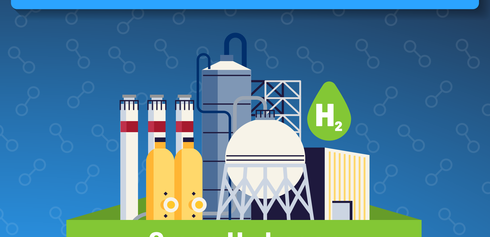
RISKY BUSINESS

What You Need To Know About...

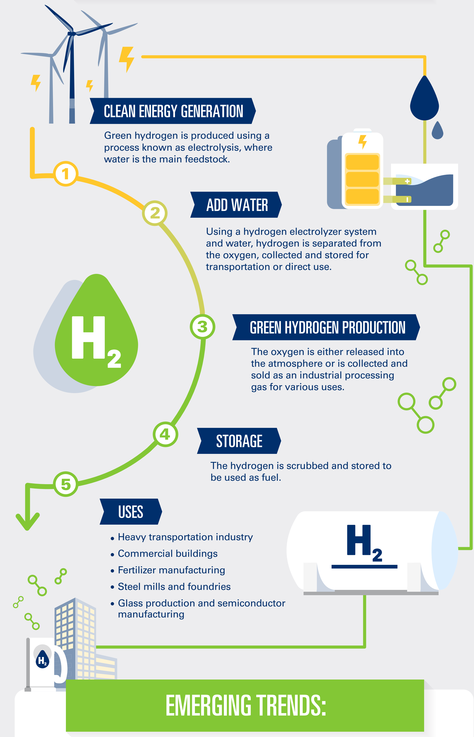


Green Hydrogen

As more and more countries adopt climate change goals to offset carbon emissions, hydrogen will be at the forefront of the transition from fossil fuels to a much cleaner form of energy production. The only emissions produced by hydrogen fuel is water.

Hydrogen is referred to by a variety of colors for how it was created. Green hydrogen is when the energy used to power electrolysis comes from renewable sources like wind, water or solar.[1] Green hydrogen is the only type produced in a climate-neutral manner.[2]

HOW GREEN HYDROGEN IS PRODUCED:



EMERGING TRENDS:

In 2021, the U.N. launched the Green Hydrogen Catapult Initiative, with the goal of cutting the cost of green hydrogen to below $2 per kilogram and increasing the production of green hydrogen 50-fold by 2027.[3]

By 2030, the U.S. hydrogen economy could generate $140 billion and support 700,000 jobs.[4]

Global demand could reach about 530 million tons by 2050, displacing roughly 10.4 billion barrels of oil.[5]

COSTS:

The cost for hydrogen electrolyzer systems runs from $550/kW to $985/kW depending on the technology being used.

Green hydrogen is still expensive to produce today. The International Energy Agency (IEA) puts the cost of green hydrogen at $3 to $7.50 per kilo, compared to $0.90 to $3.20 for production using steam methane reformation.[3]

Cutting the cost of electrolyzers will be critical to reducing the price of green hydrogen, but that will take time and scale. Electrolyzer costs could fall by half by 2040.[3]

IMPACT ON EQUIPMENT BREAKDOWN:

The main exposures from an equipment breakdown standpoint are the compressors, electrolyzers, pumps and transformers used in the conversion process. In addition, there may be fuel cells and solar photovoltaic systems used for power generation on site.

Reliable operation of a hydrogen electrolyzer system is dependent on water quality and correct operating temperatures needed for the conversion process.

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References

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[2] https://www.weforum.org/agenda/2021/06/4-technologies-accelerating-green-hydrogen-revolution/
[3] https://www.greentechmedia.com/articles/read/green-hydrogen-explained
[4] https://news.climate.columbia.edu/2021/01/07/need-green-hydrogen/
[5] https://www.strategyand.pwc.com/m1/en/reports/2020/the-dawn-of-green-hydrogen/the-dawn-of-green-hydrogen.pdf