

<u>NAME</u>	<u>Description</u>	<u>Sector</u>	<u>Activity</u>
Aker Horizons ASA	Green hydrogen & ammonia, wind, CO2 capture.	HI	NORWAY
Alfa Laval	Heat exchangers for green H2 production, electrolyzers.	HS	SWEDEN
Arcadis NV	H2 network, Netherlands, Europe, in planning.	HI	NETHER
Ballard Power Systems Inc	Fuel cells, H2 in buses, trucks, trains, backup power etc.	HT	CANADA
Belden	DC power from fuel cells, or intermittent wind & solar.	FC	USA
Bloom Energy Corp	Fuel cells, SOFC high temps can use variety of fuel sources.	FC	USA
Brookfield Renewable Energy	Teaming to produce green hydrogen from hydroelectricity.	HI	USA
Ceres Power Holdings PLC	Fuel cells, high SOFC temperature allows variety of fuels.	FC	UK
Chart Industries	Liquid hydrogen, storage and transport expertise.	HS	USA
China Datang Renewables	Wind & hydro in China, that's developing H2 projects.	HG	CHINA
Chung-Hsin Electric	Fuel cells. Hydrogen, methanol reformers.	HG	TAIWAN
Compagnie Plastic Omnium	H2 storage, high pressure tanks, vehicles, fuel cells.	HT	FRANCE
Corp. Acciona Energias Ren.	Green H2, new GreenH2Chain to ensure green H2 origins.	HI	SPAIN
Dae Myoung Energy Co Ltd	Wind, battery energy storage, new hydrogen, solar.	HG	S. KOREA
Doosan Fuel Cell	Fuel cells, high temperature for a variety of fuels.	FC	S. KOREA
Fluence Energy	Energy storage software, hardware for green H2 on grid.	HI	USA
Fuelcell Energy Inc	Fuel cells, high temperature so over range of fuel sources.	FC	USA
Furuya Metal	Electrolysis, green H2, iridium coating for electrodes.	HG	JAPAN
Gevo Inc	Biofuels, energy dense net-zero carbon liquid fuels.	HG	USA
Greenvolt Energias	Biomass to hydrogen without need for combustion.	HG	PORTUGAL
Hyosung Advanced Materials	Advanced composite materials for hydrogen tanks.	HS	S. KOREA
Iljin Hysolus	Compressed hydrogen tanks for fuel storage.	HS	S. KOREA
Infineon Technologies	Power electronics, in green hydrogen, wind, solar.	GH	GERMANY
ITM Power PLC	Fuel cells, PEM; electrolyzer manufacturing green H2.	GH	UK
Johnson Matthey	Catalyst-coated membranes, in fuel cells, electrolyzers.	FC	UK
Kolon Industries	Membranes, fuel cell PEMs, MEA commercialization.	HI	S. KOREA
LEM Holding	Power measurements, better fuel cell efficiencies.	FC	CHINA
Littelfuse	Hydrogen & fuel cell sensors, temperature probes.	HS	USA
Lotte Fine Chemical	Green hydrogen, production launch, ammonia.	GH	S. KOREA
Nel ASA	Electrolysis for H2 from water, using alkaline and PEM.	GH	NORWAY
Neoen SA	Water Electrolysis and renewable energy for green H2.	HG	FRANCE
Neste Oyj	Renewable hydrogen and diesel, SAF, but some fossils.	HG	FINLAND

Nexans SA	Cables, can carry both H2 + electricity, H2 pipelines.	HT	FRANCE
NFI Group	Hydrogen fuel cell electric power in buses,	HT	CANADA
OCI N.V.	Green Ammonia, building up from biogas, hydrogen.	HG	NETHER
Orsted A/S	Green hydrogen directly from wind power, early stage.	GH	DENMARK
OX2 AB	Green H2 infrastructure, pipelines, generation in review.	HS	SWEDEN
Plug Power Inc	Green hydrogen, and fuel cell systems in development.	HI	USA
Powercell Sweden AB	Fuel cell systems, both clean H2 and fossils for fuels.	FC	SWEDEN
Resonac Holdings Corp	Lower-CO2 hydrogen from used plastics; graphite uses.	HI	JAPAN
Scatec ASA	Green Hydrogen produced by solar power.	GH	NORWAY
Schneider Electric SE	Gas analysis, automation for advanced H2 storage.	HS	FRANCE
SKF AB	Advanced bearings, for H2 by compressed transmission.	HS	SWEDEN
SMA Solar Technology	Electrolyzer converters, green H2 from renewables.	GH	GERMANY
Spie SA	Hydrogen in mobility, H2 production, distribution.	HT	FRANCE
Takaoka Toko	Stabilizing the power grid, use of green H2 on grid.	HS	JAPAN
TE Connectivity	Hydrogen pressure sensors, fuel cell connectors.	FC	SWITZER
Tianneng Power	Hydrogen, fuel cells, Li-ion and other batteries.	FC	CHINA
Toray Industries	Membranes for H2 purification, generation, fuel cells.	HI	JAPAN
Toyo Tanso	Graphite, nanotubes H2 storage, brushes in wind.	HS	JAPAN
Varta AG	Hydrogen gas generating cells, ultrapure.	HG	GERMANY
Verbio Vereinigte Bioenergie	H2 from biomethane, biofuels, agriculture.	HG	GERMANY
Wacker Chemie AG	Green H2 from water using renewables, into methanol.	GH	GERMANY
Weichai Power	Hydrogen uses in forklifts, fuel cell buses, Asia.	HT	CHINA
Wolfspeed	High power fuel cell systems, SiC, GaN.	HT	USA
Yara International	Green ammonia, H2 catapult aims for H2 <\$2/kg.	GH	NORWAY

2 Deletions for Latter Q4 2023: JL Mag., SGL Carbon

3 Additions for Latter Q4 2023: Aker, Dae, Resonac

56 Components, Weight each %:

1.785714286

Hydrogen Index H2X Sector

FUEL CELLS (FC)	10
GREEN HYDROGEN (GH)	9
HYDROGEN GENERATION (HG)	11
HYDROGEN INNOVATION (HI)	9
HYDROGEN STORAGE (HS)	10
HYDROGEN in TRANSPORTATION (H	7
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