportation and Infrastructure Systems Prototype AutoTram	N/a	- Bus manufacturer and model: Artic 80-ft bi-directional, 300-passenger - Fuel cell manufacturer: Ballard - 80 kW PEM fuel cell engine - Compressed hydrogen @ 200 bar	N/a	N/a	
Düsseldorf, Germany	2006 - present	Fuel Cell Hybrid 2 Midibuses operated in regular service by Rheinbahn at Messe Düsseldorf fairgrounds route	NRW Ministry of Transport/Public Transit	- Bus manufacturer and model: Tecnobus Gulliver, 18-ft, 22-passenger - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - 12 kW PEM fuel cell - Compressed hydrogen @ 200 bar	124 mi/200 km	21 mph/33 km/h	
Emscher-Lippe Region, Germany	2009 - present	HyChain Mini-Trans 3-bus, 3-year demo in Bottrop, Gladbeck, and Herten	EC FP6 Lighthouse Project	- Bus manufacturer and model: Tecnobus Gulliver, 18-ft, 22 passenger - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - 12 kW PEM fuel cell - Compressed hydrogen @ 200 bar	125 mi/200 km	21 mph/33 km/h	
Erlangen, Germany	Deployed 2000 - 2001	MAN – Fuel Cell Bus 1 bus deployed by transit agency VAG/Nuremberg	Bavarian Fuel Cell Bus Project	- Bus manufacturer and model: MAN NL 263FC 40-ft - Fuel cell manufacturer: Siemens Power Generation - Fuel cell/battery hybrid - 120 kW PEM fuel cell - Compressed hydrogen @ 250 bar	155 mi/250 km	N/a	
Fuerth, Germany	Deployed 2000 - 2001	MAN – Fuel Cell Bus 1 bus deployed by transit agency VAG/Nuremberg	Bavarian Fuel Cell Bus Project	- Bus manufacturer and model: MAN NL 263FC 40-ft - Fuel cell manufacturer: Siemens Power Generation - Fuel cell/battery hybrid - 120 kW PEM fuel cell - Compressed hydrogen @ 250 bar	155 mi/250 km	N/a	
Hamburg, Germany	2010	Hamburg Fuel Cell Bus fleet 10 buses deployed	“Sustainable Bus System of the Future” (NaBuZ)	- Bus manufacturer and model: Daimler Citaro - Fuel cell manufacturer: Daimler - Fuel cell/battery hybrid - Hydrogen	156 mi/250 km	N/a	
Hamburg, Germany	2009	University Clinic (Klinik Hamburg-Eppendorf (UKE) - 1 bus deployed at hospital complex	Project of City-State of Hamburg	- Bus manufacturer and model: Tecnobus Gulliver, 18-ft, 22 passenger - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - 12 kW PEM fuel cell - Compressed hydrogen @ 200 bar	124 mi/200 km	21 mph/33 km/h	
Hamburg, Germany	2006 - 2009	HyFLEET: CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 300 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Hamburg, Germany	2003 - 2006	CUTE project deployed 27 buses deployed across 9 cities in Europe and Australia (3 per city)	CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 205 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Huerth, Germany	Deployed May 2011	5-year demo of two buses in regular transit service	NRW Ministry of Transport/Public Transit	- Bus manufacturer and model: APTS Phileas, 54 ft articulated, 140 passengers - Fuel cell manufacturer: Ballard - Fuel Cell/battery/super cap hybrid - 150 kW PEM fuel cell - Compressed hydrogen @ 350 bar	190 mi/300 km	50 mph / 80 km/h	
Munich, Germany	2004 - present	Fuel Cell Bus deployed on scheduled route near the Munich Airport	H2argemuc	- Bus manufacturer and model: MAN A23 40-ft - Fuel cell manufacturer: Ballard - Fuel cell/battery hybrid - 68 kW PEM fuel cell - Compressed hydrogen @ 350 bar	155 mi/250 km	N/a	
Munich, Germany	Deployed in 2000 - 2001	Bayernbus I - shown at Munich's Fuel Cell Day	N/a	- Bus manufacturer and model: MAN NL263 - Fuel cell manufacturer: Siemens-KWU - 120 kW PEM fuel cell engine - Compressed hydrogen @ 25 MPa	124 mi/200 km	N/a	
Munich, Germany	Shown in 2000	Bayernbus II Prototype, shown At Munich's Fuel Cell Day	N/a	- Bus manufacturer and model: NeoPlan N8012 - Fuel cell manufacturer: Proton Motor - 80 kW PEM fuel cell engine - Compressed hydrogen	93-155 mi/150-250 km	48 mph/80 km/h	

