






Worldwide Hydrogen Fueling Stations

Location	Fuel	Project	Partners	Dates	H2 Production Technique	Specifics/ Comments	Picture
Yucca, Arizona	Compress. H2	Ford's Arizona Proving Grounds mobile fueler	Ford Motor Co., Stuart Energy Systems Corp.	Opened 2002	Stuart Energy Mobile Hydrogen Energy station (Series 100). Integrates H2 generation, storage. Dual pressure (3600 and 5000 psi) dispensing. Mounted on single trailer.	Supports testing of Focus FCV and other Ford H2-fueled vehicles.	
Phoenix, Arizona	Compress. H2, CNG, & H2/CNG blend	Arizona Public Service Hydrogen Power Park	Arizona Public Service, DoE	Opened 2001	H2 produced by electrolysis and delivered. Uses ProtonEnergy's HOGEN 300 PEMFC electrolyzer and Pdc Machines compressor. H2 storage pressures of 150, 2400 and 6000 psig. Storage capacity of 67,000 SCF. Dispenser 5000 psi.	Public vehicle refueling.	
Auburn, California	Compress. H2	Hydrogen Station at PG&E's Service Center and Division Office	Ztek, CaFCP, Pacific Gas & Electric	Opened 2004	Ztek's CTU-600H hydrogen reformer on a transportable platform. Converts natural gas supplied by PG&E to H2 at a rate of 600 scfh.	Serves as a satellite refueling station for the California Fuel Cell Partnership (CaFCP).	
Burbank, California	Compress. H2	Burbank Station	Air Products and Chemicals, Inc., City of Burbank, SCAQMD, Proton Energy	Opened January 2006	H2 generated with an electrolyzer. Uses a Pdc Machines compressor. Design capacity-20 kg/day. 12 kg storage. Can deliver 0.5 kg/hr. 52 kg @ 6250 psi. Distributed Energy Systems' FuelGen® Hydrogen Fueling Systems. Capable of filling 10 vehicles/day.	One of SCAQMD's '5 Cities Project' stations. Each city and AQMD will operate 5 H2-fueled Toyota Priuses for 5 years.	
Chino, California	Compress. H2	Kia-Hyundai America Technical Center Station	ChevronTexaco, Hyundai Motor Co., UTC Power	Opened February 2005	Natural gas reforming. Also capable of producing H2 from ethanol. Pdc compressor. H2 compressed to 6,250 psi. H2 storage capacity 100 kg in pressurized containers. Able to simultaneously fuel two vehicles. Expected fuel time 3-5 minutes.	5-yr DOE cost-share demonstration to showcase practical application of H2 energy technology. Access limited to a fleet of 3-5 H2 fuel cell vehicles.	
Chula Vista, California	Compress. H2	Chula Vista mobile fueler	City of Chula Vista, Honda	Opened June 2003	Stuart Energy hydrogen fueling station. A CFP-1350 generates 60 kg of H2/day and dispenses at 3,600 and 5,000 psi. Uses Pdc Machines compressor. Can fuel 20-30 cars/day.	Supports Honda FCX leased to city of Chula Vista. The station is accessible to the public and the key card is available for unassisted fueling, also for the public.	
Davis, California	Compress H2, CNG/H2	UC Davis Station	University of California at Davis, Air Products and Chemicals Inc.	Opened April 2004	Series 100 H2 fueling station. APCI-delivered LH2. Converts liquid H2 to gaseous H2. Uses Pdc Machines compressor. 30 kg compressed hydrogen plus 1500 gallon liquid hydrogen in storage tank.	Supports 2 Toyota Highlander Fuel Cell Hybrid Vehicles used by the university.	
Diamond Bar, California	Compress. H2	SCAQMD Energy station at SCAQMD headquarters	South Coast Air Quality Management District, Hydrogenics	Opened August 2004	Stuart Energy Station (SES-f). Uses electrolyzer for generation of H2 (with H2 internal combustion engine electricity generation-set). Can fuel 20-30 cars/day.	One of first stations opened to the public. The first H2 station in California to utilize a fueling island design.	
El Segundo, California	Compress. H2	Xerox-Clean Air Now Project H2 fueling station	Clean Air Now, Xerox Corp., Praxair Inc., PVI Corp, and Kaiser Engineering	Opened 1995, completed 1997	The electrolyzer and compression system operated directly from a PV array for electrolytic generation of up to 400 scfh of H2 gas for on-site H2 fueling station. Used Praxair partial fast-fill fueling system. The fueling system was upgraded to a full fast fill system able to fuel multiple vehicles in succession in under 7 min/each.	Fueled fleet of H2 vehicles used by Xerox (Ballard buses and converted H2 ICE Ford Rangers). Demonstrated solar generated hydrogen as fuel for utility vehicles	
Irvine, California	Compress. H2	University of California-Irvine Hydrogenics Refueling Station	UC Irvine, Hydrogenics	Opened June 2005	Hydrogenics HySTAT-A Refueling Station. Vandenberg IMET® water electrolyzer 2 kg H2 per day production capacity. 12-13 kg H2 storage capacity. 5,000 psig (350 bar) filling pressure.	Supports Toyota FCHVs managed by NRCRC.	
Irvine, California	Compress. H2	University of California-Irvine APCI Refueling Station	Air Products, National Fuel Cell Research Center at UC Irvine, South Coast Air Quality Management District	Opened January 2003, upgraded in 2006/2007	150 kg in APCI HF-150 Mobile Refueler opened 1/03, Added Series 100 H2 fueling station-H2 dispensed at 350 bar/5,000 psi. APCI completed installation of new 350 bar system in 8/06. 2/07-added Series 200 700 bar/10,000 psi dispenser Can fuel 10 cars/day, storage capacity-20 kg compressed plus 1500 kg liquid H2. Pdc compressor.	Toyota, Nissan, Honda, BMW, General Motors and DaimlerChrysler are expected to use the station to fuel demo vehicles. Plans to add a liquid H2 dispenser in late 2007.	









Lake Forest, California	Compress. H2	Quantum Technologies	U.S. DoE, GM, Quantum Technologies		Part of DoE's Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project	Supports 40 fuel cell vehicles (Opel Zafira Generation 3 vehicles) for all GM led locations	
Long Beach, California	Compress. H2	Long Beach Station	Air Products	Opened in 2007	Uses Air Products' HF-150 Mobile Refueler. Uses Pdc compressor.		
Los Angeles, California	Compress. H2	City of Los Angeles mobile fueler for Honda FCX fleet	City of Los Angeles, American Honda, Air Products, Praxair	Opened December 2002	HF-150 mobile APCI fueler – uses high pressure stored hydrogen (delivered). 150 kg storage capacity. Can fuel 26-100 cars/day.	Supports fleet of 5 Honda FCX fuel cell vehicles leased to the City of Los Angeles.	
Los Angeles, California	Compress. H2	Praxair-BP Los Angeles International Airport hydrogen refueling station	DOE, SCAQMD, CEC, Los Angeles World Airports, Praxair, BP	Opened October 2004	Norsk-Hydro electrolyzer. Pdc compressor. Features a 600-sq-ft building with high-pressure H2 storage tubes on the roof. Storage-60 kg compressed H2 in ASME Steel cylinder at approx. 6,600 psi. 307 kg storage/ supplemental hydrogen via 2,400 psi tube trailer. Fueling capacity of 10 – 20 cars/day.	First retail-style H2 fueling station. Supports Honda fuel cell cars leased by City of Los Angeles.	
Oakland, California	Compress. H2	AC Transit Oakland Hydrogen Station	AC Transit, UTC Power, Chevron, Van Hool, ISE Research, DoE, NREL, ITS UC Davis, Hyundai	Opened August 2005	Small scale steam reforming of natural gas. Pdc Machines compressor. Storage capacity-366 kg H2 at 6,250 psi. Dispenses up to 150 kgH2/day (enough to fill 3 buses). Two H2 dispensers- can fuel two FC buses simultaneously at 5,000 psi.	Fuels AC Transit's fleet of 3 Van Hool 40' fuel cell hybrid buses and Hyundai Tucson fuel cell vehicles. Will also be able to fuel a stationary fuel cell for power needs at AC Transit's maintenance facility.	
Ontario, California	Compress. H2	Ontario Station	Air Products and Chemicals, Inc., City of Ontario, SCAQMD	Opened January 2006	Uses Air Products HF-150 mobile H2 refueler. Pdc compressor. Can deliver 150 kg @ 6600 psi. Storage capacity-60 kg compressed H2. Capable of filling 10 vehicles/day.	One of the SCAQMD's '5 Cities Project' stations. Each city and AQMD will operate 5 H2-fueled Toyota Priuses for 5 years.	
Oxnard, California	Liquid H2	BMW North America Hydrogen Fueling Station	BMW, Air Products, Linde AG	Opened July 2001	APCI delivered LH2 manual power assisted Linde LH2 mobile refueling station. Liquid H2 is pressure-transferred from the storage tank to the vehicle tank and no pumps or compressors are needed. APCI 1,500-gallon gross capacity vacuum-jacketed ASME storage tank	Located at BMW North America Engineering and Emission Test Center. Supports hydrogen ICE vehicles.	
Richmond, California	Compress. H2	AC Transit Hydrogen Energy Station	AC Transit, Hydrogenics, CaFCP	Opened October 2002, decommissioned	PEM electrolyzer, Pdc Machines compressor. Produces up to 24 kg H2/day. Can fuel up to 5 cars within 8 minutes. Capacity-up to 15 cars/day or 2 buses/day. Storage-47 kg compressed (5700 psi) H2 storage, 12 X 150L Type 3 Dynatek NGV-2.	First satellite hub for CaFCP vehicles. Provided H2 for AC Transit FC bus and CaFCP vehicles traveling to Bay Area from Sacramento. Also provides support for DOE's H2 technology validation project. A2008-C Transit applying for funding to help in replacing the decommissioned H2 station.	
Riverside, California	Compress. H2	Riverside Hydrogen Fueling Station	City of Riverside, SCAQMD, Air Products and Chemicals, Inc.	Opened January 2006	H2 generated with Proton Energy Systems HOGEN 6M electrolyzer, Pdc Machines compressor. 12 kg storage capacity. Distributed Energy Systems' FuelGen® Hydrogen Fueling Systems. Can deliver 0.5 kg/hr. 52 kg @ 6250 psi. Capable of filling 10 vehicles/day.	One of SCAQMD's '5 Cities Project' stations. Each city and AQMD will operate 5 H2-fueled Toyota Priuses for 5 years.	
Riverside, California	Compress. H2	Solar-Hydrogen Production and Vehicle Refueling Station	UC-Riverside, Air Products, City of Riverside, SCAQMD, Proton Energy	Opened in 1993, decommissioned	Electrolyser Corp. (Stuart Energy) Uni-polar electrolyzer was capable of using PV array or grid operation for 5,000 psi H2.	"Solar-Hydrogen Production and Vehicle Refueling Station" for H2-ICE pickup truck. Was located at University of California, Riverside, College of Engineering – Center for Research and Technology	
Rosemead, California	Compress H2	Southern California Edison headquarters	Chevron Technology Ventures, Hyundai, UTC Powers, Southern California Edison, Department of Energy, Hyundai Kia Motors	Opened May 2007	Alkaline electrolyzer produces H2 onsite. Generating capacity of 40 km H2/day gaseous hydrogen from the dispenser at a pressure of 5000 pounds per square inch. Pdc compressor. Expected fueling time: 3-5 minutes. Can fuel 18-20 vehicles/day.	Serve a small demonstration fleet of Kia and Hyundai H2 FC vehicles operated by SCE meter readers. The Chevron Hydrogen energy station is one of up to six stations that Chevron plans to build and operate under the DOE Contract.	
Sacramento, California		Sacramento Municipal Utility District (SMUD) Hydrogen Station	SMUD, BP, Ford, U.S. DoE	Opened April 2008	H2 produced onsite via a large solar array – can produce enough H2 for about 14 fuel-cell vehicles. Pdc compressor.	The station will fuel SMUD FCEVs and others in the region.	
San Francisco, California		PG&E Hydrogen Station	PG&E, Air Products, DaimlerChrysler	Opened January 2006, decommissioned	HF-150 mobile refueler. Storage capacity of 150 kg.		
San Francisco, California	Compress. H2	City of San Francisco mobile fueler for Honda FCX fleet	City of San Francisco, American Honda, Air Products and Chemicals, Inc.	Opened March 2004, decommissioned	Storage-60 kg APCI HF-60 mobile fueler – Fueling capacity 5-10 cars/day.- now decommissioned. To be replaced by APCI Series 100 station.	Serves San Francisco's fleet of two Honda FCX vehicles.	







