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International Hydrogen Fueling Stations

Location	Station	Partners	Opened	H2 Dispensed / Production Technique	Station Details	Image
Perth, Australia	Sustainable Transport Energy for Perth (STEP) project H2 refueling station	Western Australian Conservation Council, Daimler-Chrysler, BP, Path Transit	2004	Compressed H2 Delivered H2	- H2 gas produced at BP's refinery in Kwinana from crude oil/natural gas refining - Delivered to Perth site and compressed - Fueled 3 demonstration FC buses used in revenue service	
Graz, Austria	Hydrogen Center Austria (HyCentA) H2 refueling station	Graz University of Technology, Joanneum Research, JR, Austrian Research Centers GmbH	2005	Compressed H2 & LH2 N/a	- Private hydrogen station located on grounds of Graz University - Vacuum isolated tank for 17.600 liters of LH2 with dispenser - H2 conditioner, H2 compressor (up to 450 bar) - Tank for 3.200 liters of liquid nitrogen, vaporizer for H2 and nitrogen - Fuel pumps for liquid (LH2), and gaseous H2 at 400 bar	
Vienna, Austria	OMV hydrogen station	N/a	2012	Compressed H2 N/a	- - Uses Linde hydrogen fueling technology - Delivers compressed H2 at 5,000 & 10,000 psi	
Belgium	TOTAL H2 station	Linde, BMW, TOTAL	2008	N/a N/a	- Located along the Paris-bound E19 motorway	
Brussels, Belgium	WaterstofNet H2 station at Colruyt's headquarters	Hydrogenics	2012	N/a Water electrolysis	- Station procured through WaterstofNet (organization established by the governments of Flanders and southern Netherlands, within the context of the European Interreg Program) - Will provide hydrogen for forklifts, buses, and other vehicles. – Hydrogenics' HySTAT(TM)-30 unit, compressor, storage equipment, and accessories - Capable of supporting about 60 kg of H2 daily	
Leuven, Belgium	H2, LNG and LCNG Fueling Station	NexGen Fueling, Citensy	2003	Compressed H2 N/a	- Europe's first combined LNG, and liquid compressed natural gas, and H2 fueling station - Uses NexGen equipment	
Oostmalle, Belgium	H2 station for Belgian Bus Demonstration	Messer Griesheim GmbH	1994	LH2 N/a	- Station designed, fabricated and integrated by Messer Griesheim GmbH - LH_2 storage system of 125 L,, electric LH_2 evaporation system, plus all necessary connecting supply infrastructure, and control and safety components	
Sao Paolo, Brazil	Sao Paulo H2 bus fueling station	EPRI International, Hydrogenics, Petrobras	2007	Compressed H2 Electrolysis	- Located in the Sao Paolo EMTU bus garage - Fuels a small fleet of FC buses that operate in Sao Paolo and Sao Mateus - Uses Hydrogenics' electrolyzer, compression, storage and dispenser modules	
Charlottetown Prince Edward Island, Canada	Prince Edward Island Wind-Hydrogen Village H2 station	Hydrogenics, Prince Edward Island Energy Corporation, industry & govt. partners	2007	N/a N/a	- Supported Ford H2 shuttle buses	
Ottawa, Canada	Natural Resources Canada Booth Street campus H2 station	Ford Canada, Air Liquide, Natural Resources Canada, Canadian Transportation Fuel Cell Alliance	2007	N/a N/a	- Supports 3 H2-powered buses operated by the Senate of Canada - Part of the "Hydrogen on the Hill" project	
Mississauga, Canada	Stuart Energy H2 Energy Station	Stuart Energy (bought by Hydrogenics)	2003	Compressed H2 N/a	- First electrolytic Stuart Energy Station for both vehicle fueling and back-up power generation - Electrolysis using Vandenborre Inorganic Membrane Electrolysis Technology(Vandenborre IMET®)	
Montreal, Canada	STCUM H2/Natural Gas transit refueling station	Hydrogenics, STCUM (Montreal Transit Company)	1994	HCNG N/a	- Supported two buses in revenue service - Provided blend of H2 and natural gas (HCNG). - Electrolytic H2 generation and compression to 34.5Mpa and 1400scf/h using a Stuart Energy electrolyzer - Station operated at 100% reliability	
Saskatoon, Canada	Smart Fuel Highway Hydrogen Station	Natural Resources Canada, Enterprise Saskatchewan, SaskEnergy, Saskatchewan Research Council	2010	Compressed H2 Industrial byproduct	- Located in Saskatoon's north industrial district - Will fuel a fleet of 7 H2 trucks from both SaskEnergy and the Saskatchewan Research Council	

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Surrey, Canada	Green Energy Fleet Municipal H2 station	N/a	2010	N/a	First municipal H2 station in Canada. Part of the "Green Energy Fleet" program, the station will help support 21 alternative vehicles over the next few years.	
Surrey, Canada	PowerTech Station	PowerTech Labs, BC Hydro, Stuart Energy Systems and Dynetek Industries	350 bar station opened 2001, 700 bar upgrade in 2002	Compressed H2 & HCNG N/a	- CH2IP program (Compressed H2 Infrastructure Program) - Provides H2 fuel for Vancouver Fuel Cell Vehicle Program (Ford Focus FCV demonstration) - HySTAT-A refueler - Delivers up to 700-bar/ 10,000-psi gaseous H2	
Toronto, Canada	Purolator 's West Toronto H2 refueling facility	Hydrogenics, Canadian Transportation Fuel Cell Alliance, City of Toronto, h2ea, Purolator	2005	Compressed H2 Onsite H2 production	- Provides H2 fuel for Purolator hybrid fuel cell delivery vehicle used in a commercial fleet application - Hydrogenics PEM Hydrolyzer refueler with on-site H2 production, storage and dispensing capabilities - Can produce 20 kg/day of H2	
Toronto, Canada	Toronto's Hydrogen Village – Mobile Refueler project	Hydrogenics, Exhibition Place, City of Toronto, h2ea, Canadian Transportation Fuel Cell Alliance	2004	Compressed H2 Wind-powered electrolysis	- Toronto's 1st public H2 refueling station - Fueled H2-powered John Deere work vehicle, a forklift and a GEM "neighborhood" vehicle used at the Hydrogen Village - Uses Hydrogenics 140 kW PEM Hydrolyzer electrolyzer to produce H2 from wind power - Can produce 65 kg/day ofH2, enough H2 to power 20 vehicles/day	
Toronto, Canada	Toronto's Hydrogen Village - H2 Production and Refueler	Stuart Energy Systems, Canadian Transportation Fuel Cell Alliance	2004-Dismantled March 2005	Compressed H2 Alkaline electrolysis	- Provided 200 kW of zero-emission building backup power and vehicle refueling - Site was fully approved and operational but was dismantled after Stuart Energy merged with Hydrogenics - Indoor installation-alkaline electrolysis, carbon fiber cylinder H2 storage, H2 internal combustion engine generator sets - Outdoor vehicle refueling dispenser	
Vancouver, Canada	Pacific Spirit Station	National Research Council Institute for FC Innovation, Canadian Transportation Fuel Cell Alliance, BOC Canada, General Hydrogen	2005	Compressed H2 Delivered H2	- Provides H2 fuel for Vancouver Fuel Cell Vehicle Program (Ford Focus FCV demonstration) - Station is located at the University of British Columbia - Station is ready to accommodate gas that may be generated on-site in the future	
Vancouver, Canada	Coast Mountain H2 transit refueler	Stuart Energy, Coast Mountain Transit, BC Hydro, Ballard Power Systems, Natural Resources Canada	Opened 1998, concluded 2000	Compressed H2 N/a	- Supplied H2 to 3 fuel cell buses in revenue service. - HySTAT-A refueler - H2 production rate was 65Nm3/h, used 250L/h of H2O, 250bar, normal time to fill overnight - Cascade system consisted of 80 H2 bottles to provide 900sm3, could be used to fuel or defuel the transit FC bus	
Victoria, Canada	Victoria Station	Stuart Energy, BC Transit, BOC Gases, CFTCA	2006	Compressed H2 N/a	- BOC and BC Hydro have constructed an anchor fuelling station at BC Transit's Langford facility near Victoria - Supports the Vancouver FC Vehicle Program's Ford FC vehicle - 3-tiered storage bank of low, medium and high pressure storage cylinders - As the Victoria H2 vehicle fleet expands, additional storage cylinders can be added to support the incremental load	
Whistler, Canada	BC Transit H2 station	BC Transit, Air Liquide	2010	N/a N/a	- Largest H2 fueling station In the world, capable of fueling up to 23 buses/day	
Beijing, China	Beijing LN Power Sources Co, Ltd. H2 Station	Beijing LN Power Sources, Co., Ltd.	2006	Compressed H2 Electrolysis	- On-site H2 production from water electrolysis (300 Nm3/hour) - H2 stored in one vertical cylindrical steel vessel of 5 m^3 with 40 MPa, - Produced oxygen stored onsite. - H2 dispensed at 35MPa - Both H2 and O2 are also filled in steel bottles and sold to clients.	
Beijing, China	SinoHytec H2 station	SinoHytec, BP, GEF-UNDP, Ministry of Science and Technology, Beijing Municipal Government, BP, US DoE , Beijing Tongfang Co, APCI	Permanent station opened July 2006	Compressed H2 Onsite H2 production from coal via steam and oxygen	- 4,000 sq meter station located at Beijing Hydrogen Park - Comprised of R&D center, H2 refueling station, FC vehicle garage and a maintenance workshop - Supports 3 FC buses and fueled the H2 vehicle fleet for the 2008 Beijing Olympic Games - Uses APCI's Air Products' Series 300 fueling technology - Can supply 4,000 Nm3/day H2 - 25 and 35 MPa	
Beijing, China	Beijing Hydrogen Park	GEF-UNDP, Ministry of Science & Technology, Beijing Municipal Government, BP, US DoE , Beijing SinoHytec Limited, Beijing Tongfang Co.	Temporary refueler opened November 2005, (permanent station July 2006)	Compressed H2 Steam methane reforming	- H2 initially trucked in, BP to adopt a local electrolyzer later - H2 production from steam methane reforming was planned in 2006	

