



Element1's system produces hydrogen on-site as needed | Photo source Pexels

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OFF-GRID HYDROGEN GENERATION TECHNOLOGY FOR ON-DEMAND POWER

 AGRICULTURE & ENERGY

The modular system produces hydrogen on-site to avoid transportation and storage challenges

Spotted: Although relatively expensive to produce at present, and with storage often cited as a concern, green hydrogen fuel production is increasing. A naturally occurring and superabundant element, hydrogen is popular for several reasons, including the ability to produce it using renewable energy sources. And now, Element 1's modular, grid-independent hydrogen generation technology is making the fuel even more accessible.

Designed to efficiently convert methanol to hydrogen to electricity, the technology supports both hydrogen fuel cell vehicles and electric vehicles. The company's catalytic reactor heats a methanol and water feedstock mix before sending it through a membrane purifier for almost 100 per cent fuel cell grade hydrogen.

Because the modular system produces the fuel as needed, the risk of combustion is nearly eliminated, and specialty storage facilities are redundant. This is because the only material that needs to be stored and transported is the methanol and water feedstock. The hydrogen is then produced on-site. Element 1 provides both small and large-scale solutions, as well as a mobile version specifically for refuelling electric vehicles on the go.

Further development of the technology includes a sea-going business spinoff e1 Marine, as well as continued refinement of the systems, materials, and deployment options through on-site collaborations with industrial partners and as infrastructure back-ups.

Springwise has also spotted hydrogen being used as [aircraft fuel](#) and in a [personal hydrogen power plant](#) for the home. Larger scale hydrogen production innovations include a proposal for an [artificial green hydrogen island](#) in the North Sea.

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Takeaway:

Flexibility isn't a word usually associated with electricity and energy. But maybe it should be since one size never fits all. Everybody's energy consumption varies, and by building adaptability into a system via mobility and modularity, resilience increases. And in times of great environmental upheaval, reliable, off-grid, sources of power are likely to be needed even more. Off-grid [experts](#) quote rising utility bill costs, interest in living more in tune with nature, and improved technologies as some of the main factors in recent increases in interest in living in "comfortable self-sufficiency".