San Jose, California	Liquid to Compress H2	Santa Clara Valley Transportation Authority Hydrogen Fueling Station	Santa Clara VTA, CEC, Ballard, Gilling, FTA, BAAQMD, DoE, Cal EPA, Air Products and Chemicals Inc, CARB, CaFCP, NREL, SamTrans	Opened November 2004	VTA has the ability to store H2 in liquid form for efficient storage and convert the liquid to H2 gas to fuel the buses. Storage-6 ASME steel tubes, 6668 psi and 9000 gallon liquid supply tank. Can fuel 3 buses/day. H2 delivered by APCI.	Fuels VTA and SamTrans three 40-foot, low-floor, hydrogen fuel-cell buses.	
Santa Ana, California	Compress. H2	Santa Ana Mobile Station	Air Products and Chemicals, Inc., City of Santa Ana, SCAQMD	Opened January 2006	Uses Air Products HF-150 mobile H2 refueler. Uses Proton Hogen PEM electrolyzer for hydrogen generation and Pdc Machines compressor. Can deliver 150 kg @ 6600 psi. Capable of filling 10 vehicles/day.	One of the SCAQMD's '5 Cities Project' stations. Each city and AQMD will operate 5 H2-fueled Toyota Priuses for 5 years.	
Santa Monica, California	Compress. H2	Santa Monica Hydrogen Station	APCI, City of Santa Monica, South Coast Air Quality Management District, Proton Energy Systems, U.S. DOE, Quantum Technologies	Opened June 2006	Uses Proton Energy's HOGEN 6M electrolyzer for H2 generation and Pdc Machines compressor. 12 kg storage. Distributed Energy Systems' FuelGen® Hydrogen Fueling Systems.	One of the SCAQMD's '5 Cities Project' stations. Each city and AQMD will operate 5 H2-fueled Toyota Priuses for 5 years.	
Thousand Palms, California	Compress. H2	Schatz Hydrogen Generation Center at SunLine Transit facility	Schatz Energy Research Center, SunLine Transit	Opened 1994; retro fit in 2001-2	Solar-powered H2 production and fueling station. Produces up to 42 standard cubic feet per hour of H2. Pdc compressor. Compressed H2 is stored in cylinders.	Mini-hydrogen station. H2 is dispensed on-site to fuel low-volume vehicles (eg. golf carts).	
Thousand Palms, California	Compress. H2	SunLine Transit's SunFuels Hydrogen Fueling Station	Hydrogenics, Hyradix, SunLine Transit Agency	Opened April 2000	Teledyne Engineering electrolyzer and Hyradix natural gas reformer - 205 kg/day generated. Pdc Machines compressor. 425 kg hydrogen stored. H2 can be dispensed at both 3600 psig and 5000 psig. Can fuel up to 15 cars/day or 2 buses/day.	24-hour station offering H2, CNG, LNG, and Hythane CNG. H2 available by appointment. Open to the public-a trained technician performs the H2 refueling. Also fuels SunLine's H2 internal combustion engine buses and HCNG buses.	
Torrance, California	Compress. H2	Honda Solar Hydrogen Refueling Station	Honda R&D	Opened July 2001	PV-electrolysis with grid electricity back-up. Storage- 110 Nm3 @ 5,000psi. Fuels 1 car/day.	World's first solar-powered H2 production and fueling station. Supports Honda's internal 3-car FCX fleet.	
Torrance, California	Compress. H2	Honda Home Energy Station	Honda R&D	Opened October 2003	Natural gas reformation. Storage - 400 liters @ 420 atmospheres Fuels 1 car/day.	Designed to power a home, provide hot water and generate hydrogen fuel for refueling FCVs. American Honda uses this fueling station to fuel their internal four car FCX fleet These vehicles also refuel at Honda's own Solar Hydrogen Refueling Station	
Torrance, California	Compress. H2	Toyota Torrance Station	Toyota, Hydrogenics	Opened December 2002	Stuart Energy H2 fueling station. Onsite electrolysis powered by renewable energy to generate 24kg H2/day. 48 kg 5700 psi storage, 12 X 150L Type 3 Dynatek NGV-2. Can fuel up to 15 cars/day.	Part of Toyota's efforts to establish California fuel cell "communities" with the leasing of 6 FCHVs to 2 University of CA campuses. Toyota plans to open 5 more refueling stations in addition to this one.	
West Sacramento, California	Liquid to Compress. H2, MeOH	CaFCP headquarters Hydrogen Fueling Station	Air Products and Chemicals, Inc., BP, ChevronTexaco, ExxonMobil, Praxair, Shell Hydrogen	Opened December 2000	LH2 supply with gaseous onboard storage started in 2000. In 2003, added HF-150 mobile fueler. APCI and Praxair delivered LH2 Uses Linde LH2 cryogenic nozzle and controls technology. Three 750L cascading ASME steel tanks, plus 4500 gallon liquid storage tank. Can fuel 17-20 cars/day.	Vehicles operated by member technicians and engineers Can deliver H2 to vehicle at 3600 and 5000 psi under 4 minutes.	
South Windsor, Connecticut	Compress. H2	UTC Power's South Windsor Campus Hydrogen Fueling Station	UTC Power, CT Transit, CT DOT, Greater Hartford Transit, Praxair, FTA, DOT	Opened March 2007	Gaseous Hydrogen at 5000 psi – The renewably-generated hydrogen is produced and liquefied using hydropower derived from the Praxair Niagara Falls Facility.	Used regularly by CT Transit to refuel their fuel cell demonstration bus.	
Wallingford, Connecticut		Proton Energy Systems Hydrogen Fueling Station	Proton Energy Systems		Uses Proton's PEM electrolyzer.	The station will be used by CTTransit for an upcoming hydrogen bus demonstration that will begin Fall 2006.	
Washington, DC	LH2 & Compress. H2	Shell's Benning Road Station	General Motors Corp., Shell Hydrogen, Air Products and Chemicals, Inc.	Opened November 2004	Gaseous and liquid hydrogen refueling. Integration of retail hydrogen and retail gasoline sales. APCI Series 200 H2 fueling station with 350 and 700 bar refueling and LH2 dispensing supplied via underground storage tank. Safety devices such as below-mount dispenser shear valves and liquid hydrogen hose break-away.	US's first H2 pump at a Shell retail gas station. Will support a GM fleet of 6 H2 FCVs. Also first station in a potential Washington, D.C.-to-New York "hydrogen corridor".	
Orlando, Florida		Progress Energy ChevronTexaco Hydrogen Station near Orlando International Airport hydrogen station	Progress Energy Florida, the State of Florida, Ford Motor Company, Chevron Corporation	Opened May 2006	Air Products Series 300 fueling station. Uses H2Ge system to convert natural gas into hydrogen Designed to support a fleet of two baggage carriers. Generation capacity of <16 gge/day.	Fuels Ford V-10, E-450 hydrogen-powered shuttle buses transporting visitors at the Progress Energy site near the Orlando International Airport.	
Oviedo, Florida		Jamestown Hydrogen Fueling Station	Progress Energy, Ford, BP and the Florida Dept. of Environmental Protection	Opened December 2007	Air Products Series 200 fueling station supplied by a PEM electrolysis unit. Pdc compressor. Generation capacity of less than <20	Located at Progress Energy's Jamestown Operations Center. Designed to support a fleet of five FC vehicles driven by Progress Energy	