International Hydrogen Fueling Stations

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Guangzhou, China	Asian Games hydrogen station	Asian Games, Air Products, Tongji University	2010	Compressed H2 Delivered H2	- Fueled 50 fuel cell buses used during the Asian Games in Nov-Dec 2010	
Shanghai, China	Anting H2 Fueling Station	Tongji University, Shanghai Aerospace Energy Co., Shanghai Sunwise Energy System Co	2007	Compressed H2 Delivered byproduct H2	- Shell Hydrogen cooperated with Tongji University as technical consultant and funded part of the station demonstration - Linde provides engineering services for station construction - Filling pressure: 350 bar - Storage pressure: 424 bar - Storage capacity: 800 kg (max) - Uses a Pdc Machines compressor.	
Shanghai, China	Mobile H2 refueling station	Tongji Univ. and Shanghai Sunwise Energy System Co.	2004	N/a N/a	- Have developed 3 generations of mobile hydrogen fuelers (2004, 2007, 2009). - Two new mobile hydrogen fuelers (3rd generation) provided H2 refueling for FCV fleet in 2010 EXPO	
Shanghai, China	World EXPO 2010 H2 Station	N/a	N/a	N/a N/a	- FCVs at the World EXPO 2010 supported by both mobile refuelers (above) and a bigger H2 station was being constructed.	
Neratovice, Czech Republic	H2 Station	Linde Gas, Veolia Transport, Skoda Electric, the Czech Nuclear Research Institute Rez	2009	N/a N/a	- Located north of Prague and near the local unit of Linde Gas, which produces H2 fuel from natural gas - Services a zero-emissions bus make by Skoda Electric AS	
Copenhagen, Denmark	H2Station CAR-100	H2 Logic	2013	Compressed H2 Electrolysis	- H2Logic fueling station - Fuels 15 of the Hyundai iX35 production fuel-cell cars	
Copenhagen, Denmark	Hydrogen Link Denmark/ Scandinavian Hydrogen Highway Partnership	H2 Logic A/S, City of Copenhagen	2011	N/a N/a	- Vehicles: 6 Think Hydrogen Hybrid City cars 2 Service vehicles	
Copenhagen, Denmark	TotalFinaElf H2 fueling station	TotalFinaElf, BVG	2003	Compressed H2 & LH2 Electrolysis	- The Linde mobile filling station is a part of the TotalFinaElf station in Berlin, opened under the framework of the Berlin/ Copenhagen/Lisbon fuel cell bus program - Supplies H2 fuel to a MAN fuel cell bus - Linde supplied LH2 and gaseous H2 at 250 bar using a Hogen PEM electrolyzer manufactured by Proton Energy Systems	
Holstebro, Denmark	Hydrogen Link Denmark/ Scandinavian Hydrogen Highway Partnership	Vestforsyning A/S, Holstebro Municipality, Danish Energy Agency, EUDP, H2 Logic, Climat Circle	2011	Compressed H2 Delivered H2 produced from wind energy	- 700 bar fueling - The local municipality will be using three H2 powered fuel cell cars	
Ringkøbing, Denmark	Hydrogen Link Denmark/ Scandinavian Hydrogen Highway Partnership	Vestforsyning A/S, Ringköping–Skjern Municipality, H2 Logic, Ringkøbing Fjernvarmeværk	2008	Compressed H2 Delivered H2 from production plant using wind energy	- 250 bar refueling prepared for 350 bar. - Vehicles: 1 THINK Hydrogen (hybrid H2 city car) 1 MEGA Hydrogen (hybrid H2 service vehicle)	
Finland	Arctic Driving Center Hydrogen Station	H2 Logic	2012	Compressed H2 Delivered hydrogen	- 3 minute fill @ 700 bar - H2 supplied by Woikoski Ab	
Dunkerrque, France	Althytude project H2 station	Gaz de France, City of Dunkirk, Irisbus, Hydrogenics, GNVert, SDTE, Ineris, Air Liquide, CONNEX, H2 Developpement, DK Bus Marine, EGIM,	N/a	HCNG Natural gas reforming	- Part of project Althytude to demonstrate buses fuelled with a blend of natural gas and H2 in the cities of Dunkirk and Toulouse - Located at the DK' Bus Marine Facility - Delivers Hythane (H2/CNG blend) at 20 MPa. - H2 is produced on site by an electrolyzer, is compressed and stored - Pressurized H2 is mixed with natural gas present on the site. - Fuels 2 buses	