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Nuremberg, Germany	Deployed 2000 - 2001	MAN – Fuel Cell Bus 1 bus deployed by transit agency VAG/Nuremberg	Bavarian Fuel Cell Bus Project	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: MAN NL 263FC 40-ft</li> <li>- Fuel cell manufacturer: Siemens Power Generation</li> <li>- Fuel cell/battery hybrid</li> <li>- 120 kW PEM</li> <li>- Compressed hydrogen @ 250 bar</li> </ul>	155 mi/ 250 km	N/a	
Stuttgart, Germany	2003 - 2006	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft</li> <li>- Fuel cell manufacturer: Ballard</li> <li>- 205 kW PEM fuel cell engine</li> <li>- Compressed hydrogen @ 350-450 bar</li> </ul>	124-186 mi/ 200-300 km	N/a	
Reykjavik, Iceland	2006 - 2009	ECTOS (Ecological City Transport Systems) operated in conjunction with HyFLEET:CUTE project that deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	ECTOS/ HyFLEET: CUTE	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft</li> <li>- Fuel cell manufacturer: Ballard</li> <li>- 300 kW PEM fuel cell engine</li> <li>- Compressed hydrogen @ 350-450 bar</li> </ul>	124-186 mi/200-300 km	N/a	
Reykjavik, Iceland	Deployed 2003-2007	ECTOS operated in conjunction with the CUTE bus trials - 3 buses deployed in regular transit service,	ECTOS/ CUTE	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft</li> <li>- Fuel cell manufacturer: Ballard</li> <li>- 250 kW PEM fuel cell engine</li> <li>- Compressed hydrogen</li> </ul>	124 mi/ 200 km	52 mph/ 80 km/h	
Italy	Shown in 1997	Ansaldo - Fuel Cell Bus Subsequent demonstration was planned in Brescia, Italy but never took place	EQHPP	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: Macchi-Ansaldo City Bus</li> <li>- Fuel cell manufacturer: De Nora (now Nuvera)</li> <li>- Fuel cell/battery hybrid</li> <li>- 45 kW PEM fuel cell</li> <li>- Liquid hydrogen</li> </ul>	186 mi/ 300 km	N/a	
Perugia, Italy	2007 - 2008	Fuel cell bus	Rampini fuel cell bus project	<ul style="list-style-type: none"> <li>- Bus manufacturer and model : Rampini ZEV Alé 26-ft</li> <li>- Fuel cell manufacturer: Hydrogenics</li> <li>- Two 16 kW PEM fuel cell engines</li> <li>- Compressed hydrogen @ 350 bar</li> </ul>	105-118 mi/170-190 km	31 mph/ 50 km/h	
Rome, Italy	2006-present	University of Rome "La Sapienza" 1 midi-bus deployed	N/a	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: TecnoBus Gulliver, 18-ft, 22 passenger</li> <li>- Fuel cell manufacturer: Hydrogenics</li> <li>- Fuel cell/battery hybrid</li> <li>- 12 kW PEM fuel cell</li> <li>- Compressed hydrogen @ 200 bar</li> </ul>	124 mi/ 200 km	21 mph/ 33 km/h	
Torino, Italy	2004 - 2006	CityCell - Fuel Cell Bus Project. 1 bus in transit service and showcased at Winter Olympics	N/a	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: Irisbus Iveco CityClass</li> <li>- Fuel cell manufacturer: UTC Power</li> <li>- Fuel cell/battery hybrid</li> <li>- 60 kW PEM fuel cell</li> <li>- Compressed hydrogen @ 20 MPa</li> </ul>	N/a	37 mph/ 60 km/h	
Japan	Deployed Mar-Sept 2005	Toyota-Hino FCHV-BUS2 - 8 buses were deployed as a shuttle at Aichi Expo	Japan Fuel Cell Bus Demonstration Program	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: Toyota/Hino Motors 34.5-ft.</li> <li>- Fuel cell manufacturer: Toyota</li> <li>- Fuel cell/battery hybrid</li> <li>- 180 kW PEM fuel cell</li> <li>- Compressed hydrogen @ 5,000 psi</li> </ul>	155 mi/ 250 km	48 mph/ 80 km/h	
Japan	Shown in 2001	Toyota-Hino FCHV-BUS1 Prototype, driven on test course	Japan Fuel Cell Bus Demonstration Program	<ul style="list-style-type: none"> <li>- Bus manufacturer and model: Toyota/Hino Motors 34.5-ft</li> <li>- Fuel cell manufacturer: Toyota</li> <li>- Fuel cell/battery hybrid</li> <li>- 90 kW PEM fuel cell</li> <li>- Compressed hydrogen @ 25 MPa</li> </ul>	>186 mi/ >300 km	>48 mph/ >80 km/h	
Tokyo, Japan	2012	Transports travelers to and from Kansai International Airport's Terminal Building 2	METI Demonstration Program/ HySUT	<ul style="list-style-type: none"> <li>- Bus manufacturer: Toyota/Hino</li> <li>- Fuel cell/battery hybrid</li> </ul>	N/a	50 mph/ 80 km/h	
Tokyo, Japan	2010	Tokyo-Haneda Airport fuel cell bus operates between downtown Tokyo and the airport	HySUT	<ul style="list-style-type: none"> <li>- Bus manufacturers: Toyota/Hino Motors</li> <li>- Fuel cell manufacturers: Toyota/Hino Motors</li> <li>- Fuel cell/battery hybrid</li> <li>- Two 90 kW PEM fuel cells</li> <li>- Compressed hydrogen @ 35 MPa</li> </ul>	N/a	50 mph/ 80 km/h	