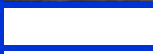
					gge/day.	staffers, and Florida's Dept. of Env. Protection park rangers and field inspectors.	
Honolulu, Hawaii		Hickam AFB hydrogen station	HydraFLX Systems LLC, USAF	Opened December 2006	Uses a HydraFLX system - generates H2 from water in a flexible pressure management process	Will fuel buses, tow-tractors, vans, sedans and ground support equipment. Deployable without the need for H2 infrastructure or pipelines.	
Honolulu, Hawaii	Compress. H2	Hickam AFB mobile hydrogen station	HCATT, Hydrogenics, Stuart Energy	Opened February 2004	Three primary PODs, H2 Fuel Processor, two Teledyne Energy Systems HMX 200 electrolyzers, 50kg/day, H2 Pressure Management - HydraFLX compression system; JP8 /diesel powered, up to 5000psi, 9 Dynetek composite tanks; stores at 5000psi. Two additional PODs provide Power Control and Water for electrolysis; MEP 9 Generator used for deployment.	Modular, deployable hydrogen production and fueling station, designed and developed by HydraFLX Systems, composed of Packaged Operating modules (PODs), which are crush proof-designed carbon steel packages for military or commercial transport.	
Chicago, Illinois	Liquid to Compress. H2 at station	Chicago Transit Authority's Chicago/Pulaski Avenue Garage Hydrogen Station	Air Products and Chemicals, Inc., Chicago Transit Authority, Ballard Power Systems	March 1998 – February 2000	APCI delivered LH2. • H2 receiving and long-term storage system to receive and store LH2 (150 psi), vaporize LH2 to create gaseous H2 (3600 psi), and compress and store compressed H2 for fueling operations.	Provided H2 for three Ballard fuel cell buses used in a revenue service demonstration.	
Des Plaines, Illinois	Compress. H2	GTI hydrogen fueling station	GTI, US DoE	Opened April 2007	The H2 station can produce H2 from natural gas, ethanol, or electrolysis of water.	Located at GTI's headquarters. Publicly-accessible by arrangement. Select credit cards accepted.	
Crane, Indiana	Compress. H2	Naval Surface Warfare Center Hydrogen Station	US Navy, Hydrogenics	Delivered March 2004	Hydrogenics PEM HyLYZER electrolyzer refueler. Can produce and dispense 2.0 kg of compressed H2 gas/day.	Located at Naval Surface Warfare Center - Crane Division Test Center. Installed at NAVSEA's showcase test facility	
Ann Arbor, Michigan	LH2 to Compress. H2	EPA National Vehicle and Fuel Emissions Lab hydrogen station	EPA, DaimlerChrysler, UPS, Air Products and Chemicals, Inc.	Opened 2004	Series 200 APCI H2 station. Pdc compressor. Dispenses 350 bar gaseous H2. Stores up to 1,500 gallons of LH2.	Supports a fleet of DaimlerChrysler FCVs used by UPS located at EPA's NVFEL.	
Dearborn, Michigan	Liquid H2 & Liquid to Compress. H2 at Station	Ford's Sustainable Mobility Transportation Lab hydrogen Station	Ford Motor Co., Air Products and Chemicals, Inc.	Opened 1999	APCI delivered H2	First filling station that provided liquid and gaseous H2.	
Detroit, Michigan		NextEnergy Center hydrogen station	NextEnergy, BP, APCI, Albert Kahn Assoc., DMA Technical Services, Praxair, REB Research and Consulting, DaimlerChrysler	Opened October 2006	Uses Air Products' Series 200 fueling technology. Pdc compressor. Can store 50 kg H2 and dispense 20 to 40 kg H2/day.	Located in NextEnergy's Microgrid Power Pavilion. Will initially fuel a DaimlerChrysler A Class FCV used at Wayne State Univ. Eventually, station will use H2 produced onsite by different technologies for DaimlerChrysler FC vehicles.	
Milford, Michigan	Compress. H2	General Motors Milford Proving Ground hydrogen station	APCI, GM	Opened in 2004	APCI Series 200 H2 fueling station with 350 and 700 bar gaseous dispensing. Pdc compressor.		
Romeo, Michigan		Ford Motor Company Proving Grounds	APCI	Opened in 2003	APCI Series 100 H2 fueling station. Pdc compressor.		
Selfridge, Michigan		Chevron Hydrogen Energy Station	Chevron Hydrogen, U.S. DOE, U.S. DOD, Hyundai Kia Motor Company, UTC Power	Opened in 2007	H2 produced onsite from natural gas, using steam methane reforming. Produces 80 kgs gaseous H2/day, pressure of 5000 psi. Can fuel for up to 20 fuel cell vehicles/day.	Located at the Selfridge Air National Guard Base. Fuels Hyundai Kia FC vehicles. Limited access.	
Southfield, Michigan	Compress. H2	DTE Hydrogen Technology Park Station	DTE Energy, Stuart Energy Systems, BP, DaimlerChrysler, DoE	Opened October 2004	Stuart Energy Station electrolyzer, Pdc Machines compressor. Can produce 100,000 kW/hrs of electricity/yr (is fed back into the grid system at peak periods or can fuel several fuel cell vehicles/day). Storage capacity of 140kg. Can produce 30 Nm3h (65 kg/day) of hydrogen at 6000 psi to vehicles. 5,000 psig (345 barg) (nominal) H2 Dispense..	Fuels DaimlerChrysler FCVs.	
Taylor, Michigan	Compress. H2	City of Taylor hydrogen station	Ford Motor Company, BP, City of Taylor, US DoE	Opened October 2006	Pdc compressor.	Located at the Taylor Department of Public Works. Supports four H2-powered Ford Focus FC vehicles: three in the Fire Department and one in the DPW.	
Rolla, Missouri	Compress. H2	University of Missouri, Rolla mobile hydrogen station	University of Missouri-Rolla, U.S. DOT, National University Transportation Center,	Opened in 2007	Uses APCI mobile H2 fueler.	Installed at the HyPoint Industrial Park, fuels two Ford E-450 H2-powered shuttle buses for the campus. Plans for permanent H2	














			U.S. Air Force Research Laboratory and the Defense Logistics Agency			fueling station being finalized for the installation in St. Robert by 2008. After station is completed, will provide fuel for a commuter service for Fort Leonard Wood employees along Interstate 44 corridor.	
Las Vegas, Nevada		Las Vegas Valley Water District's main campus hydrogen station	Las Vegas Valley Water District, UNLV Research Foundation, US DoE	Opened April 2007	Air Products Series q00 fueling station supplied by a PEM electrolysis unit. H2 produced onsite using solar-generated electricity. Pdc compressor.	The district will have two small H2-powered trucks and Las Vegas will be adding eight trucks or shuttle buses that will use H2 or a H2/natural gas blend.	
Las Vegas, Nevada	Compress. H2, LH2	Las Vegas Energy Station	Air Products, Plug Power, City of Las Vegas, DoE	Opened August 2002	2002-Onsite H2 reforming of natural gas with LH2 backup. In 2004 added Series 100 H2 fueling station supplied by 50 kW PEM electrolyzer. A portion of the power delivered by solar cells. H2/CNG blends & pure H2 vehicle dispensers.	Fuels vehicles (two Honda FC cars and four trucks using a H2/natural gas blend) and a PEM fuel cell that provides electrical energy to the Las Vegas grid.	
Albany, New York		Harriman State Office campus hydrogen station	Organizations Involved: Honda, Air Products, Plug Power, NY State Energy Research and Development Authority (NYSERDA), Homeland Energy	Opened in 2006	Uses Air Product's HF-150 mobile refueler	Serves two Honda FCXs leased by NY state.	
Latham, New York	Compress. H2	Home Energy Station	Honda R&D Americas, Plug Power	Opened November 2004	Home Energy Station II. H2 derived from natural gas. Can fuel one car/day.	Developed by Honda R&D Americas and located at Plug Power's corporate headquarters. Will fuel Honda FCX FC cars on public roads in the Northeastern United States.	
White Plains, New York	Compress. H2	Shell Hydrogen Station	City of White Plains, Shell Hydrogen, General Motors	Opened November 2007	H2 manufactured and stored (up to 30 kg gaseous H2) onsite - 350 bar. H2 from electrolysis of water using CO2-free hydropower from the New York Power Authority. Uses Distributed Energy Systems Corp.'s FuelGen onsite H2 generation system & Air Products' Series 200H2 fueling technology with PEM electrolysis unit. Uses Pdc compressor.	Commercial fueling station located at the city's public works garage. NYSERDA covering 2/3 of cost and Shell 1/3 of costs. Will serve GM Project Driveway Chevy Equinox vehicles.	
Charlotte, North Carolina	Compress. H2	John Deere Southeast Engineering Center hydrogen station	APCI, John Deere, Hydrogenics	Opened in 2002	APCI electrolyzer Dispenses at 350 bar.	Provides H2 for FC-powered forklift. Received a grant from Sustainable Development Technology Canada (SDTC) to develop, demonstrate and pre-commercialize fuel-cell powered forklifts.	
Columbus, Ohio		Ohio State University's H2 station	Praxair, Ohio State University, Honda	Opened May 2006	H2 delivered by Praxair. May produce H2 onsite in the future.	Station built by Ohio State's Center for Automotive Research. Ford has loaned a Focus FCHV to the Center.	
University Park, Pennsylvania	Compress. H2	Penn State/Air Products Hydrogen Station	DOE, Air Products and Chemicals, Inc., Penn State	Opened Fall 2004	Air Products Series 300 H2 and HCNG fueling station, on-site reforming of natural gas. LH2 backup. Commercial station project. Refuel up to 7000 psi, uses Pdc Machines compressor.	Fuels Penn State experimental fuel cell vehicle (pure H2) and utility van (H2 blend). Also fuels a Centre Area Transportation Authority bus (H2 blend).	
Aiken, South Carolina		Center for Hydrogen Research (CHR) hydrogen station	Center for Hydrogen Research, eTec	Opened February 2008		Provides a permanent source of hydrogen for CHR's H2 ICE Silverado truck and other hydrogen powered vehicles. Current plans are to keep the temporary station at the CHR until a more accessible location at Sage Mill Industrial Park on I-20 is constructed.	
Burlington, Vermont	Compress. H2	EVermont hydrogen station	EVermont, Northern Power Systems, Proton Energy Systems, APCI, Burlington Dept. of Public Works, Burlington Electric Department, U.S. DOE	Opened July 2006	H2 produced by wind-powered PEM electrolysis (Proton HOGEN H Series electrolyzer-12 kg/day, 40 kW at peak production capacity) with a combination of electrochemical and mechanical compression for on-site storage at 6,000 psi in high-pressure cylinders. Uses Pdc compressor.	Will power a H2-powered Toyota Prius.	
Ft. Belvoir, Virginia	Compress. H2	Ft. Belvoir hydrogen station	GM, DoD	Opened in 2004	APCI Series 100 hydrogen fueling station supplied by gaseous H2. Pdc compressor.	Supports a GM FC vehicle.	
Perth, Australia	Compress. H2	Sustainable Transport Energy for Perth (STEP) project refueling station	Western Australian Conservation Council, DaimlerChrysler, BP, Path Transit	Opened in 2004	H2 gas produced at BP's refinery in Kwinana from crude oil/natural gas refining. Delivered to Perth site and compressed.	Supported demonstration of 3 fuel cell buses in revenue service.	
Graz, Austria	LH2 and CGH2	Hydrogen Center Austria (HyCentA) hydrogen refueling station	Graz University of Technology, Joanneum Research, JR, Austrian Research Centers GmbH-ARC, Magna Steyr, MAGNA, OMV, AVL, FVT, SIGW.	Opened in 2005	Vacuum isolated tank for 17.600 liters of liquid H2 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 hydrogen (CGH2 at 400 bar).	Located on grounds of Graz University.	














