Green Hydrogen (H_2)

Green hydrogen is a highly sustainable, CO_2 neutral fuel, which can be produced using only renewable energy and water. It has the potential to become a major fuel source for v2.0 ships. and society in general.

Chemistry

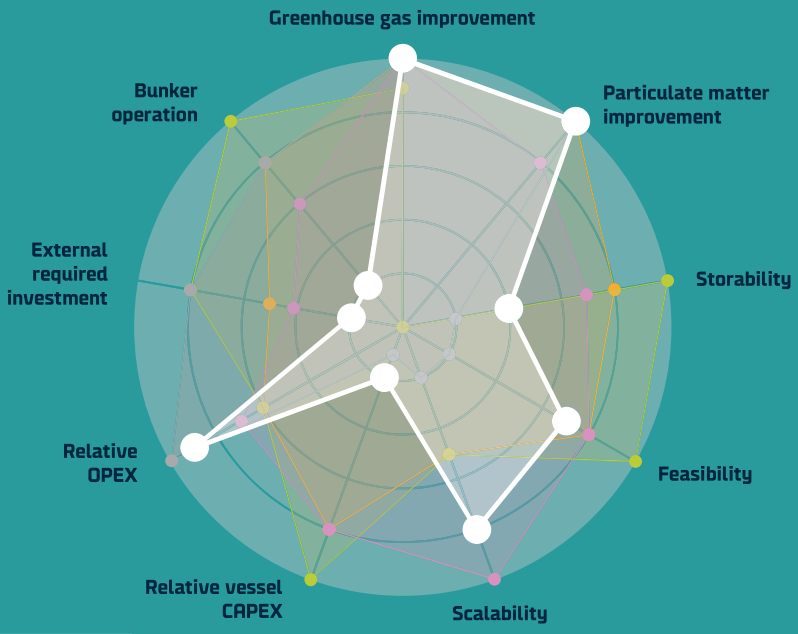
Dihydrogen is an elemental molecule consisting of two hydrogen atoms joined by a single bond.

Characteristics

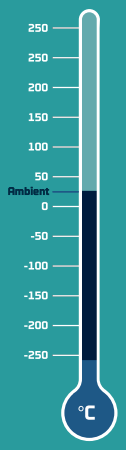
Odourless, colourless, tasteless, non-toxic gas in ambient environments.

Hydrogen burns with an almost invisible blue flame which can cause very localized heating and explosion or rupture of pressure vessels.

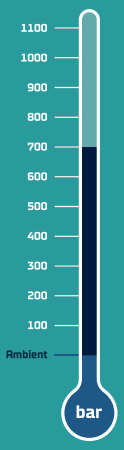
Hydrogen is very difficult to store and handle in large quantities. It is much lighter than air – so light that it escapes the Earth's atmosphere if spilled.



Storage Temperature



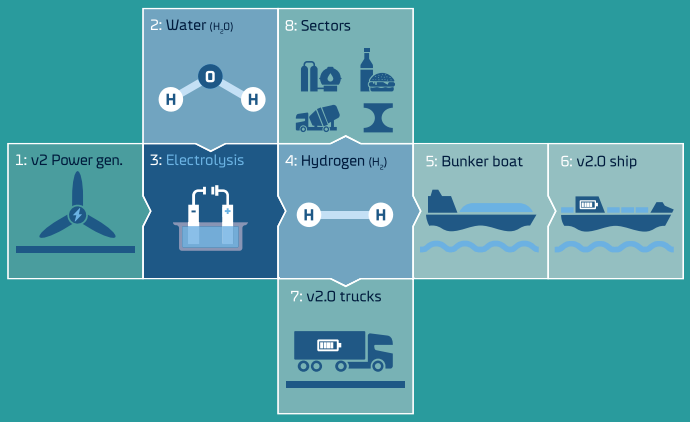
Storage Pressure



Energy density

	MJ/L	MJ/kg
Hydrogen (pressure)	4.7	120
Hydrogen (cryogenic)	9.7	120
Ammonia	11.3	18.4
Ammonia -33°	11.3	18.4
Methanol	15.6	19.7
Pyrolysis (MASH)	35.8	36.5
Electricity	3.6	0.7
HFO	42.1	42.6
LNG -162°	20.3	48

Production and consumption



Green hydrogen is made by using renewable electricity[1] to split water[2] into hydrogen and oxygen in an electrolysis process[3]. Already today, hydrogen is being used in huge quantities in other sectors [4]such as the petrochemical, cement, fertilizer, metal and food industry. Hydrogen is also a great fuel in fuel cells for ships [5]and trucks [6]. Today, most of the hydrogen is being produce near to where it is consumed, as it is very difficult to handle and store. For shipping to adopt hydrogen as a fuel, we would need to have a new fleet of zero emission fuel cell ships and a new bunker infrastructure in place.[7]

Learn more online about green hydrogen, check out relevant DFDS projects and join the dialogue.

Magnolia Seaways

Gothenburg – Immingham

	M³	Tons
Hydrogen (pressure)	707	28
Hydrogen (cryogenic)	343	28
Ammonia	294	181
Ammonia -33°	294	181
Methanol	213	169
Pyrolysis (MASH)	93	91
Electricity	923	4747
HFO	79	78
LNG -162°	164	69

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