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Tokyo, Japan	2006 - present	Toyota-Hino FCHV-BUS 3 buses shuttle passengers between the passenger terminal and airplanes on the tarmac at Nagoya, Japan's Centrair Airport	Japan Fuel Cell Bus Demonstration Program	- Bus manufacturers and model: Toyota/Hino Motors 34.5-ft - Fuel cell manufacturer: Toyota - Fuel cell/battery hybrid - 180 kW PEM fuel cell - Compressed hydrogen @ 350 bar	155 mi/250 km	N/a	
Tokyo, Japan	2003 - 2004	Toyota-Hino FCHV-BUS21 bus placed in regular transit service by the Tokyo Metropolitan Transportation Service	Japan Fuel Cell Bus Demonstration Program	- Bus manufacturers and model: Toyota/Hino Motors 34.5-ft - Fuel cell manufacturer: Toyota - Fuel cell/battery hybrid - 180 kW PEM fuel cell - Compressed hydrogen @ 350 bar	N/a	48 mph/80 km/h	
Luxembourg	2006 - 2009	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft buses - Fuel cell manufacturer: Ballard - 300 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Luxembourg	2003 - 2006	CUTE project deployed 27 buses deployed across 9 cities in Europe and Australia (3 per city)	CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 205 kW PEM fuel cell engine - Compressed hydrogen @ 350-450	124-186 mi/200-300 km	N/a	
The Netherlands	Deployed in 2007	UTC Power/Van Hool - Hybrid Fuel Cell Bus continuously deployed in various locations	N/a	- Bus manufacturer and model: Van Hool 43-ft - Fuel cell manufacturer: UTC Power - Fuel cell/battery hybrid - 120 kW PEM fuel cell - Compressed hydrogen @ 5,000 psi	250-300 mi/402-483 km	70 mph/113 km/h	
Amsterdam, The Netherlands	2006 - 2009	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 300 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Amsterdam, The Netherlands	2003 - 2006	CUTE project deployed 27 buses deployed across 9 cities in Europe and Australia (3 per city)	CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft buses - Fuel cell manufacturer: Ballard - 205 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Arnhem, The Netherlands	2011	HyMove demonstration project deployed a fuel cell bus and fueling station, and will deploy hydrogen cars.	HyMove	- Bus manufacturer and model: VDL Ambassador Low-Entry - Fuel cell manufacturer: Nedstack - 30 kW PEM fuel cell engine - 50 kWh Li-ion battery pack	250 km	60 mph/100 km/h	
Oslo, Norway	2012	Fuel cell buses – CHIC project placing 26 fuel cell hybrid buses in daily public transport operations and bus routes in 5 cities, will operate 5 buses	CHIC	- Bus manufacturer: Van Hool	N/a	N/a	
Oslo, Norway	1999	NEBUS - New Electric Bus Prototype, shown in cities around the world, demonstrated 2 weeks in Oslo, Norway in 1999	N/a	- Bus manufacturer and model: Daimler-Chrysler 0405N - Fuel cell manufacturer: Ballard - 250 kW PEM fuel cell engine - Compressed hydrogen @ 300 bar	156 miles/251 km	N/a	
Lisbon, Portugal	Deployed 2002 – 2003	MAN - Fuel Cell City Bus Bus deployed for 3 months	THERMIE	- Bus manufacturer and model: MAN NL223 40-ft - Fuel cell manufacturer: Nuvera - Fuel cell/battery hybrid - 120 kW PEM fuel cell - Liquid hydrogen	N/a	N/a	
Porto, Portugal	2003 - 2006	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 205 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	