Leuven, Belgium	Compress. H2, LNG & LCNG	H2, LNG and LCNG Fueling Station	NexBen Fueling, Citseny	Opened in 2003	Uses NexGen equipment.	Europe's first combined LNG, and liquid compressed natural gas/LCNG and hydrogen fueling station.	
Oostmalle, Belgium	Liquid H2	H2 station for Belgian Bus Demonstration	Messer Griesheim GmbH	Opened in 1994	LH ₂ storage system of 125 L, an electric LH ₂ evaporation system as well as all necessary connecting supply infrastructure and relevant control and safety components.	Station designed, fabricated and integrated by Messer Griesheim GmbH.	
Sao Paolo, Brazil	Compress. H2	Sao Paulo hydrogen bus fueling station	EPRI International, Hydrogenics, Petrobras	Opened in November 2007	Uses Hydrogenics' electrolyzer, compression, storage and dispenser modules. H2 produced by electrolysis of water.	Located in the Sao Paulo EMTU bus garage to fuel a small fleet of FC buses that operate in Sao Paolo and Sao Mateus,	
Ottawa, Canada		Natural Resources Canada Booth Street campus H2 station	Industry Canada, Ford Canada, Air Liquide, Natural Resources Canada, Canadian Transportation Fuel Cell Alliance	Opened October 2007		Supports 3 H2-powered buses operated by the Senate of Canada. Part of the "Hydrogen on the Hill" project.	
Mississauga, Canada	Compress. H2	Stuart Energy Hydrogen Energy Station	Stuart Energy (bought by Hydrogenics)	Opened February 2003	Electrolysis using Vandenberg Inorganic Membrane Electrolysis Technology(Vandenberg IMET®)	First electrolytic Stuart Energy Station for both vehicle fueling and back-up power generation.	
Montreal, Canada	H2/Natural Gas blend	STCUM H2/Natural Gas transit refueling station	Hydrogenics, STCUM (Montreal Transit Company)	Operated during 1994	Station provided blend of H2 and natural gas. Electrolytic H2 generation and compression to 34.5Mpa and 1400scf/h using a Stuart Energy Electrolyzer.	Supported two buses in revenue service. Station operated at 100% reliability.	
Surrey, Canada	Compress. H2 & H2/Natural Gas blend	PowerTech Station	PowerTech Labs, BC Hydro, Stuart Energy Systems and Dynetek Industries	350 bar station opened 2001, 700 bar upgrade in 2002	HySTAT-A refueler. Delivers up to 700-bar/ 10,000-psi gaseous H2.	CH2IP program (Compressed H2 Infrastructure Program). It now supplies H2 as well as a blend of H2/natural gas to a variety of vehicles. Provides H2 fuel for Vancouver Fuel Cell Vehicle Program (Ford Focus FCV demonstration).	
Toronto, Canada	Compress. H2	Toronto's Hydrogen Village – Mobile Refueler project	Hydrogenics, Exhibition Place, City of Toronto, h2ea, Canadian Transportation Fuel Cell Alliance	Opened August 2004	Uses Hydrogenics 140 kW PEM Hydrolyzer Electrolyzer to produce H2 from wind power. Can produce 65 kg/day of H2, enough H2 to power 20 vehicles/day.	Toronto's 1 st public hydrogen refueling station. Used to fuel H2-powered John Deere work vehicle, a forklift and a GEM "neighborhood" vehicle used at the Hydrogen Village.	
Toronto, Canada	Compress. H2	Purolator 's West Toronto H2 refueling facility	Hydrogenics, Canadian Transportation Fuel Cell Alliance, City of Toronto, h2ea, Purolator	Opened May 2005	Hydrogenics PEM Hydrolyzer refueler with on-site H2 production, storage and dispensing capabilities. Can produce 20 kg/day of H2.	Provides H2 fuel for Purolator hybrid fuel cell delivery vehicle used in a commercial fleet application.	
Toronto, Canada	Compress. H2	Toronto's Hydrogen Village - H2 Production and Refueler	Stuart Energy Systems, Canadian Transportation Fuel Cell Alliance	Dismantled March 2005	Indoor installation-alkaline electrolysis, carbon fiber cylinder H2 storage, H2 internal combustion engine generator sets. Outdoor vehicle refueling dispenser.	Provided 200 kW of zero-emission building backup power and vehicle refueling. The site was fully approved and operational but was dismantled after Stuart Energy merged with Hydrogenics.	
Vancouver, Canada	Compress. H2	Coast Mountain Hydrogen transit Refueler	Stuart Energy, Coast Mountain Transit, BC Hydro, Ballard Power Systems, Natural Resources Canada	Opened 1998, concluded 2000	HySTAT-A refueler. H2 production rate was 65Nm ³ /h, used 250L/h of H ₂ O, 250bar, normal time to fill overnight. Cascade system consisted of 80 H2 bottles to provide 900sm ³ , could be used to fuel or defuel the transit FC bus.	Supplied H2 to 3 fuel cell buses in revenue service.	
Vancouver, Canada	Compress. H2	Pacific Spirit Station	National Research Council Institute for FC Innovation, Canadian Transportation Fuel Cell Alliance, BOC Canada, General Hydrogen	Opened Spring 2005	H2 gas trailer-delivered. Station is ready to accommodate gas that may be generated on-site in the future.	Provides H2 fuel for Vancouver Fuel Cell Vehicle Program (Ford Focus FCV demonstration). Station is located at the University of British Columbia.	
Victoria, Canada	Compress. H2	Victoria Station	Stuart Energy, BC Transit, BOC Gases, CFTCA	Opened Spring 2006	Will utilize 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.	BOC and BC Hydro have constructed an anchor fuelling station at BC Transit's Langford facility near Victoria. Will be set-up to dispense fuel to support the Vancouver FC Vehicle Program's Ford FC vehicle.	
Beijing, China	Delivered Compress. H2	SinoHytec hydrogen station	SinoHytec, BP, GEF-UNDP, Ministry of Science and Technology, Beijing Municipal Government, BP, U.S. DoE, Beijing Tongfang Co, APCI	Temporary refueler opened November 2005, permanent station to be opened November 2006	Uses APCI's Air Products' Series 300 fueling technology and a Pdc compressor. Can supply 4,000 Nm ³ /day H2. In 2007 will produce synthesis gas H2 onsite from coal via steam and oxygen.	The 4,000 square meter station is located at Beijing Hydrogen Park (comprised of a R&D center, H2 refueling station, a FC vehicle garage and a maintenance workshop). Supports three FC buses and will fuel the H2 vehicle fleet for the 2008 Beijing Olympic Games.	
Beijing, China	Compress. H2	Beijing Hydrogen Fueling Station	GEF-UNDP, Ministry of Science and Technology, Beijing Municipal Government,	Temporary refueler opened November	H2 fuel delivered to refueler. BP will adopt a local electrolyzer after trucked-in system start-up. A steam methane reformer is planned in	Permanent station was delayed, infrastructure completed May 2006, station to be operational end of July 2006. In the meantime, BP and	

			BP, U.S. DoE, Beijing SinoHytec Limited, Beijing Tongfang Co.	2005, permanent station to open July 2006	2006.	Sinohytec Co. agreed to use a temporary refueling system, operable beginning November 2005	
Shanghai, China	Compress. H2	Anting Hydrogen station	Tongji University, Shell Hydrogen, government of Shanghai, Linde Group	Opened in November 2007	Uses a Pdc Machines compressor.	Located at International Automotive City in Anting, Shanghai. Will serve fuel cell cars and buses.	
Arhus, Denmark		Hydrogen station				Private station - fuels a service/industrial vehicle. Station is part of the Hydrogen Link Project.	
Herning, Denmark		Hydrogen station				Private station - fuels a service/industrial vehicle. Station is part of the Hydrogen Link Project.	
Holstebro, Denmark		Golf Club Stordalen hydrogen station				Private station - fuels a golf cart. Part of the Hydrogen Link West Denmark Project.	
Holstebro, Denmark		Danish Forest and Nature Agency hydrogen station				Private station - fuels a golf cart. Part of the Hydrogen Link West Denmark Project.	
Samsø, Denmark		Hydrogen station				Private station - fuels a service/industrial vehicle. Part of the Hydrogen Link Project.	
Sydney, Denmark	Compress. H2	Nordic Folkecentre hydrogen station			Onsite production of H2. The system consists of DC-power supply, electrolyser, H2 processing, medium and high-pressure storage and filling station for vehicles.	Private station - fuels an H2ICE Ford Focus. Part of the Hydrogen Link Project.	
Dunkerrque, France	H2/CNG blend	Althitude project hydrogen station	Gaz de France, The Urban Community of Dunkirk, Irisbus, Hydrogenics, GNVert, SDTE, Ineris, Air Liquide, H2 Developpement, DK Bus Marine, EGIM, CONNEX		Delivers Hythane (H2/CNG blend) at 20 MPa. H2 is produced on site by an electrolyzer and is compressed and stored. Pressurized H2 is mixed with natural gas present on the site. Fills 2 buses.	Part of project Althitude to demonstrate buses fuelled with a blend of natural gas and hydrogen in the cities of Dunkirk and Toulouse. Located at the DK' Bus Marine Facility.	
Sassenage, France	Compress. H2	Air Liquide Advanced Technology Division site test hydrogen station	Air Liquide, Axane Fuel Cell Systems	Opened in September 2002	Uses Air Liquide technology. The station is used to validate fast fill advanced algorithms. Dispensing capacity-120kg/day. Delivers compressed H2 at 35 MPa H2 supply-tube trailer 200 & 420 bar.	Located at Axane Fuel Cell Systems facility (Axane a subsidiary of Air Liquide).	
Sassenage, France	Compress. H2 & CGH2	Air Liquide Advanced Technology Division mobile hydrogen station	Air Liquide	Opened in 2004	Uses Air Liquide technology. Mobile filling station, up to 35kg/day. Dispensing capacity-up to 35 MPa. H2 supply-tube trailers or cylinders-350 bar.	In operation. Station to be rented to customers.	
Sassenage, France	Compress. H2 & CGH2	Air Liquide mobile filling station	Air Liquide Fuels	Opened in 2006	Uses Air Liquide technology. Fast and cold fill capabilities at 35 and 70MPa up to 70kg/day. Organisations involved Compressed H2 and CGH2 at 35 MPa and 70 MPa. H2 supply-tube Trailer.H2 storage-450 bar and 850 bar. Dispensers-dual pressure.	In operation and available for rent	
Toulouse, France	H2/CNG blend	Althitude project hydrogen station	Gaz de France, GNVert, INERIS, EGIM, Irisbus, CONNEX, IMFT, SMTC-Tisséo, Tisséo Réseau Urbain, Air Products		Delivers Hythane (H2/CNG blend). natural gas reformer produces the H2, filling 3 buses. Uses Pdc compressor.	Part of project Althitude to demonstrate buses fuelled with a blend of natural gas and hydrogen in the cities of Dunkirk and Toulouse.	
Aachen, Germany		Ford Research Center hydrogen station		Opened in 2004		Supports Ford's H2ICE and FC hybrid car development.	
Barth, Germany	Compress. H2	WIV solar-hydrogen station	Wasserstoff-Initiative-Vorpommern (WIV), Proton Energy Systems, Wolters-Ostseebus GmbH	Opened in 2002	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. The Barth environmental site also incorporates solar panels for zero emission electricity generation.	Provides fuel for fuel cell powered bus.	
Berlin, Germany	Liquid & Compress. H2	Second Clean Energy Partnership Project Berlin Station	Aral, BMW, BVG, DaimlerChrysler, Ford, GM/Opel, Hydro, Linde, TOTAL and Vattenfall Europe	Opened March 2006	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.	Integrated into a conventional TOTAL service station in Heerstraße. Will support HyFleet/CUTE H2 vehicle projects.	
Berlin, Germany	H2 & LH2 & Convent. fuels	First Clean Energy Partnership Project Berlin Station	Aral, BMW, BVG, DaimlerChrysler, Ford, GM/Opel, Hydro, Linde, TOTAL and Vattenfall Europe	Opened November 2004	Norsk Hydro electrolyzer. H2 production with renewable energy.	World's 1 st public hydrogen gas station located at Aral station in Messedam. Supports 16 H2-powered vehicles from BMW, Ford, GM/Opel & DaimlerChrysler.	