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Sassenage, France	Air Liquide mobile filing station	Air Liquide Fuels	2006	Compress H2 & HCNG N/a	- In operation and available for rent - Uses Air Liquide Technology - Fast and cold fill capabilities at 35 and 70 MPa up to 70 kg/day - H2 supply-tube trailer - H2- storage-450 bar and 850 bar - Dispensers dual pressure	
Sassenage, France	Air Liquide Advanced Technology Division site test H2 station	Air Liquide	2004	Compressed H2 N/a	- Station to be rented to customers - Uses Air Liquide technology - Mobile fueling station, up to 35 kg/day - Dispensing capacity-up to 35 MPa. - H2 supply-tubes trailers or cylinders-350 bar	
Sassenage, France	Air Liquide Advanced Technology Division site test H2 station	Air Liquide, Axane Fuel Cell Systems	2002	Compressed H2 N/a	- Located at Axane Fuel Cell Systems facility (Axane a subsidiary of Air Liquide) - Uses Air Liquide technology - The station is used to validate fast fill advanced algorithms. Dispensing capacity -120 kg.day - Delivers compressed H2 at 35 MPa - H2 supply-tube trailer 200 & 420 bar	
Toulouse, France	Althytude project H2 station	Gaz de France, GNVert, INERIS, EGIM, Irisbus, CONNEX, IMFT, SMTC-Tisséo, Tisséo Réseau Urbain, Air Products	N/a	HCNG Natural gas reforming	- Part of project Althytude to demonstrate buses fuelled with a blend of natural gas and H2 in the cities of Dunkirk and Toulouse. - Fuels 3 buses - Uses Pdc compressor	
Aachen, Germany	Ford Research Center H2 station	N/a	2004	N/a N/a	- Supports Ford's H2ICE car development.	
Barth, Germany	WIV solar-H2 station	Wasserstoff-Initiative-Vorpommern (WIV), Proton Energy Systems, Wolters-Ostseebus GmbH	2002	Compressed H2 Solar electrolysis	- Provides fuel for fuel cell powered bus. CGH2 at 21 MPa - Uses Proton Energy Systems HOGEN 380 PEM electrolyzer. O2 byproduct from the unit is adding oxygen to Barth's biological wastewater treatment system	
Berlin, Germany	Shell H2 Station/ Clean Energy Partnership	Shell Deutschland Oil GmbH, Linde	2011	N/a Delivered H2	- Shell Sachsendamm service station - Green H2 supply - Delivered hydrogen **from** a Linde pilot plant in Leuna which uses crude glycerol as feedstock. - Capacity to fill about 250 vehicles per day, but will be predominantly used for demonstration and research purposes, fueling 20 vehicles daily	
Berlin, Germany	TOTAL H2 station	TOTAL, Statoil	2010	N/a Electrolysis, Wind-sourced H2 from ENERTRAG	- Located at Holzmarktstrasse in Berlin -Part of the Clean Energy Partnership in Germany	
Berlin, Germany	Opel dealership H2 station	N/a	2009	N/a N/a	N/a	
Berlin, Germany	Second Clean Energy Partnership Project Berlin Station	Aral, BMW, BVG, DaimlerChrysler, Ford, GM/Opel, Hydro, Linde, TOTAL and Vattenfall Europe	2006	Compressed H2 & LH2 N/a	- Integrated into a conventional TOTAL service station in Heerstraβe - Will support HyFleet/CUTE H2 vehicle projects - Onsite reformer, output of 240 nm3/hr at 450 bar, can fuel 7 buses/day - Ionic compressor to be added 6-06 will boost production to 540 nm3/hr at 450 bar	
Berlin, Germany	First Clean Energy Partnership Project Berlin Station	Aral, BMW, BVG, DaimlerChrysler, Ford, GM/Opel, Hydro, Linde, TOTAL and Vattenfall Europe	2004	H2 & LH2 Electrolysis	- World's 1st public H2 gas station located at Aral station in Messedam - Supports 16 H2-powered vehicles from BMW, Ford, GM/Opel & DaimlerChrysler - Norsk Hydro electrolyzer - H2 production with renewable energy	
Berlin, Germany	Total-BVG H2 fueling station	TotalFinaElf, BVG, Linde, MAN and Opel: Hydrogen Competence Center Berlin	2002	Compressed H2 & LH2 Delivered LH2, electrolysis for gaseous H2, wind-sourced H2 from ENERTRAG	- 1st permanent H2 fuel station in Berlin -H2 Station was opened under the framework of the Berlin/Copenhagen/Lisbon fuel cell bus Program - Fuels H2 ICE buses from MAN & fuel cell buses - Linde AG mobile filling station - Uses Linde supplied LH2 & Proton Energy Systems' HOGEN® PEM electrolyzer for compressed H2 - Liquefied Petroleum Gas (LPG) reformer added in 2007 that can produce enough H2 to fuel 7 buses	

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Dressden, Germany	HyTra Mobile H2 Fueling Unit	Fraunhofer Institute for Transportation and Infrastructure Systems, TÜV Industrie Service, Proton Energy Systems, Wystrach, GreenField, CHRIST AG,Sempa Systems, WEH	N/a	Compressed H2 PEM electrolysis	- HyTra was developed as an affordable and highly flexible alternative to stationary H2 production facilities. - H2 production by PEM electrolysis, production rate 1 Nm³/h high-purity H2 (5.0) - Storage of 600 l H2 with a pressure of 200 bar / 2 900 psi	
Dudenhofen, Germany	Opel Test Center H2 Station	Opel, Linde	2003	Compressed H2 & LH2 Delivered H2	- Created for the Adam Opel AG vehicle - Uses Linde LH2 and compressed H2 refueling technology - Compressed H2 at 10,000 psi (700 bar). - LH2 and Compressed H2 delivered by Linde	
Dusseldorf, Germany	Dusseldorf Hydrogen Station	Air LIquide	2012	N/a N/a	- Publicly-accessible H2 station	
Erlangen and Munich, Germany	Mobile H2 Station	Linde, SWM	1996 –1998 (HICE bus) 2000 –2001 (fuel cell bus)	LH2 Delivered H2	- Station supported world's first H2-fueled internal combustion engine bus in regular service (1996) - Supported MAN LH2-ICE bus demonstrations in Erlangen (4-96 to 2-97) - Station moved to SWM bus yard in Munich (4-97) - Linde AG supplied LH2 from their large central H2 production & liquification plant, transported to the Linde mobile fueling station	
Frankfurt, Germany	MultiEnergy station at Hochst Industrial Park	European Commission, companies and research groups from Italy, Sweden, Denmark and Germany; Linde	2006	Compressed H2 & LH2 Piped-in H2 from chemical plant	- Located near Hochst Industry Park and integrated into a multi-fuel public service station - Part of the Zero Region H2 vehicle demonstration project - Will support DaimlerChrysler F-Cell vehicles - H2 produced as byproduct of a Hochst Industry Park chemical plant, connected by 2 km long pipe to H2 fueling station - Will offer 350 and 700 bar dispensers	
Freiburg, Germany	Fraunhofer ISE H2 Station	Fraunhofer ISE, Baden-Württemberg Ministry of the Environment, Climate and Energy	2012	Compressed H2 Solar electrolysis	- Solar-hydrogen station - 700 bar pressure - Open to the public	
Hamburg, Germany	HafenCity H2 station	Vattenfall, German Ministry of Transport, Hydrogenics, Linde Group, Shell	2012	Compressed H2 Onsite electrolysis and delivered H2	- Two Hydrogenics' HySTAT-60 electrolyzers - Generates 750 kg of H2 daily - Linde will supplement this capacity with delivered H2 as needed - 350 and 700 bar fueling - Fueling station integrated and managed by Vattenfall - Part of the Clean Energy Partnership (CEP) and the National Innovation Programme for Hydrogen and Fuel Cell Technology (NIP) - Will fuel 20 FC Hamburger Hochbahn buses, and FCVs	
Hamburg, Germany	H2 Station for ZEMship	Linde, City of Hamburg, EU	2008	Compressed H2 N/a	- Supplies H2 to Hamburg's fuel cell-powered boat, "ZEMship", that can carry 100 passengers along the Elbe and Alster rivers - Station located at Hamburg City Park - LH2 stored at a temperature of minus 253 degrees C is transformed into H2 gas in an evaporator and then compressed up to 450 bar via a two-stage compressor system. - Fueling station was designed and built by Linde	
Hamburg, Germany	Mobile Linde H2 station at Hamburg Airport	Hamburg Regional Initiative for Hydrogen and Fuel Cell Technology, Hamburg Airport, Linde Group, Wasserstoffgesellschaft Hamburg	2007	Compressed H2 Delivered H2	- Will fuel 2 FC tractors and a people-carrier at the airport - Fueling station components are built into a 3-meter long container - H2 cylinders delivered by Linde - Two separate H2 taps do deliver at 200 and 350 bar - Installation controlled by programmable logic control	
Hamburg, Germany	W.E.I.T. Phase II H2 project fueling station	Norsk Hydro, Hamburger Hochbahn, HEW, BP/Aral, DaimlerChrysler/ Evobus	2003	Compressed H2 Wind-powered electrolysis	- Filling station and production facilities located at the bus depot - Supports 3 CUTE project FC buses - This is the 2nd phase of the W.E.I.T project, which will incorporate the Hamburg CUTE project - On-site H2 production by water electrolysis from renewable energy source (wind power) – Norsk Hydro electrolyzer	
Hamburg, Germany	W.E.I.T. phase I H2 project fueling station	Gastechnologie and Messer Griesheim	Opened in 1999; project completed	Compressed H2 Delivered H2	- W.E.I.T. project financed six small H2-fueled vans and a compressed H2 fuelling station - Serviced H2 vehicles for: Hamburg Hermes Versand Service, HEW, and HHA - Delivered compressed H2 by m-tec. - Station has been dismantled	