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Singapore	Deployed in 2010	Tsinghua University Nanyang Technological University fuel cell bus deployed by SBS Transit in daily service, shuttled athletes & officials during Youth Olympic Games in Singapore, tested beforehand in China	N/a	- Bus manufacturer: Higer - Fuel cell/battery hybrid - 50 kW fuel cell	N/a	N/a	
Jeju Island, South Korea	2006 - present	Hyundai FCB I - 1 bus operated in routine service	N/a	- Bus Model: 27-passenger buses - Fuel cell manufacturer: Hyundai Motor Co. - Fuel cell/battery hybrid - 160 kW fuel cell - Compressed hydrogen @ 35 MPa	186 mi/300 km	N/a	
Seoul, South Korea	2009	Hyundai FCB II at the Seoul Motor Show	N/a	- Bus manufacturer and model: Hyundai Low Floor Aero City bus platform - Fuel cell manufacturer: Hyundai Motor Co. - 200 kW fuel cell engine - Compressed hydrogen @ 350 bar	225 mi/360 km	62 mph/100 km/h	
Seoul, South Korea	2006 - present	Hyundai FCB I - 1 bus operated in routine service. Hyundai has contract with Seoul to start supplying fuel cell buses starting in 2013	N/a	- Bus model: 27-passenger buses - Fuel cell manufacturer: Hyundai Motor Co. - Fuel cell/battery hybrid - 160 kW fuel cell - Compressed hydrogen @ 35 MPa	186 mi/300 km	N/a	
Barcelona, Spain	2006 - 2009	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 300 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Barcelona, Spain	2003 - 2006	CUTE project deployed 27 buses deployed across 9 cities in Europe and Australia (3 per city)	CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 205 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Castille-Léon Spain	2009	HyChain Mini-Trans 3-bus, 3-year demo	EC FP6 Lighthouse Project	- Bus manufacturer and model: Tecnobus Gulliver, 18-ft, 22 passenger - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - 12 kW PEM fuel cell - Compressed hydrogen @ 200 bar	125 mi/200 km	21 mph/33 km/h	
Madrid, Spain	2006 - 2009	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 300 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Madrid, Spain	2003 - 2006	CUTE project deployed 27 buses deployed across 9 cities in Europe and Australia (3 per city)	CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 205 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
Madrid, Spain	Deployed in 2003	CityCell - Fuel Cell Bus Project, 1 bus deployed	N/a	- Bus manufacturer and model: Irisbus Iveco CityClass - Fuel cell manufacturer: UTC Power - Fuel cell/battery hybrid - 60 kW PEM fuel cell - Compressed hydrogen @ 35 MPa	N/a	37 mph/60 km/h	
Zaragoza, Spain	2008-present	3 midi-buses deployed at ExpoAgua International Exposition starting in 2008	N/a	- Bus manufacturer and model: Tecnobus Gulliver, 18-ft, 22 passenger - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - 12 kW PEM fuel cell - Compressed hydrogen @ 200 bar	124 mi/200 km	21 mph/33 km/h	
Stockholm, Sweden	2003 - 2006	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 205 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	