Berlin, Germany	Liquid & Compress. H2	TOTAL-BVG H2 fueling station	TotalFinaElf, BVG, Linde, MAN and Opel: Hydrogen Competence Center Berlin	Opened October 2002	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.	1 st permanent hydrogen 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.	
Dresden, Germany	Compress. H2	HyTra Mobile Hydrogen Fueling Unit	Fraunhofer Institute for Transportation and Infrastructure Systems, TÜV Industrie Service GmbH, Proton Energy Systems, Wystrach GmbH, GreenField, CHRIST AG, Sempa Systems GmbH, WEH GmbH		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	HyTra was developed as an affordable and highly flexible alternative to stationary hydrogen production facilities.	
Dudenhofen, Germany	Liquid H2 & Compress. H2	Opel Test Center Hydrogen Station	Opel, Linde	Opened in 2003	Uses Linde LH2 and Compress. H2 refueling technology. Can refuel Compress. H2 at 10,000 psi (700 bar). LH2 and compress. H2 delivered by Linde.	Created for the Adam Opel AG vehicle.	
Erlangen and Munich, Germany	Mobile Liquid H2	Mobile H2 Station	Linde, SWM	April 1996 – August 1998 (ICE) Oct. 2000 – April 2001 (fuel cell)	Linde AG supplied LH2 from their large central H2 production & Liquefaction plant and transported it to the Linde mobile fueling station.	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 then moved to SWM bus yard in Munich (4-97).	
Frankfurt, Germany	Compress. and liquid H2	MultiEnergy station at Höchst Industrial Park	European Commission, companies and research establishments from Italy, Sweden, Denmark and Germany, Linde	Opened November 2006	H2 produced as byproduct of a Höchst Industry Park chemical plant, connected by 2 km long pipe to H2 fueling station. Will offer 350 and 700 bar dispensers.	Integrated into a multi-fuel public service station. Part of the Zero Region H2 vehicle demonstration project. Will support DaimlerChrysler F-Cell vehicles.	
Hamburg, Germany	Compress. H2	Mobile Linde hydrogen station at Hamburg's airport	Hamburg Regional Initiative for Hydrogen and Fuel Cell Technology, Hamburg Airport, Wasserstoffgesellschaft Hamburg, The Linde Group	Opened May 2007	Fueling station components are built into 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.	The H2 station will fuel two fuel cell tractors and a people-carrier at the airport.	
Hamburg, Germany	Compress. H2	W.E.I.T. phase I H2 project fueling station	Gastechnologie and Messer Griesheim	Opened in 1999; project completed	On-site electrolysis using 'Green' electricity and 100% fuel cell powered vehicles is the current goal/direction of this project. Delivered Compressed H2 by m-tec.	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.. Station has been dismantled	
Hamburg, Germany	Compress. H2	W.E.I.T. Phase II H2 project fueling station	Norsk Hydro, Hamburger Hochbahn, HEW, BP/Aral, DaimlerChrysler/ Evobus	Opened September 2003	On-site H2 production by water electrolysis from renewable energy source (wind power) – Norsk Hydro.	Filling station and production facilities located at the bus depot, supports 3 CUTE project FC buses. This is the 2 nd phase of the W.E.I.T. project, which will incorporate the Hamburg CUTE project.	
Isenbüttel, Germany	Compress. H2	Volkswagen Technology Center Solar-H2 fueling station	Solvis, Volkswagen AG	Opened June 2005	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.	Produces fuel needed to run the fuel cell vehicles and test beds developed there to be produced on location using energy from sunlight.	
Kiel, Germany		H2 portable filling station, Kiel Shipyards	Air Products and Chemicals, Inc., Howaldtwerke-Deutsche Werft	Completed in 2002	APCI uses cryogenic H2 gas and liquid compressor technology. Pdc Machines compressor	World's 1 st installed complete hydrogen infrastructure in a non-nuclear H2-driven Class 212 submarine used by Germany Navy.	
Kirchheim/ Tech Nabern, Germany	LH2 and LH2 to Compress. H2	DaimlerChrysler Fuel Cell Research Facility Refueling Station	Linde, DaimlerChrysler	Opened in 1998	Uses Linde H2 refueling technology. LH2 delivered by Linde.	Supports DaimlerChrysler FC vehicles	
Lohhof, Germany	LH2 & CGH2	Linde Group Hydrogen Research Center hydrogen fueling station	Linde Group	Opened in 2006	Linde expects to refuel around 10 vehicles per day. Supplies both liquid hydrogen (LH2) and compressed gaseous hydrogen (CGH2).	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 fueller.	
Munich, Germany	LH2	BMW H2 station	BMW, Linde	Opened in 1989	Uses Linde technology.	Supports BMW H2 research vehicles.	

Munich, Germany	Compress. H2 & Liquid H2 & Liquid to Compress. H2	Munich Airport Vehicle Project H2 fueling station	Bavaria Ministry of Economics, Transportation and Technology, Linde, BP/Aral,GHW, BMW	Opened May 1999	Uses Linde H2 refueling technology. LH2 and compressed H2 delivered by Linde. LH2 road tank cars' fueling is done by a tank-robot.	Public Accessible. BP's Aral subsidiary provides the infrastructure to fuel air-side vehicles at Munich airport. Liquid H2 for vehicles and gaseous high pressure-H2 provided for the shuttle buses.	
Munich, Germany	Liquid H2	TOTAL hydrogen fueling station	BMW Group, TOTAL	Opened in 2007	Integrated in a regular TOTAL filling station. Underground storage of liquid H2. The station will also offer gas and diesel fuel. Can fuel buses and cars.	Located in Detmoldstraße, near the BMW Research and Innovation Center.	
Neckarsulm, Germany		Audi Research Center hydrogen station	Audi, Air Products and Chemicals		Uses Air Products Series 100 fueler.	Supports Audi H2 vehicles.	
Neunberg vorm Wald, Germany	Liquid H2	Solar Hydrogen Bavaria (SWB) H2 Station	Bayernwerk AG, Siemens, Linde, MBB (now DASA), BMW	Opened in late 1980's-completed in 1999	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).	Solar hydrogen project. Manual coupling of filling line to vehicle, program-controlled fuel tank filling. Capable of refueling cars in immediate succession.	
Nürnberg, Germany	Compress. H2	Mobile hydrogen station	Linde, LBST, VAG, MAN	2000-2001	Onsite delivery of LH2 in cryocontainers, onsite storage in cryocontainer, conditioning and LH2 dispensing to LH2 fueled vehicles. Integrated into a conventional standard filling station layout.	Supplied H2 for fuel cell bus demonstration in Erlangen, Nürnberg and Furth. Bus drivers performed refueling after the filling equipment manufacturer (Linde) instructed the drivers in the system's operation.	
Oberstdorf, Germany	Compress. H2	Mobile H2 station	Linde, government of Bavaria state. Town of Oberstdorf	1999-2001	Linde AG supplied LH2 from central H2 production facility.	Supplied H2 for Neoplan fuel cell bus demonstration	
Sindelfingen, Germany	Compress. H2	DaimlerChrysler Company Refueling Station	Linde, DaimlerChrysler, BGA Garn	Opened in 2002	LH2 delivered by Linde. Delivers CGH2 @ 35 MPa and 70 MPa	Supports DaimlerChrysler FC vehicles	
Stuttgart, Germany	Compress. H2	CUTE Bus Demonstration and H2 fueling station	BP, NWS, SSB Stuttgart	Opened November 2003	On-site natural gas steam reformation. Additional H2 delivered to site.	Located at the bus depot. Station supports 3 fuel cell buses.	
Wolfsburg, Germany	Liquid H2	Volkswagen H2 fueling station				On-site fueling for VW H2 vehicles.	
Greece	Compress. H2	Center for Renewable Energy Sources (CRES) Wind Energy Park hydrogen station	ROKAS (Greece), FIT (Cyprus), Planet (Germany), INABENSA (Spain)	Opened November 2005	25-kW electrolysis unit connected to 500 kW wind turbine. Electrolysis unit operates at variable power input, according to the available wind. 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.	First hydrogen refueling station in Greece, located near Athens. Developed and tested in the framework of European Commission FP5 project titled "RES2H2". Fueled Tropical S.A. 'sH2 City Car at grand opening.	
Hong Kong	Compress. H2	Hydrogen fueling station	Cheung Kong Infrastructure Holdings, Ltd., Stuart Energy Systems	Opened in late 2004	Stuart Energy Station for vehicle fueling and power (SES-fp).	Will produce H2 for vehicles and can additionally provide back-up power for building. Supports H2-powered buses with modified Ford engines.	
Reykjavik, Iceland	Compress. H2	ECTOS Bus Demonstration H2 Station	VistOrka, DaimlerChrysler, Shell Hydrogen	Opened April 2003	On-site hydrogen from water electrolysis (geothermal generation and hydraulic power generation)-Norsk Hydro.	World's first commercial H2 station. Supports 3 DaimlerChrysler fuel cell buses and 10 Toyota Prius H2 vehicles.	
Faridabad, India	HCNG blend & pure H2	Hydrogen Fueling Station at Indian Oil Corporation Ltd's R&D Center	Indian Oil Corporation, Ltd., Air Products and Chemicals, Inc., INOX Air Products	Opened October 2005	Uses APCI's HCNG mixing unit and dual dispensing unit that can fuel vehicles with either a HCNG blend or pureH2.	Station owned by Indian Oil Corporation. First phase of India's development of its hydrogen economy.	
Collesalvetti (near Livorno), Italy		AGIP Multienergy Station	Eni, AGIP	Opened July 2006	H2 produced by an electrolyzer powered by PV panels mounted on the station's roof (20 kW). Three wind generators (20 kW each) and 20 kW cogeneration plant cover the complete energy needs of the station.	Serves three H2ICE vehicles (two FIAT Multipla's and one FIAT Doblo) will use the H2 station.	
Mantova, Italy	Compress. H2, HCNG, CH4, LPG, low sulfur diesel, gasoline	AGIP MultiEnergy public service station	European Commission, companies and research establishments from Italy, Sweden, Denmark and Germany, Linde	Opened September 2007	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.	Part of the Zero Region H2 vehicle demonstration project. Will be integrated into a multi-fuel public service station (station is powered by solar panels). Will support a fleet of three fuel cell Fiat Pandas.	