International Hydrogen Fueling Stations

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Hürth, Germany	Hydrogen station	Air Products	2010	N/a N/a	- 24 hour, self service station - The station, based at the Infraserv-Knapsack Chemical Park, will initially supply H2 to two buses run by the local council.	
Isenbüttel, Germany	Volkswagen Technology Center Solar-H2 fueling station	Solvis, Volkswagen AG	2005	Compressed H2 Solar-powered electrolysis	- Produces fuel needed to run the FCVs and test beds - Solar-panel is used to generate electricity that powers an electrolyzer. - H2 is compressed and stored - The system can produce 25 cubic meters H2/day	
Kiel, Germany	H2 portable filling station, Kiel Shipyards	Air Products and Chemicals, Inc., Howaldwerke-Deutsche Werft	Completed in 2002	Compressed H2 N/a	- World's 1st installed complete H2 infrastructure in a non-nuclear H2-driven Class 212 submarine used by Germany Navy - APCI uses cryogenic H2 gas and liquid compressor technology - Pdc Machines compressor	
Kircheim/ Tech Nabern, Germany	DaimlerChrysler Fuel Cell Research Facility Refueling Station	Linde, DaimlerChrysler	1998	Compressed H2 & LH2 Delivered H2	- Supports DaimlerChrysler FC vehicles Uses Linde H2 refueling technology - LH2 delivered by Linde	
Lohhof, Germany	Linde Group Hydrogen Research Center H2 fueling station	Linde Group	2006	Compressed H2 & LH2 N/a	- Supports a test fleet of H2 cars and buses at the Linde technology test center and training center - Linde has also developed the traiLH2TM mobile fueler - Linde expects to refuel around 10 vehicles per day - Supplies both LH2 and gaseous H2	
Munich, Germany	TOTAL H2 Fueling Station	BMW Group, TOTAL	2007	LH2 N/a	- Located in the Detmoldstraße, near the BMW Research and Innovation Center - Integrated in a regular TOTAL filling station - Underground storage of LH2 - Station will also offer gas and diesel fuel - Can fuel buses and cars	
Munich, Germany	Munich Airport Vehicle Project H2 fueling station	Bavaria Ministry of Economics, Transportation and Technology, Linde, BP/Aral, GHW, BMW	1999	Compressed H2 & LH2 Delivered H2	- Publicly accessible - BP's Aral subsidiary provides the infrastructure to fuel air-side vehicles at Munich airport - LH2 for vehicles and gaseous high pressure-H2 provided for the shuttle buses - Uses Linde H2 refueling technology - LH2 and compressed H2 delivered by Linde - LH2 road tank cars' fueling is done by a tank-robot	
Munich, Germany	BMW H2 station	BMW, Linde	1989	LH2 N/a	- Supports BMW H2 research vehicles - Uses Linde technology	
Neckarsulm, Germany	Audi Research Center H2 station	Audi, Air Products and Chemicals	N/a	N/a N/a	- Supports Audi H2 vehicles - Uses Air Products Series 100 fueler	
Neunberg vorm Wald, Germany	Solar Hydrogen Bavaria (SWB) H2 Station	Bayernwerk AG, Siemens, Linde, MBB (now DASA), BMW	Opened in late 1980's-completed in 1999	LH2 N/a	- Solar H2 project - Manual coupling of filling line to vehicle, program-controlled fuel tank filling - Capable of refueling cars in immediate succession - Phase i: LH2-car filling station with < 3.000 l LH2 storage capacity and 30 l LH2/ min. filling speed (Linde) -Phase II: automatic LH2-car filling station with drastically increased filling speed (Messer Griesheim and Linde)	
Nürnberg, Germany	Mobile H2 station	Linde, LBST, VAG, MAN	2000-2001	LH2 Delivered H2	- Supplied H2 for fuel cell bus demonstration in Erlangen. Nürnberg and Furth - Bus drivers performed refueling after the filling equipment manufacturer (Linde) instructed drivers on system operation - Onsite delivery and storage of LH2 in cryocontainers, onsite conditioning and LH2 dispensing to LH2 fueled vehicles - Integrated into a conventional filling station layout	
Oberstdorf, Germany	Mobile H2 station	Linde, government of Bavaria state. Town of Oberstdorf	1999-2001	Compressed H2 Delivered H2	- Fuel for Neoplan fuel cell bus demonstration - Linde AG supplied LH2 from central H2 production facility	
Sindelfingen, Germany	DaimlerChrysler Company Refueling Station	Linde, DaimlerChrysler, BGA Garn	2002	Compressed H2 Delivered H2	- Supports DaimlerChrysler FC vehicles - LH2 delivered by Linde - Delivers CGH2 @ 35 MPa and 70 MPa	

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Stuttgart, Germany	OMV H2 station at Stuttgart Airport	Daimler, OMV, Linde, State of Baden-Wurttemberg	2009	Compressed H2 Steam reforming	- Public H2 station, located at an existing OMV service station at Stuttgart Airport - Station is also located by Daimler's R&D centers and is used to fuel Daimler F-cell vehicles - Station uses ion-compressor technology by Linde - 350 and 700 bar refueling is accomplished in just a few minutes	
Stuttgart, Germany	CUTE Bus Demonstration and H2 fueling station	BP, NWS, SSB Stuttgart	2003	Compressed H2 Natural gas reforming and delivered H2	- Located at the bus depot - Station supports 3 fuel cell buses - On-site natural gas steam reformatting. And additional H2 delivered to site	
Wolfsburg, Germany	Volkswagen H2 fueling station	N/a	N/a	LH2 Onsite reforming	- Will fuel VW H2 vehicles	
Greece	Center for Renewable Energy Sources (CRES) Wind Energy Park H2 station	ROKAS (Greece), FIT (Cyprus), Planet (Germany), INABENSA (Spain)	2005	Compressed H2 Wind-powered electrolysis	- 1st h2 station in Greece, located near Athens - Developed and tested in the framework of European Commission FP5 project titled "RES2H2" - 25-kW electrolysis unit connected to 500 kW wind turbine - Electrolysis unit operates at variable power input, according to the available wind, with excess energy fed to the grid - H2 stored in metal hydride tanks (50 Nm3 H2 capacity), remainder compressed to about 220 bar and fed to cylinders at a filling station - Uses Pdc Machines compressor	
Hong Kong	H2 fueling station	Cheung Kong Infrastructure Holdings, Ltd., Stuart Energy Systems	2004	Compressed H2 N/a	- Produces H2 for vehicles and can additionally provide back-up power for building - Supports H2-powered buses with modified Ford engines - Stuart Energy Station for vehicle fueling and power.	
Reykjavik, Iceland	ECTOS Bus Demonstration H2 Station	VistOrka, DaimlerChrysler, Shell Hydrogen	2003	Compressed H2 Geothermal and hydraulic-powered electrolysis	- World's first commercial H2 station - Supports 3 DaimlerChrysler fuel cell buses - On-site H2 from water electrolysis (geothermal generation and hydraulic power generation) - Norsk Hydro electrolysis unit	
Faridabad, India	Hydrogen Fueling Station at Indian Oil Corporation Ltd's R&D Center	Indian Oil Corporation, Ltd., Air Products and Chemicals, Inc., INOX Air Products	2005	H2 & HCNG N/a	- Station owned by Indian Oil Corporation - First phase of India's development of its H2 economy - Uses APCI's HCNG mixing unit and dual dispensing unit that can fuel vehicles with either a HCNG blend or pure H2	
New Delhi, India	DELHY-3W project H2 station	UNIDO, India Institute of Technology, India Trade Promotion Organization	2012	N/a N/a	- Supports 15 H2 3-wheeler vehicles(rickshaws)	
Collesalvetti (near Livorno), Italy	AGIP Multienergy Station	Eni, AGIP	2006	N/a Solar electrolysis	- Fuels three H2ICE vehicles - 2 FIAT Multiplas and a FIAT Doblo will use the H2 station - H2 produced by an electrolyzer powered by PV panels mounted on the station's roof (20 kW) - 3 wind generators (20 kW each) and 20 kW cogeneration plant cover the complete energy needs of the station	
Mantova, Italy	AGIP MultiEnergy public service station	European Commission, companies and research establishments from Italy, Sweden, Denmark, and Germany, Linde	2007	Compressed H2 & HCNG Delivered H2 and onsite natural gas reforming	- Part of the Zero Region H2 vehicle demonstration project - Integrated into a multi-fuel public service station (station powered by solar panels) - Will support a fleet of three fuel cell Fiat Pandas - H2 to be delivered from central production facility and reformed on-site from natural gas (ENI reformer) - Uses a Pdc compressor - Will dispense at 350 bar	

