FUEL CELLS 2000
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Fuel Cell Buses

Bus Mfr.	Operation	Model	Year Shown	Engine Type	Fuel Cell Size/Type	Fuel Cell Mfr.	Range (mi/km)	Max. Speed	Fuel Type	Picture
Bus Manufacturing U.S.A., Inc.	Generation I of Georgetown University's program	30-foot Transit Bus	1994	Fuel cell/ battery hybrid	50kW/ Phosphoric Acid FC (PAFC)	Fuji Electric	250mi 402km	55mph 90km/h	Methanol	
Bus Manufacturing U.S.A., Inc.	Generation I of Georgetown University's program	30-foot Transit Bus	1995	Fuel cell/ battery hybrid	50kW/ PAFC	Fuji Electric	250mi 402km	55mph 90km/h	Methanol	
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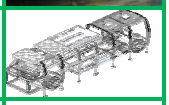
NovaBus Corporation (a subsidiary of Volvo)	Generation II of Georgetown University's program This bus will start a 1 yr. demonstration with Washington DC's Metro Area Transit Authority	40-foot heavy duty transit buses	1998	Fuel cell/ battery hybrid	100kW/ PAFC Ambient-pressure	UTC Fuel Cells	350mi 563km	66mph 106km/h	Methanol	
NovaBus Corporation (a subsidiary of Volvo)	Generation II of Georgetown University's program This bus is used for national demonstration purposes	40-foot heavy duty transit buses	2000	Fuel cell/ battery hybrid	100kW/ PEMFC	Ballard	350mi 563km	66mph 106km/h	Methanol	
Undetermined	Generation III of Georgetown University's program	40-foot low-floor bus platform	2003	Fuel cell	At least 240 kW/ PEMFC	Undeter.	N/a	N/a	Methanol	
New Flyer Industries Ltd.	Proof of Concept	**P1**; low fl. transit bus based on New-Flyer model 40	1993 world's first	Fuel cell/ battery hybrid	90kW/ PEMFC	Ballard	250mi 400km	60mph 95km/h	Compress. Hydrogen	
N/a	Proof of Concept	**P2**: full-sized, 40-foot	1995	Fuel cell/ battery hybrid	205kW/ PEMFC	Ballard	250mi 400km	N/a	Compress. Hydrogen	
Enova Systems	U.S. Air Force, State of Hawaii's High Technology Development Corporation and Hydrogenics partnership	**N/a**	2004	Fuel cell/battery hybrid	20kW	Hydrogenics	N/a	N/a	Hydrogen	
EvoBus: a Daimler Chrysler company	Accumulated over 540 hrs driving exper. By 1997; two week road test in Oslo, Germany 1999	**Nebus**: 405 low-fl. urban regular-service bus	1997	Fuel cell/ battery hybrid	205kW/ PEMFC	Ballard	155mi 250km	50mph 80km/h	Compress. Hydrogen	
EvoBus: a Daimler Chrysler company	Demonstrated at SunLine Transit, AC Transit, and CaFCP	**Zebus** (P4): 40 ft. (1 year demo with SunLine)	1999	Fuel cell/ battery hybrid	205kW/ PEMFC	Ballard	N/a	N/a	Compress. Hydrogen	
EvoBus: a Daimler Chrysler company	Sold as part of the CUTE; ECTOS; Perth, Australia programs. Cost ~US$3 million unsubsidized each.	**Citaro** (P5): (33 for the CUTE, ECTOS, STEP)	2003	Fuel cell/ battery hybrid	205kW/ PEMFC	Ballard	124mi 200km	50mph 80km/h	Compress. Hydrogen @ 5,000 psi	
Gillig Corporation	VTA, San Metro Transportation District, CaFCP & CARB - 3 FC Buses will be operated at VTA in San Jose, Ca	N/a	2004	Fuel cell/ battery hybrid	205 kW/ PEMFC	Ballard	N/a	N/a	Hydrogen	
Irisbus: a Renault V.I. and Iveco Co.	Demonstrated in Torino, Italy beginning in 2002	40 foot	2001	Fuel cell/ battery hybrid	60kW/ PEMFC Ambient-pressure	UTC Fuel Cells	N/a	N/a	Compress. Hydrogen	

MAN “Bavaria 1”	Regular service in Erlangen and Nurernberg, Germany. 50% funded by Bavarian State	40 ft. low-floor city bus NL 263 "Bavaria I"	2000	Fuel cell/ battery hybrid	120kW/ PEMFC	Siemens	155mi 250km	50mph 80km/h	1548 L Compress. Hydrogen	