Milan, Italy	Compress. H2 & Liquid H2	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	Opened September 2004	H2 production by natural gas reforming and H2 distribution facility for buses and cars (4 Fiat H2ICE Doblo and Multipla cars, also planned are 1 IRISbus FC bus, 2 BMW ICE).	Demonstration of H2 and fuel cell technologies applied to a syngas stream produced by an existing reformer plan. Includes H2 auto fueling station for fleet of H2 cars.	
Pontadera, Italy	Compress. H2	PIEL hydrogen station	PIEL, ILT Technologie s.r.l., Fiat	Opened in 2003	H2 produced by onsite electrolysis.	Fuels Fiat Multipla hydrogen demonstrator vehicles.	
Torino, Italy			City of Turin, Turinese Transport Group, Irisbus, Sapio, Ansaldo Ricerche, CVA, Enea		H2 produced by 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	Liquid H2 & Compress. H2	Ariake Hydrogen Station - Japan Hydrogen and Fuel Cell (JHFC) Demonstration Project	Iwatani International Corporation; Tokyo Metropolitan Government, Showa Shell Sekiyu KK	Opened in 2002	Uses Linde LH2 refueling technology. LH2 from Iwatani and high pressure compressed H2 from Linde Hydrogen Cryo-Compressor. Dispenses compress. H2 at 25 and 35 MPa.	Tokyo's first hydrogen station.	
Funabashi, Japan	Compress. H2	JHFC Funabashi Hydrogen Station	Japan Energy Corp, Taiyo Nippon Sanso Corporation, Babcock-Hitachi K.K.		Mobile high-pressure hydrogen station. Presently operating in Funabashi as stationary use. Production capacity-2.7 kg/h. Storage-26kg	Can fuel two consecutive passenger cars.	
Hadano, Japan	Compress. H2	Hadano Hydrogen Station - JHFC Demonstration Project	Idemitsu Kosan Co. Ltd.	Opened 2003-FY2005	H2 produced from kerosene-reforming. Production capacity: 50Nm3/h. Pressure-25/35MPa, Consecutive Fueling Capability-Five passenger cars or one bus	The world's first kerosene-reform H2 fueling facility, using originally-developed desulfurization technology. The Hadano hydrogen station was transferred to the Ichihara hydrogen station.	
Hiroshima, Japan	Compress. H2	Mazda Hydrogen Fueling Station at Ujina section of Hiroshima Head Office plant	Mazda	Opened February 2005	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. Fuels up to 10 vehicles/day.	Supplies H2 for H2 rotary engine vehicles and H2 engine testing facilities, and has the capacity to fill up to approximately ten H2-powered cars per day.	
Ichihara, Japan		Ichihara Hydrogen Station	Idemitsu Kosan Co. Ltd.		H2 produced from kerosene-reforming. Production capacity: 50Nm3/h. Pressure-25/35MPa, Consecutive Fueling Capability-Five passenger cars or one bus	The Hadano hydrogen station was transferred to the Ichihara hydrogen station.	
Kasumigaseki, Japan		Kasumiaseki Hydrogen Station	METI, Taiyo Nippon Sanso Corporation		Mobile H2 station. Production capacity 50Nm3/h. Two consecutive passenger cars can be fueled. Dispenses at 25 and 35 MPa	Located at Ministry of Economy, Trade and Industry. On weekdays, components are carried to premises and assembled & disassembled in the evening and moved off premises. All devices (H2 cylinders, dispensers, etc.) are combined into single unit for easy transport.	
Kansai, Japan	Compress. H2	Kansai Airport Hydrogen Station	Kansai Electric Power Co, Iwatani International Corp.		Small satellite H2 station. Liquid H2 delivered w/compressed hydrogen storage (297Nm³, 39.5MPa),	Two consecutive vehicles can be fully fueled.	
Kawasaki, Japan	Compress. H2	Kawasaki Hydrogen Station - JHFC Demonstration Project	Japan Air Gases Ltd, Ministry of Economy, Trade and Industry, Air Liquide Japan	Opened in 2002	Methanol reformation.H2 production-50Nm3/h. Dispenses at 25 and 35 MPa.	First station to supply hydrogen by methanol reforming. H2 for one passenger car can be produced in about 40 minutes. Five passenger cars or one bus can be fueled at a time.	
Nagoya, Japan		Central Japan International Airport (Centrair) Hydrogen Station - JHFC Demonstration Project	Centrair, Toho Gas Co., Ltd., Taiyo Nippon Sanso Corporation, Nippon Steel Corporation	Opened July 2006	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 the domestic hybrid-type hydrogen station. Replaces the Expo/Seto-Minami South H2 Station. The station has largest H2 supply capacity in Japan (100kg/day).	H2 station services Toyota and Hino Motors' FCHV-BUS, which operated on public routes in March 2006 around Centrair and renewed operation in July 2006, including expanded service to and within the airport.	
Nagoya, Japan	Compress. H2	Toho Gas Company Semi-Commercial H2 Station	Toho Gas	Opened October 2002	Natural gas reforming. H2 production capacity: 40Nm3/h. H2 supply pressure: 25/35MPa, H2 purity: 99.99%, H2 storage: 300Nm3 at 40MPa.	Provides H2 for vehicles owned by Aichi Prefectural government and Nagoya city along with Toho's vehicles and for tests conducted by local automakers.	
Nagoya, Japan	Compress. H2	Expo 2005 Aichi Japan, Seto-Minami South Hydrogen Station	Toho Gas Co., Ltd Taiyo Nippon Sanso Corp.	Operated Mar-Sep 2005	Steam reforming and PSA refinement of natural gas. The largest scale domestic hydrogen station (H2 supply capacity 1,100Nm3/day). Uses Pdc Machines compressor.	First hybrid-type hydrogen refueling station in Japan, adopting natural gas reforming and coke oven gas byproduct H2.	

Nagoya, Japan	Compress. H2	The Expo 2005 Aichi Japan, Seto-Kita North Hydrogen Station	Nippon Steel, Taiyo Nippon Sanso Corporation	Operated Mar-Sep 2005	Off-site H2 station that conveys by trailer byproduct H2, obtained by refining coke oven gas generated at Nippon Steel's Nagoya steel mill. Uses Pdc Machines compressor.	Quick refilling with controlled rise in fuel canister temperature is possible for fuel cell buses.	
Osaka, Japan	Compress. H2	WE-NET Hydrogen Refueling Station		Opened February 2002	H2 produced by natural gas reforming.	Japan's first H2 station. PEMFC vehicle demonstration by WE-NET.	
Ome, Japan	Compress. H2	Ome Hydrogen Station	Babcock-Hitachi K.K., ENAA, Nippon Sanso Corp., QuestAir	Opened December 2003	Vehicle-mounted. Natural-gas reforming. H2 production rate 30Nm3/h. Two consecutive passenger cars can be fueled.	Vehicle-mounted H2 supply, can travel where needed.	
Sagamihara, Japan	Compress. H2	Sagamihara Station	Kurita Water Industries Ltd., Sinanen Co., Ltd., Itochu Enex Co., Ltd.	Opened in 2003	Receives H2 from trucks - a H2 generator and compressor are mounted as the mobile production facilities. Uses Pdc Machines compressor. H2 production by water electrolysis-30Nm3/h. Consists only of a gas storage unit and dispenser as the receiving station.	First station installed at an existing LP gas station supplying fuel to fleets of cabs and other low-pollution vehicles. Five passenger cars or one bus can be fueled at a time.	
Senju, Japan	Compress. H2	Senju Hydrogen Station – JHFC Demonstration Project	Tokyo Gas Co., Ltd., Taiyo Nippon Sanso Corporation, QuestAir	Opened in 2002	Steam reforming of LPG (mixed butane and propane) and PSA refinement. Uses Pdc Machines compressor. H2 production rate-50Nm3/h. Dispenses 25 and 35 MPa.	H2 sufficient for one passenger car can be produced in about 40 minutes.	
Takamatsu, Japan	Compress. H2	We-NET Hydrogen Refueling Station	Nippon Sanso Corporation	Opened February 2002	H2 produced by natural gas reforming using PEM electrolyzer, 30Nm3/hr. Dispenses 35MPaG and 25MPaG w/ fast fueling	PEMFC vehicle demonstration by WE-NET.	
Tokai, Japan	Compress. H2	Toho Gas Research Laboratory hydrogen station	Toho Gas Co.	Opened October 2002	H2 produced by natural gas reforming, capacity of 50 Nm3/hr.	Located at Toho Gas Co.'s research laboratory in Aichi Prefecture	
Tokyo, Japan	Compress. H2	Ministry of Economy, Trade and Industry mobile hydrogen station – JHFC Demonstration Project	Taiyo Nippon Sanso Corporation, Tokyo Gas, Senju		H2 source: off-site H2 cylinders. 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	Mobile station located at Ministry of Economy, Trade and Industry. Can supply H2 to vehicles which are outside the area covered by fixed H2 stations or temporarily back up a fixed H2 station.	
Tokyo, Japan	LH2 & LCGH2	Showa Shell Hydrogen Station – JHFC Demonstration Project	Iwatani Intl. Corp., Tokyo Metropolitan Government, Showa shell Sekiyu KK, Linde	Opened April 2003	Linde delivered the core components for liquid and gaseous H2.		
Yakushima, Japan		Yakushima Hydrogen Station	Kagoshima University, United Nations University, Toyohashi University of Technology and Kanagawa University, Honda, Yakushima Denko	Opened in 2004	PEM electrolyzer supplies Series 100E H2 fueller power from hydroelectric generator-100% renewable.	The Yakushima H2 Station research project for establishing a sustainable society in Yakushima. The station was constructed by the U J-R team on grounds next to a market – both owned and run by Yakushima Denko. Supplies fuel to a Honda FCX.	
Yokohama, Japan	Compress. H2	Yokohama-Asahi Hydrogen Station – JHFC Demonstration Project	Nippon Oil Corporation, Ministry of Economy, Trade and Industry	Opened in 2002	Naphtha reformation, uses Pdc Machines compressor. H2 production rate- 50Nm3/h. Dispenses 25 and 35 MPa.	H2 sufficient for one passenger car can be produced in about 40 minutes.	
Yokohama, Japan	Compress. H2	Yokohama-Daikoku Hydrogen Station (JHFC Park) – JHFC Demonstration Project	Cosmo Oil Co., Ltd., Ministry of Economy, Trade and Industry	Opened March 2003	Steam reforming of desulfurized-gas. Uses Pdc Machines compressor. H2 production-30Nm3/h. Dispenses 25 and 35 MPa.	H2 for one car can be produced in about 60 min. Five consecutive vehicles can be fueled (5 minutes/vehicle).	
Yokohama, Japan	Compress. H2	Yokohama-Tsurumi Hydrogen Station – JHFC Demonstration Project	Tsurumi Soda Co. Ltd. Iwatani International Corporation	Operated August 2002-FY2006	Byproduct H2 (brine electrolysis) produced off-site at Tsurumi Soda Co. Ltd. is fueled into fuel cell vehicles through a trailer.	Next to this station is a showroom and garage for fuel cell vehicles, managed by the Japan Automobile Research Institute.	
City of Luxembourg	Compress. H2	CUTE Bus Demonstration hydrogen fueling station	Shell Hydrogen, Air Liquide, Ville de Luxembourg VdL	Opened October 2003	Shell Hydrogen/Air Liquide delivered H2.	Station is located at Luxembourg's main bus depot. Supplies fuel to 3 DaimlerChrysler Citaro fuel cell buses.	