International Hydrogen Fueling Stations

Location	Station	Partners	Opened	H2 Dispensed / Production Technique	Station Details	Image
Milan, Italy	Milan-Bicocca Project filling station	Lombardia Region, Environment & Instruction/Research Ministries, City of Milan, AEM, Zincar, SOL, BMW, Ansaldo, ENEA, Genova University, Politecnico di Milano	2004	Compressed H2 & LH2 Natural gas reforming	- Demonstration of H2 and FC technologies applied to a syngas stream produced by an existing reformer plan - Includes H2 auto fueling station for fleet of H2 cars and buses(4 Fiat H2ICE Doblo and Multipla cars, also planned are 1 IRISbus FC bus, 2 BMW ICE)	
Pontadera, Italy	PIEL H2 station	PIEL, ILT Technologie s.r.l., Fiat	2003	Compressed H2 Electrolysis	- Fuels Fiat Multipla H2 demonstrator vehicles	
Torino, Italy	N/a	City of Turin, Turinese Transport Group, Irisbus, Sapio, Ansaldo Ricerche, CVA, Enea	N/a	N/a Electrolysis	- Supports one fuel cell Irisbus and H2 Fiat Panda and Fiat 500 - - FC bus testing began in 2001, regular city route service started in 2004	
Ariake, Japan	Ariake H2 Station - Japan Hydrogen and Fuel Cell (JHFC) Demonstration Project	Iwatani International Corporation; Tokyo Metropolitan Government, Showa Shell Sekiyu KK	2002	Compressed H2 N/a	- Tokyo's first H2 station - Uses Linde LH2 refueling technology - LH2 from Iwatani and high pressure compressed H2 from Linde Hydrogen Cryo-Compressor - Dispenses compressed H2 at 25 and 35 MPa	
Edina, Japan	Hydrogen Station	JX Nippon Oil & Energy Corp., New Energy and Industrial Technology Development Organization (NEDO)	2013	N/a N/a	- Japan's 1st H2 station in a non-industrial area for use by the general public - Located in a conventional gas station	
Fukuoka, Japan	Kitakyushu Hydrogen Station	JX Nippon Oil & Energy Corporation, Iwatani Corporation, Nippon Steel Corporation	2009	Delivered via pipeline	- 35 MPa - 3 vehicles in a row	
Fukuoka, Japan	Kyushu University Hydrogen Station	Kyushu University, Kysuhu Electric Power Co., Kyuden Technosystems Corporation, Taiyo Nippon Sanso Corporation	2009	Water electrolysis	- 35 MPa - 5 vehicles in a row	
Funabashi, Japan	JHFC Funabashi H2 Station	Japan Energy Corp., Taiyo Nippon Sanso Corporation, Babcock-Hitachi K. K.	Ended service at end of 2010	N/a N/a	- Mobile high-pressure H2 station. - Production capacity-2.7 kg/h - Storage capacity 26 kg - Can fuel 2 consecutive passenger cars	
Hadano, Japan	Hadano H2 Station – JHFC Demonstration Project	Idemitsu Kosan Co. Ltd.	2003-2005	Compressed H2 Kerosene reforming	- World's 1st kerosene-reformed H2 fueling facility - The Hatano H2 station was transferred to the Ichihara H2 station - Production capacity-50 Nm3/h - Pressure-25-35 MPa - Consecutive fueling capability- 5 passenger cars or 1 bus	
Haneda, Japan	Haneda H2 Station	N/a	2010	Generated onsite	- Refuels fuel cell buses operating between downtown Tokyo and Haneda Airport. - 35 Mpa	
Hiroshima, Japan	Mazda H2 Fueling Station at Ujina section of Hiroshima Head Office plant	Mazda	2005	Compressed H2 N/a	- Supplies H2 for H2 rotary engine vehicles and H2 engine testing facilities - Has the capacity to fill up to approximately 10 H2-powered cars/ day - High-pressure H2 gas is stored at about 2,900 psi in compressed H2 tanks and then further pressurized to over 5,000 psi for delivery to vehicles	
Ichihara, Japan	Ichihara H2 Station	Idemitsu Kosan Co. Ltd.	2006-2010	N/a Kerosene reforming	- The Hadano H2 station was transferred to the Ichihara H2 station - H2 produced from kerosene reforming, production capacity-50 Nm3/h - Pressure-25-35 MPa - Consecutive fueling capability-five passenger cars or one bus	