Location	Year	Details	Project	Vehicle Details	Range	Max. Speed	Picture
Aargau, Switzerland	2011	Fuel cell buses – CHIC project placing 26 fuel cell hybrid buses in daily public transport operations and bus routes in 5 cities, will operate 5 buses	CHIC	- 5 Mercedes-Benz Citaro FuelCELL Hybrid buses - Operating on routes in and around Brugg in the canton of Aargau. - Aargau Canton supporting the project - subsidy of 1.5 million Swiss francs from the Swisslos lottery fund. - Will save 2 000 tonnes of CO <sub>2</sub> during the 5-year test.	N/a	N/a	
London, England, United Kingdom	2010	CHIC project deploying 26 fuel cell hybrid buses in daily public transport operations and bus routes in 5 cities across Europe, London will operate 8 buses (5 presently deployed) in daily transit service on an all-fuel cell bus route	CHIC (Clean Clean Hydrogen In European Cities) Project	N/a	N/a	N/a	
London, England, United Kingdom	2006 - 2009	HyFLEET:CUTE project deployed 47 hydrogen buses (33 fuel cell) in 10 cities on 3 continents	HyFLEET: CUTE	- Bus manufacturer and model: Mercedes-Benz Citaro 40-ft - Fuel cell manufacturer: Ballard - 300 kW PEM fuel cell engine - Compressed hydrogen @ 350-450 bar	124-186 mi/200-300 km	N/a	
London, England, United Kingdom	2003 - 2004	CUTE project deployed 27 buses deployed across 9 cities in Europe and Australia (3 per city)	CUTE	- Bus manufacturer and Model: Mercedes-Benz Citaro	N/a	N/a	
Pontypridd, Wales, United Kingdom	Deployed 2008	University of Glamorgan, Uses "tribid" configuration of fuel cell, battery and ultra capacitors	Wales Accelerate Clusters	- Bus manufacturer: IVECO Daily - Fuel cell manufacturer: Hydrogenics - Fuel cell/battery hybrid - 12 kW PEM fuel cell - Compressed hydrogen @ 200 bar	150 mi/ 241 km	90 km/h 55 mph	
Worldwide	Shown in 2001	Scania – fuel cell midi-bus	N/a	- Bus manufacturer and model: Scania midi-bus - Fuel cell manufacturer: Nuvera - Fuel cell/battery hybrid	N/a	N/a	
Worldwide	Shown in 1997	NEBUS – New Electric Bus Prototype, shown in cities around the world	N/a	- Bus manufacturer and model: Daimler-Chrysler 0405N - Fuel cell manufacturer: Ballard - 250 kW PEM fuel cell engine - Compressed hydrogen @ 300 bar	156 miles/ 251 km	N/a	

## International Planned Fuel Cell Bus Deployments

Location	Year	Project	Program	Vehicle Details	Range	Max. Speed	Picture
Flanders, Belgium	Planned	Five fuel cell buses will be deployed	N/a	- Bus manufacturer: Van Hool - Fuel cell manufacturer: Ballard - 150 kW FCvelocityTM-HD6 modules	N/a	N/a	
Cologne, Germany	Planned	Two fuel cell buses, procured by government of North Rhine Westphalia with funding support from the German National Innovation Program	N/a	- Bus manufacturer: Van Hool - Fuel cell manufacturer: Ballard - 150 kW FCvelocityTM-HD6 modules	N/a	N/a	
Bolzano, Italy	Planned	CHIC project placing 26 fuel cell hybrid buses in daily public transport operations and bus routes in 5 cities, will operate 5 buses	CHIC	N/a	N/a	N/a	



Location	Year	Project	Program	Vehicle Details	Range	Max. Speed	Picture
Milan, Italy	Planned	Fuel cell buses – CHIC project placing 26 fuel cell hybrid buses in daily public transport operations and bus routes in 5 cities, will operate 3 buses	CHIC	- Bus manufacturer and model: Daimler/EvoBus Citaro Fuel Cell Hybrid	N/a	N/a	
San Remo, Italy	Planned	Five fuel cell buses will be deployed	N/a	- Bus manufacturer: Van Hool - Fuel cell manufacturer: Ballard - 150 kW FCvelocityTM-HD6 modules	N/a	N/a	
Aberdeen, Scotland, United Kingdom	Planned in 2014	First and Stagecoach will operate 10 fuel cell buses, supported by JTI funding through the High V.LO-City and HyTransit programs	N/a	- Bus manufacturer: Van Hool - Fuel cell manufacturer: Ballard - 150 kW FCvelocityTM-HD6 modules	N/a	N/a	

## International Buses with Fuel Cell Auxiliary Power Units (APUs)

Location	Year	Project	Program	Vehicle Details	Range	Max. Speed	Picture
Germany	Testing in 2008	Hybrid APU for H2-ICE bus with ultra capacitors for energy storage; provides onboard power, AC and heat; Photo at right shows rooftop location of fuel cell APU	N/a	- Bus manufacturer: MAN - Fuel cell manufacturer: Hydrogenics - Fuel cell APU - 16 kW PEM fuel cell	N/a	N/a	