Amsterdam, The Netherlands	Compress. H2	CUTE Bus Demonstration and H2 fueling station	Shell Hydrogen, DaimlerChrysler, GVB, Dienst Milieu en Bouwtoezicht, HoekLoos, NOVEM, Nuon	Opened November 2003	Stuart Energy provided SES Hydrogen Generation Modules generate 60 Nm ³ /h of H2 (>120 kg/day). Uses IMET® powered water electrolyzer. Hoekloos (a Linde Co.) delivers compressed H2.	Located at the GVB bus station, supports three DaimlerChrysler Citaro fuel cell buses. Dispenses 40 kg of H2 in about 10 minutes.	
Petten, The Netherlands	Compress. H2	Energy Research Center (ECN) hydrogen station	ECN, Air Products	Opened October 2006	Uses Air Products' H2 filling station. H2 derived from natural gas. The station has a stock of about 1,600 litres (two 800-litre packages) stored at relatively low pressure (200 bar)	Will fuel ECN's H2 hydroGEM vehicle. It takes five to ten minutes to fill the HydroGEM's hydrogen tank.	
Grenland/Porsgrunn, Norway	Compress. H2	HyNor Grenland hydrogen station	Zero, Telemark Fylkeskommune, Miljøbil Grenland, Hogskolen I Telemark, GassTEK, Hydro	Opened June 2007	H2 produced from chlorine production. Compressor-4 to 500 bar. Capacity: 60 Nm ³ /h. HP storage-500 bar. Hydro's fuel dispenser filling time 1-2 min (cars)	Part of HyNor's Hydrogen Road between Oslo and Stavanger. Fuels 9 cars.	
Stavanger, Norway	Compress. H2, HCNG, Natural Gas	HyNor Stavanger hydrogen station	Stavanger Kommune, RF, Rogaland Fylkeskommune, Energiparken, Statoil, Lyse, Rogaland Taxi	Opened August 2006	H2 from natural gas-reforming, CO2 capture. Multiple fuels will be available: 700 bar H2, 350 bar H2, 200 bar HCNG, 200 bar NG. H2 to be transported by pipeline from industrial hydrogen plant in Rafnes.	Integrated in public filling station. Available 24/7. Will fuel a Mazda RX-8 Hydrogen RE vehicle. Other car and bus demonstrations being planned. Part of HyNor's Hydrogen Road between Oslo and Stavanger.	
Porto, Portugal	Compress. H2	CUTE Bus Demonstration and H2 fueling station	BP, Linde	Opened late 2003	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.	Filling station is installed at the bus depot. Supports 3 fuel cell buses.	
Singapore	Compress. H2	BP Singapore Hydrogen Fueling Station	BP, Air Liquide, SOXAL	Opened December 2005	On-site H2 production via electrolysis using technology by Singapore Oxygen Air Liquide (SOXAL). Uses Pdc Machines compressor.	World's first H2 facility designed to be a totally unmanned, stand alone operation. Supports DaimlerChrysler F-Cell FCVs. Part of SINERGY Project (Singapore Initiative in Energy Technology).	
Singapore	Compress. H2 & Convent. fuel	BP Singapore Hydrogen Fueling Station	Air Products and Chemicals Inc., BP, Singapore Econ. Dev. Board, Min. of Env. & Land Transport Auth., DaimlerChrysler	Opened July 2004	APCI Series 200 H2 fueling station supplied by gaseous hydrogen at a retail gas station. APCI electrolyzer, H2 reformed from natural gas. Uses Pdc Machines compressor. Supplies up to 70kg of compress. H2 per day (~35 vehicles per day).	Supports 6 DaimlerChrysler F-Cell FCVs. Located at a BP public fueling station. Part of SINERGY Project (Singapore Initiative in Energy Technology).	
Daejeon, South Korea	Compress. H2	Korean Gas Technology Corporation's (KOGAS) Korea Institute of Energy Research hydrogen station	QuestAir Technologies Inc., Hydrogenics	Opened August 2006	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.	The station will be capable of producing 65 kg/day, sufficient hydrogen to refuel approximately 20 fuel cell powered vehicles.	
Seoul, South Korea	Compress. H2	GS Caltex hydrogen station	MOCIE, Korea Energy Management Corporation, National RD&D Organization for Hydrogen & Fuel Cell	Opened in October 2007	H2 produced from naphtha at the station and is stored in a high-pressure chamber	Located on the campus of Yonsei University in Seoul's Shinchon neighborhood.	
Songdo, Incheon, South Korea	Compress. H2	KOGAS Tech R&D hydrogen station	KOGAS, MOCIE	Opened in 2007	H2 generated from natural gas, Hydrogenics reformer. Pressure Products compressor up to 5000 psig (350 bar).	Capable of fueling up to 20 FC vehicles.	
South Korea	Compress. H2	Hyundai Motor Company Environmental Technology Research Center H2 fueling station	Pressure Products Industries, Inc. & Doojin Corporation	Opened in 2001	The research facility has a 700 bar, 10,000 psi H2 fueling station. PPI two stage compressor, model 4V104068 designed for 6,000 psig.	Supports fuel cell vehicle research (Hyundai Santa Fe FCEV).	
Barcelona, Spain	Compress. H2	CUTE Bus Demonstration and H2 fueling station	BP, Transports Metropolitans de Barcelona (TMB)	Opened September 2003	On-site production-solar & grid-powered electrolysis. Stuart Energy SES H2 Generation Modules produce 60 Nm ³ /h of H2 (>120 kg/day). IMET® water electrolyzer, Linde High Booster Compressor System.	Filling station is installed at the TMB bus facilities. Supports 3 fuel cell buses.	
Madrid, Spain	Compress. H2	CUTE Bus Demonstration and CityCell Bus Demonstration H2 fueling station	Empresa Municipal de Transportes de Madrid (EMT), Air Liquide, Natural Gas-Repsol YPF	Opened April 2003	Steam reforming of natural gas. Uses Pdc Machines compressor.	Located at EMT bus facilities. Both bus projects share the H2 refueling facility.	
Malmö, Sweden	Compress. H2, H2CNG	Hydrogen station	Sydskraft, Stuart Energy Systems, Vandenborre, E.ON, Malmo Stad	Opened September 2003	Stuart Energy HESf electrolyzer uses energy from wind power Capacity 36 m ³ /h. Allows dual pressure dispensing. Dispenser incorporates H2 & natural gas mixing system. Generates 700 Nm ³ /day, enough for about 25 cars.	Sweden's first H2 station.. Serves buses running on hythane gas (8%). There are plans for more hythane vehicles and possible one H2 vehicle in a near future.	
Stockholm, Sweden	Compress. H2	CUTE Bus Demonstration and H2 fueling station	SL Stockholm, Busslink, Stad Stockholm, Fortum, Birka Energie	Opened November 2003	Stuart Energy's Hydrogen Energy Station for vehicle fueling, uses Pdc Machines compressor. Central Hydro-powered electrolysis, then transported to fueling site. H2 from certified "green" sources.	Supplies H2 fuel to 3 fuel cell buses.	


Basel, Switzerland	Gaseous H2	HyStation H2 fueling station	Messer/SL Gas, ESORO AG	Shown in October 2002	Used a cluster of pressurised tanks supplied the service station with up to 180 Nm3 of gaseous H2.	Showcased at the international Reach 2002 trade fair in Basel. Fueled ESORO's HyCar fuel cell car.	
Tao-Yuan, Taiwan		May-Chong Energy hydrogen station	ZTek	Opened in 2004	Uses ZTek's H2 station with a HPSR-2000H reformer.	H2 supply for FC vehicles.	
Birmingham, United Kingdom		University of Birmingham hydrogen station	University of Birmingham	Opened April 2008	Air Products Series 100 fuelling station. H2 fuel is produced from renewable energy.	The university will have a fleet of 5 FC cell vehicles, made by Microcab Industries Limited.	
London, United Kingdom	Compress. H2	CUTE Bus Demonstration and H2 fueling station	BP	Opened May 2005	BP developed fueling infrastructure. H2 is dispensed gaseous (into the buses), but is transported liquid by tanker (from Belgium/Luxemburg) and then stored in liquid form underground.	The buses fill up with H2 at a normal retail station, adjacent to the BP Connect site at Hornchurch, Essex.	

Planned Hydrogen Fueling Stations

Location	Fuel	Project	Partners	Dates	H2 Production Technique	Specifics/ Comments	Picture
Chena Hot Springs, Alaska	Compress. H2	Chena Hot Springs Resort hydrogen station			H2 will be generated via electrolyzer from power produced by the resort's two geothermal plants.	Ground-breaking for the start of station construction during Aug 2007.	
Arcata, California	Compress. H2	Schatz Energy Research Center at Humboldt State University	Schatz Energy Research Center, Humboldt State University, Chevron Technology Ventures, Caltrans, North Coast Unified Air Quality Management District	To be opened in 2007	Station will produce H2 by electrolysis, compress, and store on-site. Will be able to deliver 2.3 kg H2/day with storage capacity of 12 kg at 1,200 psi. Industry standard H2 dispenser with temperature compensated fills to 5,000 psi.	Will support an H2-powered Toyota Prius for two-yr. demo. Will be located by Humboldt State University's Plant Operations yard. Future plans to develop an H2 power park using renewable gas from a local landfill.	
Barstow, California		Hythane station	City of Barstow, Hythane Co.		H2/CNG mixture	MOU signed. Will convert the existing natural gas fueling station into an "Energy Station" offering natural gas, H2, Hythane and integrate Hythane into existing natural gas vehicle fleet.	
Camp Pendleton, California		Camp Pendleton hydrogen station	U.S. Navy, ZTek	To be opened in 2007	Uses Air Products' HF-60 mobile hydrogen fueller. Steam methane reformer for hydrogen generation-produces 30 kg/day. 60 kg of H2 storage. Dispensing-5,000 psi.	Accessible from the I-5 freeway. To encourage shared usage, station is deliberately located outside the guarded Camp Pendleton.	
Emeryville, California	Compress. H2	AC Transit hydrogen fueling Station	AC Transit, Avalence LLC		Solar powered electrolyzer to generate H2 using Avalence 10 kg/day electrolyzer with integrated compression to 5,000 psi. 20 kg H2 storage.	Will support AC Transit's three 40' fuel cell buses, 10 Kia & Hyundai H2FCV (HMC Tucson SUV and KMC Sportage sedan)	
Lake Tahoe, California		Lake Tahoe hydrogen station	U.S. DOE, HFU, Air Products, Honda, Toyota, Nissan, BMW, GM, Fuel Cell Energy, DaimlerChrysler, SCAQMD, Shell Hydrogen, UC Irvine, ConocoPhillips		Will employ a new liquid delivery concept	Will test H2 cars in the colder temperatures of the Lake Tahoe Basin.	
Menlo Park, California		Menlo Park Station	Distributed Energy Systems, San Mateo County	To be opened in 2007			
Port Hueneme, California	Compress. H2	Port Hueneme hydrogen station	Naval Facilities Engineering Service Center, Marine Corps Southwest Region Fleet Transportation	To be opened in February 2008	Will employ onsite H2 production from natural gas.	Will be the Navy's first compressed H2 station.	
Sacramento, California		Sacramento Municipal Utility District (SMUD) BP hydrogen station	SMUD, BP	To be opened in late 2007	H2 to be generated from solar array. Will use a Pdc compressor.	Station will not be open to the public-limited to use by SMUD and State of California fuel cell vehicles (Ford and DaimlerChrysler). Approximately two to three vehicles a day are expected to refuel at the facility	
Sacramento, California		Sacramento Airport hydrogen station	BP, Ford				
San Carlos, California	Compress. H2	San Carlos Station		To be opened by Spring 2008	Temporary H2 refueler.		
San Francisco, California		San Francisco Airport Station	San Mateo County	TBD			