International Hydrogen Fueling Stations

Location	Station	Partners	Opened	H2 Dispensed / Production Technique	Station Details	Image
Kansai, Japan	Kansai Airport H2 Station	Kansai Electric Power Co., Iwatani International Corp.	N/a	Compressed H2 N/a	- Two consecutive vehicles can be fully fueled - Small satellite H2 station - LH2 delivered with compressed H2 storage (297 Nm3, 39.5 Mpa)	
Kasumigaseki Japan	Kasumiaseki H2 Station	METI, Taiyo Nippon Sanso Corporation	N/a	N/a	- Located at the Ministry of Economy, Trade, and Industry - Mobile H2 station, on weekdays, components are carried to premises and assembled & dismantled in the evening and moved off the premises, all devices (H2 cylinders, dispensers, etc.) are combined into a single unit for easy transport - Production capacity 50Nm3/h - Two consecutive passenger cars can be fueled - Dispenses at 25 and 35 MPa	
Kawasaki, Japan	Kawasaki H2 Station – JHFC Demonstration Project	Japan Air Gases Ltd, Ministry of Economy, Trade and Industry, Air Liquide Japan	2002	Compressed H2 Methanol reforming	- First station to supply H2 by methanol reforming - H2 for one passenger car can be produced in about 40 minutes - 5 passenger cars or one bus can be fueled at a time - H2 production- 50Nm3/h - Dispenses at 25 and 35 MPa	
Nagoya, Japan	Expo 2005 Aichi Japan, Seto-Minami South H2 Station	Toho Gas Co., Ltd Taiyo Nippon Sanso Corp.	Operated March - September 2005	Compressed H2 Steam reforming of natural gas & byproduct H2	- 1st hybrid-type H2 refueling station in Japan, adopting natural gas reforming and coke oven gas byproduct H2 - The largest scale domestic H2 station (H2 supply capacity 1,100Nm3/day) - Uses Pdc Machines compressor	
Nagoya, Japan	The Expo 2005 Aichi Japan, Seto-Kita North H2 Station	Nippon Steel, Taiyo Nippon Sanso Corporation	Operated March-September 2005	Compressed H2 Byproduct H2	- Quick refilling with controlled rise in fuel canister temperature is possible for fuel cell buses - Off-site H2 station that conveys by trailer byproductH2, obtained by refining coke oven gas generated at Nippon Steel's Nagoya steel mill -Uses Pdc Machines compressor	
Nagoya, Japan	Toho Gas Company Semi-Commercial H2 Station	Toho Gas	2002	Compressed H2 Natural gas reforming	- Provides H2 for vehicles owned by Aichi Prefectural government and Nagoya city along with Toho's vehicles and for tests conducted by local automakers - H2 production capacity: 40Nm3/h - H2 supply pressure: 25/35MPa - H2 storage: 300Nm3 at 40MPa	
Osaka, Japan	JHFC Osaka Hydrogen Station	Osaka Gas Co., Ltd.	2002-2010	Compressed H2 Natural gas reforming	- first H2 station in business district - PEM vehicle demonstration by WE-NET	
Ome, Japan	Ome H2 Station	Babcock-Hitachi K.K., ENAA, Nippon Sanso Corp., QuestAir	2003	Compressed H2 Natural gas reforming	- Vehicle-mounted H2 supply, can travel where needed - H2 production rate 30Nm3/h - Two consecutive passenger cars can be fueled	
Sagamihara, Japan	Sagamihara Station	Kurita Water Industries Ltd., Sinanen Co., Ltd., Itochu Enex Co., Ltd.	2003-2010	Compressed H2 Electrolysis	- First station installed at an existing LP gas station supplying fuel to fleets of cabs and other low-pollution vehicles - 5 passenger cars or 1 bus can be fueled at a time - H2 production by water electrolysis-30Nm3/h - Receives H2 from trucks on which a H2 generator and compressor are mounted as the mobile production facilities - Uses Pdc Machines compressor - Consists only of a gas storage unit and dispenser as the receiving station	
Saitama, Japan	Honda H2 Station	Honda, Iwatani and Saitama Prefecture	2012	Compressed H2 Solar electrolysis	- Located at Honda's Saitama Prefecture office - Open to the public - Generates 1.5 kg of H2 daily	
Senju, Japan	Senju H2 Station – JHFC Demonstration Project	Tokyo Gas Co., Ltd,. Taiyo Nippon Sanso Corporation, QuestAir	2002	Compressed H2 Steam reforming of LPG	- H2 sufficient for one passenger car can be produced in about 40 minutes - Uses Pdc Machines compressor - Steam reforming of LPG (mixed butane and propane) and PSA refinement - H2 production rate- 50Nm3/h - Dispenses 25 and 35 MPa	

International Hydrogen Fueling Stations

Location	Station	Partners	Opened	H2 Dispensed / Production Technique	Station Details	Image
Takamatsu, Japan	We-NET H2 Refueling Station	Nippon Sanso Corporation	2002	Compressed H2 Natural gas reforming	- PEMFC vehicle demonstration by WE-NET - H2 produced by natural gas reforming - 30Nm3/hr - Dispenses 35MPaG and 25MPaG w/ fast fueling	
Tokoname City, Japan	Central Japan International Airport (Centrair) H2 Station – JHFC Demonstration Project	Centrair, Toho Gas Co., Ltd., Taiyo Nippon Sanso Corporation, Nippon Steel Corporation	2006	N/a Natural gas reforming and by-product H2	- H2 station services Toyota and Hino Motors' FCHV-BUS - Produces H2 on-site by reforming natural gas; using this as the base load, byproduct H2 attained off-site is combined and utilized, making this domestic hybrid-type H2 station - Replaces the Expo/Seto-Minami South H2 station - Largest H2 supply capacity in Japan (100 kg/day)	
Tokai, Japan	Toho Gas Research Laboratory H2 station	Toho Gas Co.	2002	Compressed H2 Natural gas reforming	- Located at Toho Gas Co.'s research laboratory in Aichi Prefecture - H2 produced by natural gas reforming, capacity of 50 Nm3/hr	
Tokyo, Japan	Tokyo Suginami H2 Station	JX Nippon Oil and Energy	2010	Delivered hydrogen (from JX Energy refinery) 35 MPA	- Refuels fuel cell buses operating between downtown Tokyo and Haneda airport. - Part of HySUT "Hydrogen Highway Project"	
Tokyo, Japan	Tokyo Gas Hydrogen Station	Tokyo Gas	2010	N/a N/a	- Tokyo Gas combined a H2 station with an existing natural gas facility in Tokyo's Ota Ward - Buses and cars fill up on H2 extracted from city gas	
Tokyo, Japan	Ministry of Economy, Trade and Industry mobile H2 station – JHFC Demonstration Project	Taiyo Nippon Sanso Corporation, Tokyo Gas, Senju	N/a	Compressed H2 N/a	- Mobile station located at Ministry of Economy, Trade and Industry - Compact components which can be transported by truck - Direct refueling by a compressor (50Nm^3/hr) - Easy-to perform operational control and various safeguards - Dispenses 35MPaG and 25MPaG w/ fast fueling	
Tokyo, Japan	Showa Shell H2 Station – JHFC Demonstration Project	Iwatani Intl. Corp., Tokyo Metropolitan Government, Showa shell Sekiyu KK, Linde	2003	Compressed H2 & LH2 N/a	- Linde delivered the core components for liquid and gaseousH2	
Yakushima, Japan	Yakushima H2 Station	Kagoshima University, United Nations University, Toyohashi University of Technology and Kanagawa University, Honda, Yakushima Denko	2004	N/a Electrolysis	- The Yakushima H2 Station is a research project for establishing a sustainable society in Yakushima - Station was constructed by the U J-R team near a market, owned and operated by Yakushima Denko - Supplies fuel to a Honda FCX - PEM electrolyzer supplies Series 100E H2 fueler powered from hydroelectric generator-100% renewable	
Yokohama, Japan	Yokohama-Daikoku H2 Station (JHFC Park) – JHFC Demonstration Project	Cosmo Oil Co., Ministry of Economy, Trade and Industry	2003	Compressed H2 Steam reforming of desulfurized-gas	- H2 for one car can be produced in about 60 min - 5 consecutive vehicles can be fueled (5 minutes/vehicle) - Uses Pdc Machines compressor - H2 production-30Nm3/h - Dispenses 25 and 35 MPa	
Yokohama, Japan	Yokohama-Asahi H2 Station – JHFC Demonstration Project	Nippon Oil Corporation, Ministry of Economy, Trade and Industry	2002	Compressed H2 Naphtha reforming	- Can produce H2 for 1 passenger car in about 40 min - Uses Pdc Machines compressor - H2 production rate- 50Nm3/h - Dispenses 25 and 35 MPa	
Yokohama, Japan	Yokohama-Tsurumi H2 Station – JHFC Demonstration Project	Tsurumi Soda Co, Iwatani International Corporation	2002-2006	Compressed H2 Delivered H2 produced by brine electrolysis	- Next to this station was a showroom and garage for fuel cell vehicles, managed by the Japan Automobile Research Institute - Byproduct H2 (brine electrolysis) produced off-site at Tsurumi Soda Co. Ltd.	
City of Luxemburg	CUTE Bus Demonstration H2 fueling station	Shell Hydrogen, Air Liquide, Ville de Luxembourg VdL	2003	Compressed H2 N/a	- Station is located at Luxemburg's main bus depot - Supplied fuel to 3 DaimlerChrysler Citaro fuel cell buses - Shell Hydrogen/Air Liquide delivered H2	