MAN	Will be used for EU’s THERMIE program: Berlin, Copenhagen, Lisbon	40 ft. MAN N L223 low floor	Not Compl	Fuel cell/ Super capacitator hybrid	5 x 30kW/ PEMFC	Nuvera	N/a	N/a	700 L Liquid Hydrogen @ -253° C	
MAN	Will deliver one fuel cell bus to be operated as part of the hydrogen project at Munich Airport	40 ft. MAN low floor	Not Compl	Fuel cell/ battery hybrid	PEMFC	Ballard	N/a	N/a	H2 tanks on the roof at 5,000 psi	N/a
Neoplan	2 years fee-paying service in public traffic in the German spa resort Oberstdorf. Funded by Bavarian State	Midi bus N 8008 FC	1999	Fuel cell/ battery hybrid	40kW/ PEMFC	Nuvera	373mi 600km	30mph 50km/h	Compress. Hydrogen	
Neoplan	Available for Sales	N8012 - 33-seat bus	2000	Fuel cell/ 100kW flywheel hybrid	80kW/ PEMFC	Proton Motor Fuel Cell GmbH	155mi 250km	50mph 80km/h	Compress. Hydrogen	
New Flyer Industries	Demo. service of 3 buses in Chicago (1997) and Vancouver (1998) for 2 years	**P3**: H40LF models	1998	Fuel cell/ battery hybrid	205kW/ PEMFC	Ballard	N/a	N/a	Compress. Hydrogen	
New Flyer Industries	Natural Resources Canada (US$1.9 million) and Hydrogenics for demo in Winnipeg, Manitoba, Canada *Will incorp. Vehicle-To-Grid technology	40 ft.	March 2005	Distributed array of 25kW modules w/ ultra-capacitors	180kW/ PEMFC	Hydrogenics	N/a	N/a	Compress. Hydrogen	N/a
NovaBus Corporation (a subsidiary of Volvo)	Demonstrated in NY, NV, and DC. Received FTA funding to continue program.	Standard 40-foot transit bus	1999	Zinc-Air fuel cells with batteries	Zinc-Air	Arotech	N/a	65mph 105km/h	Zinc	
NovaBus Corporation (a subsidiary of Volvo)	Plans for RTC (Nevada Transit Agency) to use 2 – 5 buses	Standard 40-foot transit bus	2001	Zinc-Air fuel cells with ultra-capacitors	Zinc-Air	Arotech	N/a	N/a	Zinc	
Thor Industries (ThuderPower LLC)	Will be tested by SunLine Transit in 2002 for 6 months (started public service at Sunline Nov. 6, 2002)	30 ft. Low Floor El Dorado National E-Z Rider	2001	Fuel cell/ battery hybrid	75kW/ PEMFC Ambient-pressure	UTC Fuel Cells	200mi 322km	55mph 90km/h	Compress. Hydrogen	
Van Hool	3 will be used in regular service at AC Transit	40 foot	2005 goal	Fuel cell/ battery hybrid	PEMFC Ambient-pressure	UTC Fuel Cells	250mi 400km	65mph 105km/h	5,000 psi Compress. Hydrogen	
Van Hool	No Demonstration (Project EUREKA)	18 meter City Bus	1995	Fuel cell/ battery hybrid	78kW/ PAFC	Elenco	186mi 300km	N/a	700 Liters Liquid Hydrogen	
NABI	1 will be used in regular service at SunLine Transit	45 foot	Not Compl	Fuel cell/ battery hybrid	PEMFC Ambient-pressure	UTC Fuel Cells	N/a	N/a	Compress. Hydrogen	N/a
Macchi-Ansaldo (EC project EQHHPP)	Company Testing only; part of the EC project EQHHPP	Full size regular floor city bus	1997	Fuel cell/ battery hybrid	45kW/ PEMFC	Nuvera	250mi 400km	N/a	600 Liters Liquid Hydrogen	
Hino Motors Ltd. (Toyota subsidiary)	Toyota in-house testing	Low-floor city bus: **FCHV-BUS1**	2001	Fuel cell/ battery hybrid	160kW/ PEMFC	Toyota	186mi 300km	50mph 80km/h	Compress. Hydrogen @ 5,000 psi	
Hino Motors Ltd. (Toyota subsidiary)	Tokyo metro. gov. began using this bus during summer 2003 on waterfront route – Japan’s nat’l debut of public fuel cell buses	60 pass. Low fl., diesel model: **FCHV-BUS2**	2002	Fuel cell/ battery hybrid	180kW/ PEMFC [2 x 90kW]	Toyota	186mi 300km	50mph 80km/h	Compress. Hydrogen @ 5,000 psi	
NovaBus Corporation (a subsidiary of Volvo)	BVG - Berlin’s public transportation body - to buy 2 prototypes	15.3 meter long Double-Decker	Not Compl	N/a	N/a	Proton Motor Fuel Cell GmbH	N/a	N/a	Hydrogen