California							
Santa Monica, California		West Los Angeles Shell Station	Shell	To be opened June 2008	H2 to be produced onsite.		
South Lake Tahoe, California		South Lake Tahoe Station	Air Products	TBD			
Torrance, California	Compress. H2	Torrance Station	Air Products, Toyota, SCAQMD, TBD		CGH2 @ 350 bar, 700 bar. Pressure swing absorption system will purify the pipeline-grade H2 to the higher fuel purity level required by the fuel cell vehicle manufacturers. Will use a Pdc compressor. Dispenser - AP Series 200.	APCI owns/operates 17-mi of H2 pipeline - station will utilize the pipeline system to deliver H2 to the fueling site. Several FC vehicle manufacturers are headquartered near the proposed H2 station. Will Provide multiple-fleet and public access & lower price for H2.	
Westwood, California	Compress. H2	UCLA hydrogen station	UCLA, CaH2Net	To be opened in 2007	Steam methane reformer. CGH2 @ 350 bar. Will be able to fuel 25 cars/day.	Will support two Daimler Chrysler F-Cell vehicles. Capable of fueling 25 cars/day	
Westminster, California		Westminster Station		To be opened in 2007	HF-150 Mobile Refueler. 150 kg storage capacity.		
Fort Collins, Colorado	Compress. H2 and HCNG	South Transfort fueling station	City of Fort Collins, Colorado State, Hydrogen Components Inc.	To be opened in 2008	Will dispense hydrogen and Hythane (H2/CNG mix) using a Hydrofiller 175 H2 fuel generator by Avalence. Will generate H2 onsite with an electrolyzer.	Will fuel one CNG-powered minibus (which can also operate using Hythane), 3-4 more buses on order.	
Cape Canaveral, Florida		Kennedy Space Center hydrogen station			Generation capacity of <60 gge/day.	Will support a fleet of two shuttle buses.	
Orlando, Florida	Compress H2	Progress Energy Operations Center	Chevron		On-site methane reformer will convert natural gas to H2. Generation capacity of 100 kg H2/day. Storage capacity of 325 kg H2 at a maximum of 7,000 psi.	Designed to support a fleet of four Ford V-10 E-450 ICE shuttle buses. That will transport employees around Orlando Int'l. Airport and the Orange County Convention Center.	
Orlando, Florida		Hydrogen Station			Generation capacity of <120 gge/day.	To be located on International Drive. Will support a fleet of four shuttle buses.	
Chicago, Illinois			City of Chicago, Gas Technology Institute (GTI)		Ethanol-to-H2 station.	Will be world's first ethanol-hydrogen station. Will supply fuel for Chicago-based Ford H2 ICE vehicles.	
Detroit, Michigan		Hydrogen station to be located near Detroit Metropolitan Airport	BP, Ford Motor Co.			Will fuel demonstration fleet of Ford Focus FCVs	
Grand Blanc Township, Michigan		Hydrogen station	MTA, Kettering University, Michigan State University	To be opened in early 2009		Will fuel Michigan Transportation Authority fuel cell buses. Groundbreaking in February 2008.	
Selfridge, Michigan		Selfridge Air National Guard Base	Chevron Technology Ventures, U.S Department of Energy		On-site steam methane reformer to convert natural gas to H2. Will generate up to 80 kg H2/day. Storage capacity-315 kg/H2 at a maximum of 7,000 psi. Hydrogen dispensing at 5,000 psi.	Station will be for demonstration purposes only, supporting fleet of light duty vehicles.	
New York			Plug Power, APCI, State of New York, Homeland Energy		H2 generated and dispensed by Plug Power's GenSite product with added fueling capability provided by an Air Products HF-150 mobile refueler. Will use a Pdc compressor.	Will be used by two Honda FCX fuel cell vehicles being leased by the State of New York.	
New York City, New York		White Plains hydrogen station	General Motors, Shell Hydrogen, Proton Energy Systems		Will be a portable H2 fueling module sited at an existing Shell gasoline station in the metropolitan New York area. Will use a PEM electrolyzer that can produce 12 kg H2/day. Will use a Pdc compressor.	Will support a future fleet of GM H2 fuel cell vehicles.	
Western New York state			American Wind, State of New York			American Wind to construct regional H2 station in western NY.	
North Carolina		Advanced Vehicle Research North Carolina hydrogen station	Gold Leaf Foundation				
Minot, North Dakota	Compress. H2	State University's North Central Research Extension Center hydrogen station	Hydrogenics, Basin Electric Power Cooperative, Central Power Electric		Electrolyzer-based H2 refueling station. Will use electricity from a wind power resource to produce H2 from water. Electrolyzer will be installed in late 2006.	Will be used to demonstrate a linkage between wind power and vehicle refueling. Will fuel 3 H2-powered internal combustion engine pick-up trucks.	
Columbia, South Carolina	Compress. H2		S.C. Research Authority, city of Columbia	To be opened in Feb 2009	Bulk liquid H2 will be delivered to the station, which will be stored and converted to gaseous H2.	Will service a hybrid fuel cell-electric bus that will serve the Univ. of SC and a fleet of H2 cars.	
Austin, Texas	Compress. H2	Hydrogen fueling station	University of Texas, Austin, GTI, GreenField Compression, TCEQ, US DoT, Texas State Energy Conservation Office		Will generate H2 onsite from natural gas and compressed/stored on site.	Will support a fuel cell-hybrid shuttle bus and other H2 vehicles planned in the Austin area. To be located at the J.J. Pickle Research Center	
Charlottetown, Prince Edward Island, Canada		Prince Edward Island Wind-Hydrogen Village H2 station	Hydrogenics, Prince Edward Island Energy Corporation, industry and government partners			Will support up to 3 full-service H2 shuttle buses, fuel cell utility vehicles and a hydrogen-powered tour boat.	
Whistler, British Columbia,		Hydrogen station	Air Liquide, BC Transit		Will use a Pdc compressor.	Will support a fleet of hydrogen-powered transit buses.	

Canada								
Langford, British Columbia, Canada		Hydrogen station	Air Liquide, BC Transit				Will support a fleet of hydrogen-powered transit buses.	
China		Beijing Lnpower Sources Co, Ltd. hydrogen station	Beijing Lnpower Sources, Co., Ltd.			Will supply 7,200 Nm3/day H2.		
Beijing, China		Tsinghua University hydrogen station	Tsinghua University			Will supply 2,000 Nm3/day H.2		
Aarhus, Denmark		Hydrogen station					Public fueling station for a car and bus. Station is part of the Hydrogen Link Project.	
Copenhagen, Denmark		Hydrogen station					Public fueling station for hydrogen vehicles - car, bus and a service/industrial vehicle. Station is part of the Hydrogen Link Project.	
Herning, Denmark		Hydrogen station					Public hydrogen station for a materials handling vehicle, service/industrial vehicle and a car. Station is part of the Hydrogen Link Project.	
Hobro, Denmark		Hydrogen station					Public fueling station. Station is part of the Hydrogen Link Project.	
Holstebro, Denmark		Hydrogen station					Public fueling station. Station is part of the Hydrogen Link Project.	
Hvide Sande, Denmark		Hvide Sande Fish Auction and Harbor	Danish Energy Agency, Vestas Wind Systems A/S and H2 Logic A/S	To be opened in June 2008	H2 is produced centrally in the city of Holstebro and is distributed by truck to each of the filling stations in the cities. Fuels FC-hybrid vehicle.		Private hydrogen station – will fuel a Dantruck/Heden forklift. Station is part of the Hydrogen Link West Denmark Project.	
Ringkobing, Denmark		Rinkobing-Skjern Municipality hydrogen station	Danish Energy Agency, Vestas Wind Systems A/S and H2 Logic A/S	To be opened in June 2008	H2 is produced centrally in the city of Holstebro and is distributed by truck to each of the filling stations in the cities. Fuels FC-hybrid vehicles.		Public hydrogen station. Will fuel a Think Hydrogen City car and a Mega Multitruck Service vehicle. Station is part of the Hydrogen Link West Denmark Project.	
Ringkobing, Denmark		Vestas Wind Systems A/S hydrogen station	Danish Energy Agency, Vestas Wind Systems A/S and H2 Logic A/S	To be opened in June 2008	H2 is produced centrally in the city of Holstebro and is distributed by truck to each of the filling stations in the cities. Fuels FC-hybrid vehicle.		Private hydrogen station – will fuel a Dantruck/Heden forklift. Station is part of the Hydrogen Link West Denmark Project.	
Skjern, Denmark		A/S P. Grene hydrogen station	Danish Energy Agency, Vestas Wind Systems A/S and H2 Logic A/S	To be opened in June 2008	H2 is produced centrally in the city of Holstebro and is distributed by truck to each of the filling stations in the cities. Fuels FC-hybrid vehicle.		Private hydrogen station will fuel an Atlet-Unitruck forklift. Station is part of the Hydrogen Link West Denmark Project.	
Grenoble, France		HyChain Project hydrogen station				H2 produced by natural gas reforming.	Will support FC-powered tramway and possibly a Hythane-powered bus.	
Delhi, India	H2/CNG	Indian Oil Corporation hydrogen station	Indian Oil Corporation, Ministry of New and Renewable Energy, Tata Motors, Ashok Leyland, Mahendra and Mahendra, Eicher and Bajaj	To be opened in 2008	Will initially deliver a 10:90 percent hydrogen: CNG mix H2 will gradually hydrogen later be increased in the mix.		To be located on Lohdi Road in Delhi Will fuel five demonstration vehicles.	
Arese, Italy	Liquid H2	Arese hydrogen station	Politecnico di Milano, Centro Ricerche Fiat, Lombardy Region				Multi-fuel station (CH2-LH2, CH4-GPL and Mix). Will fuel hybrid FC and H2 ICE fleet vehicles.	
Firenze, Italy		HBUS project H2 refueling station	SOL GROUP, Comune di Firenze, I2T3, ITAE, Nuvera, Comune di Bologna, Compagnia Trasporti di Pubblici Napoli, Enea, Ataf, Istituti Motori CNR, Autodromo, Thecla, ST, Rearum Causam, Congnoscere			On-site H2 production. Phase I: water electrolysis; Phase II: methane reforming		
Venezia, Italy		Venice Hydrogen Park station				H2 to be produced from chlorine process waste gas.		
Bergen, Norway		HyNor Bergen hydrogen station	HydrogenLink, Vestlandsforskning, Sogndal			Production of H2 from natural gas with CO2-capture (The ZEG project). – H2 from refinery – H2 as a by-product from Carbon Black production from natural gas	H2 will fuel ship, bus and cars.	
Drammen, Norway		HyNor Drammen hydrogen station	Drammen Kommune, Radet for Drammensregionen, Vardar, Buskerud Fylkeskommune, Linden, Drammen Taxi			CO2 neutral production of H2 from methane rich waste gas with CO2 capture.	Part of HyNor's Hydrogen Road between Oslo and Stavanger. Car and bus demonstrations being planned.	
Lyngdal, Norway		HyNor Lyngdal hydrogen station				Station will be supplied by trucked H2.	Part of HyNor's Hydrogen Road between Oslo and Stavanger. Car and bus demonstrations being planned.	
Oslo, Norway	Compress. H2	HyNor Oslo hydrogen station	Stor-Oslo Lokaltrafikk, Zero, Norgestaxi, Hydro, Akershus	Planned in Autumn 2008		Electricity from hydroelectric power plant will be used to produce H2 by electrolysis. Compressor TBD.	Part of HyNor's Hydrogen Road between Oslo and Stavanger. Car and bus demonstrations being planned.	

			Fylkeskommune, Mijobil Grenland, Norgesbuss		Capacity-130 Nm ³ /h, HP storage-450 bar. Hydro's fuel dispenser filling time 2 min (cars)		
Romerike, Norway		HyNor Romerike hydrogen station	Ife, Akershus Energi, THINK, Akershus Fylkeskommune, SNR		Local H2 production based on solar and bio.	Part of HyNor's Hydrogen Road between Oslo and Stavanger.	
Trondheim, Norway		HYTREC hydrogen station	Statkraft, Statoil, DNV			To be located at a Hydrogen Research and Demonstration Center.	
Daejeon, South Korea		SK Energy's Research Center hydrogen station		To be opened in 2007			
Valencia, Spain			Electric Technology Institute		Will be solar photovoltaic H2 system.	Hydrogen station will provide fuel for H2-powered boats in Albufera Natural Park (El Palmar area).	
Goteborg, Sweden			Fordonsgas, Göteborgs Gatu AB, Göteborg Energi, StatoilHydro AB, Volvo, Hydrogen Sweden	To be opened in 2009	Station will dispense Hythane and H2. H2 source not decided. One alternative is trucked in hydrogen from nearby industry.		
London, United Kingdom						Three hydrogen stations are planned for London, 12 H2 stations are planned countrywide by 2010.	
Stornoway, Western Isles, Scotland, UK		Hydrogen Station	Western Isles Council	To be opened in late 2008	APCI H2 fueling station. H2 will be generated by electrolysis using electricity from its waste-treatment plant at the business park.	To be located at Creed Enterprise Park. Will fuel two H2-powered cars operated by the Western Isles Council and would be open for use by the public.	