International Hydrogen Fueling Stations

Location	Station	Partners	Opened	H2 Dispensed / Production Technique	Station Details	Image
Amsterdam, The Netherlands	CUTE Bus Demonstration and H2 fueling station	Shell Hydrogen, DaimlerChrysler, GVB , Dienst Milieu en Bouwtoezicht, HoekLoos, NOVEM , Nuon	2003	Compressed H2 Electrolysis & delivered H2	- Located at the GVB bus station, supports 3 DaimlerChrysler Citaro fuel cell buses - Dispenses 40 kg of H2 in about 10 minutes - Stuart Energy provided SES Hydrogen Generation Modules generate 60 Nm/h of H2 (>120 kg/day) - Uses IMET® powered water electrolyzer - HoekLoos (a Linde Co.) delivers compressed H2	
Arnhem, The Netherlands	H2 station	Avia	2010	Compressed H2	N/a	
Petten, The Netherlands	Energy Research Center (ECN) H2 station	ECN, Air Products	2006	Compressed H2 Natural gas reforming	- Will fuel ECN's H2 hydroGEM vehicle - Takes 5-10 minutes to fill the HydroGEM's tank - Uses Air Products' hydrogen filling station - The station has a stock of about 1,600 liters (two 800-litre packages) stored at relatively low pressure (200 bar)	
Drammen, Norway	HyNor Project H2 station/ Scandinavian Hydrogen Highway Partnership	Drammen Kommune, Linden, Radet for Drammensregionen, Vardar, Buskerud Fylkeskommune, Drammen Taxi	2009	N/a Trucked-in H2, reformed biogas starting in 2011	- Part of HyNor's planned Hydrogen Road between Oslo and Stavanger - H2 is trucked-in hydrogen from HyNor Grenland. - The goal is supply H2 utilizing biogas. With this production line in place from 2011, the hydrogen will come from a carbon neutral and renewable local source	
Oslo, Norway	Hydrogen Station	H2 Logic	2011	Compress H2 Solar electrolysis	- 700 bar fueling - Onsite alkaline electrolyzer to produce H2 using electricity from solar panels - Refueling time 3 minutes - Part of the H2MOVES Scandinavia demonstration" project	
Oslo, Norway	HyNor Project H2 station/ Scandinavian Hydrogen Highway Partnership	Zero, SL, Norgestaxi, Norgesbuss, Hydro	2009	N/a Trucked-in H2	- Part of HyNor's Hydrogen Road - Integrated into an ordinary Statoil petrol station	
Porsgrunn/ Grenland, Norway	HyNor Stavangar H2 station	Stavangar Kommune, RF, Rogaland Fylkeskommune, Energyiparken, Statoil, Lyse, Rogaland Taxi, Statoil	2007	Compressed H2 & HCNG Pipeline-delivered H2	- Part of HyNor's Hydrogen Road between Oslo and Stavanger. - H2 is a by-product from the chlorine production at Rafnes, transported by pipeline under the fjord to the filling station - H2 is purified at the station, pressurized up to 460 and 900 bar and stored below ground - 9 Toyota Prius vehicles use the station on a daily basis	
Stavanger, Norway	HyNor Project H2 station/ Scandinavian Hydrogen Highway Partnership	Stavangar Kommune, RF, Rogaland Fylkeskommune, Energyiparken, Statoil, Lyse, Rogaland Taxi	2006	Compressed H2, HCNG N/a	- Norway's first H2 station, part of HyNor's Hydrogen Road - Integrated part of an ordinary Statoil fueling station - Supports 4 Toyota Prius cars - There are plans to establish local production of H2 from biogas or natural gas, build a 2nd H2 filling station, and introduce H2 vehicles in harbor activities in Risavika. - Production would be sufficient to supply H2 to the existing station as well as to other possible nodes nearby	
Lisbon, Portugal	TotalFinaElf H2 station	TotalFinaElf, Linde, BP	2003	LH2 Delivered H2	- Station was opened under the framework of the Berlin, Copenhagen, Lisbon fuel cell bus Program - BP developed fueling infrastructure - Uses Arliquido supplied LH2	
Porto, Portugal	CUTE Bus Demonstration and H2 Fueling Station	BP, Linde	2003	Compressed H2 Delivered H2	- Filling station is installed at the bus depot - Supported 3 fuel cell buses - Centralized H2 gas production from natural gas using electrolysis, transported by road tanker to bus depot refueling site and compressed/stored on-site Uses Linde High Booster Compressor System for high pressure H2.	
Singapore	Nanyang University H2 Fueling Station	SBS Transit, Nanyang Technological University	2010	N/a N/a	- Station located at Nanyang Technological University (NTU) - Fuels SBS Transit's fuel cell bus - Bus is also garaged at NTU	
Singapore	BP Singapore H2 Fueling Station	BP, Air Liquide, SOXAL	2005	Compressed H2 Electrolysis	- World's 1st H2 facility designed to be a totally unmanned, stand alone operation - Supports DaimlerChrysler F-Cell FCVs - Part of SINERGY - On-site H2 production via electrolysis using technology by Singapore Oxygen Air Liquide (SOXAL) - Uses Pdc Machines compressor	

International Hydrogen Fueling Stations

Location	Station	Partners	Opened	H2 Dispensed / Production Technique	Station Details	Image
Singapore	BP Singapore H2 Fueling Station	Air Products and Chemicals Inc., BP, Singapore Econ. Dev. Board, Min. of Energy. & Land Transport Auth,, DaimlerChrysler	2004	Compressed H2 Natural gas reforming	- Supports 6 DaimlerChrysler F-Cell FCVs - Located at a BP public fueling station - Part of SINERGY Project - API Series 200 H2 fueling station supplied by gaseous H2 at a retail gas station - Uses Pdc Machines compressor - Supplies up to 70 kg/day (about 35 vehicles per day)	
Daejeon, South Korea	SK Energy's Research Center H2 station	QuestAir Technologies Inc., Hydrogenics	2007	Compressed H2 LPG reforming	- Station capable of producing 65 kg/day, sufficient H2 to fuel approximately 20 FC vehicles - 350 bar fueling - QuestAir's H-3200 will purify H2 produced from natural gas and will be integrated into a H2 generation and compression package supplied by Hydrogenics.	
Hwaseong, South Korea	Hyundai Motor Co. H2 Station		2008	Compressed H2 Trucked-in	- 350 and 700 bar fueling	
Incheon, South Korea	KOGAS Tech R&D H2 station	KOGAS, MOCIE	2007	Compressed H2 Natural gas reforming	- Capable of fueling up to 20 FC vehicles - Hydrogenics reformer - Pressure Products compressor up to 5000 psig (350 bar) - 45 MPa storage pressure - 35 MPa fueling pressure	
Jeju, South Korea	Hyundai Motor Co. H2 Station		2011	Compressed H2 Electrolysis	- 350 fueling	
Seoul, South Korea	City of Seoul H2 Station		2011	Compressed H2 LFG reforming	- 350 bar fueling	
Seoul, South Korea	Hyundai Motor Co. H2 Station		2010	Compressed H2 N/a	- Trucked-in hydrogen - 350 bar fueling	
Seoul, South Korea	Hyundai Motor Co. H2 Station		2009	Compressed H2 N/a	- Mobile H2 station - 350 bar fueling	
Seoul, South Korea	KIST H2 Station		2008	Compressed H2 N/a	- Mobile H2 station - 350 bar fueling	
Seoul, South Korea	GS Caltex H2 station		2006	Compressed H2 Naphtha reforming	- 350 bar fueling	
Ulsan, South Korea	Dongdeok Gas H2 Station (#2)		2011	Compressed H2 N/a	- Trucked-in H2 - 700 bar fueling	
Ulsan, South Kore	Dongdeok Gas H2 Station (#1)		2009	Compressed H2 N/a	- Trucked-in H2 - 350 bar fueling	
Yeosu, South Korea	SPG Chemical h2 Station			Compressed H2 N/a	- Trucked-in H2 - 350 bar fueling	
Yongin, South Korea	Hyundai Motor Co. H2 Station		2005	Compressed H2 N/a	- Trucked-in H2 - 350 and 700 bar fueling	
Barcelona, Spain	CUTE Bus Demonstration and H2 fueling station	BP, Transports Metropolitans de Barcelona (TMB)	2003	Compressed H2 Solar & wind-powered electrolysis	-Filling station was installed at the TMB bus facilities - Supported 3 fuel cell buses - Onsite production-solar & grid--powered electrolysis - Stuart Energy SES Hydrogen Generation Modules produced 60 Nm/h of H2 (>120 kg/day) - IMET® water electrolyzer - Linde High Booster Compressor System	
Huesca, Spain	kragon Hydrogen Foundation H2 Station	N/a	2010	N/a	- Located at the Walqa Technology Park, along the motorway between Zaragoza and Huesca (75 km)	

International Hydrogen Fueling Stations

Location	Station	Partners	Opened	H2 Dispensed / Production Technique	Station Details	Image
Madrid, Spain	CUTE Bus Demonstration and CityCell Bus Demonstration H2 fueling station	Empresa Municipal de Transportes de Madrid (EMT), Air Liquide, Natural Gas-Repsol YPF	2003	Compressed H2 Natural gas reforming	-Was located at EMT bus facilities - Both bus projects shared the H2 refueling facility - Used Pdc Machines compressor	
Zaragoza, Spain	Expo Hydrogen Filling Station	N/a	2008	N/a N/a	- Located along the motorway between Zaragoza and Huesca (75 km)	
Arjeplog, Sweden	Hydrogen Station	H2 Logic	2011	Compressed H2 N/a	- Used by car manufacturers using test tracks in Arjeplog	
Malmö, Sweden	H2 station	Sydkraft, Stuart Energy Systems, Vandenborre	2003	Compressed H2, HCNG Wind-powered electrolysis	- Sweden's 1st H2 station - Capacity 36 m^3/h - Stuart Energy HESf electrolyzer uses energy from wind power to generate 80 kg of H2/day - Allows dual pressure dispensing. Dispenser incorporates H2 & natural gas mixing system - Generates 700 Nm3/day, enough for about 25 cars - Fuels one Toyota Prius (H2) and two buses running on hythane gas (8%).- there are plans for more hythane vehicles	
Stockholm, Sweden	CUTE Bus Demonstration and H2 fueling station	SL Stockholm, Busslink, Stad Stockholm, Fortum, Birka Energie	2003	Compressed H2 Delivered "green" H2	- Supplied H2 fuel to 3 fuel cell buses - Stuart Energy's Hydrogen Energy Station for vehicle fueling - Uses Pdc Machines compressor - Central Hydro-powered electrolysis, then transported to fueling site	
Aargau, Switzerland	H2 Station	Carbagas AG	2012	Compressed H2 Electrolysis and delivered H2	- Fuels 5 PostBus fuel cell buses during a 5-year trial - 60% of H2 generated onsite by electrolysis; remainder is delivered - 350 bar fueling	
Basel, Switzerland	HyStation H2 fueling station	Messer/SL Gas, ESORO AG	Shown in October 2002	Compressed H2 N/a	- Showcased at the international Reach 2002 trade fair in Basel. - Fueled ESORO's HyCar fuel cell car - Used a cluster of pressurized tanks supplied the service station with up to 180 Nm3 of gaseous H2	
Taichung, Taiwan	Feng Chia University H2 Station	N/a	2011	N/a H2 from agricultural waste biomass	N/a	
Tao-Yuan, Taiwan	May-Chong Energy H2 station	ZTec	2004	N/a N/a	- H2 supply for FC vehicles. - Uses ZTec's H2 station with a HPSR-2000H reformer	
Istanbul, Turkey	Hydrogen Station	Hydrogenics, Turkish Ministry of Energy & Natural Resources, Int'l Center for Hydrogen Energy Technologies (ICHET)	2012	N/a Electrolysis	- Hydrogenics fueling station - Hydrogen generated by electrolysis - Capable of producing 65 kg H2/day - Located at Golden Horn, historic inlet of the Bosphorus in Istanbul - Will be used for both land and sea transport applications	
Birmingham, England, United Kingdom	University of Birmingham H2 station	University of Birmingham	2008	N/a N/a	- The university will have a fleet of 5 FC vehicles, made by Microcab Industries Limited - Air Products Series 100 fueling station - H2 fuel is produced from renewable energy	
Coventry, England, United Kingdom	University of Coventry H2 Station	Air Products	2010	N/a N/a	- Series 100 station will fuel a test fleet of MicroCab vehicles, produced by the University of Coventry spin-off company	
Leicestershire England, United Kingdom	Loughborough University H2 refueler	N/a	2008	N/a Delivered H2	- Based at Holywell Park - Station part of a H2 station cluster known as the Midlands Hydrogen Ring - Air Products fueling station - Uses delivered H2, university may create own green H2 on campus	

International Hydrogen Fueling Stations

Location	Station	Partners	Opened	H2 Dispensed / Production Technique	Station Details	Image
London, England, United Kingdom	CHIC Bus Demonstration and Hydrogen fueling station	Air Products, First, Transport for London	2010	N/a N/a	- Air Products hydrogen station located at First's bus depot in Stratford, east London.	
London, England, United Kingdom	H2 station	Air Products	2010	N/a N/a	- Supports 8 Transport for London fuel cell buses operating in daily transit service along the first zero-emissions bus route (RV1)	
London, England, United Kingdom	CUTE Bus Demonstration and H2 fueling station	BP	2005	Compressed H2 Delivered H2	- The buses filled up with H2 at a normal retail station adjacent to the BP Connect site at Hornchurch, Essex - BP developed fueling infrastructure - H2 dispensed gaseous (into the buses), but is transported liquid by tanker (from Belgium/Luxemburg) and then stored in liquid form underground - Station will be used in the new CHIC project, using delivered LH2, 320 kg/day capacity	
Millbrook, United Kingdom	Millbrook Proving Ground H2 Station	Millbrook Proving Ground, Transport for London (TfL), Air Products, Technology Strategy Board, Department for Energy and Climate Change (DECC)	2012	Compressed H2 N/a	- Air Products mobile SmartFuel Hydrogen Station located at a vehicle testing grounds - Capable of refueling buses and cars - 350 and 700 bar fueling - Only UK station that has been fully certified by General Motors to J2601 (compliant with safety limits and performance requirements for gaseous hydrogen fuel dispensers)	
Nottingham, England, United Kingdom	University of Nottingham H2 Station	N/a	2012	Compressed H2 Solar electrolysis	- H2 generated via an ITM power electrolyzer, using solar energy from panels mounted on the roof of the University's Energy Technologies Building. - 350 bar fueling, 150 bar H2 for the University's laboratory - Will fuel up to 5 HICE vehicles	
Stansted, England, United Kingdom	H2 station	ITM Power, Stansted Airport	2011	N/a N/a	- Fuels hydrogen vans used at the airport	
Swindon, England, United Kingdom	Honda's South Marston Plant Hydrogen Station	Honda, BOC, Forward Swindon	2012	N/a N/a	- Station was built and is operated by industrial gases company BOC. - Single pump, 5,000 and 10,000 psi filling (350 and 700 bar). - Accessible by the public for those who have undergone a BOC safety training course	
Pontypridd, Wales, United Kingdom	H2 station	Air Products, University of Glamorgan	2011	N/a Solar electrolysis	- Air Products Series 100 hydrogen station - Located on Glyntaff campus - Hydrogen generated on campus via solar electrolysis	
Pontypridd, Wales, United Kingdom	Baglan Energy Park H2 station	University of Glamorgan	2008	N/a Solar electrolysis	- University operates a fuel cell-powered minibus	