SunHydrogen on track to make the cleanest greenest hydrogen

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Every once in a while I read about a company and wonder why their technology isn't being adopted by everyone, everywhere. To me, it can seem like the idea sounds almost too good to be true (and maybe in some cases it is), but in the event that it is a legitimate, proven technology, one feels compelled to dig deeper and understand why it isn't a tool being used for the betterment of the whole of society (and the profit of shareholders). I'll admit that sometimes I don't think the same way as others and that perhaps my perception of what might be the best thing since sliced bread could make you scratch your head and ask what is this guy smoking, but we can leave that debate for another day.

What piques my interest today is the potential of the ultimate green energy – clean hydrogen derived from water and sunlight. On top of that, it is a self-contained, scalable solution to provide on-site solar hydrogen generation facilitating local distribution to further reduce/eliminate the carbon footprint. Makes you wonder why we are wasting our time mining/extracting lithium, copper, etc. to build EVs.

The company behind this revolutionary solution to reduce carbon emissions is SunHydrogen, Inc. (OTC: HYSR), a U.S. based technology company, dedicated to the development of breakthrough technologies to make, store and use green hydrogen across a wide range of industrial applications. The Company's core technology is its patented SunHydrogen Panel, currently in development, which harnesses the power of sunlight to split water molecules into high-purity green hydrogen and oxygen.

Converting water to hydrogen is not new science. Electrolysis

has been around for centuries, and more recently, as the world searches for means to reduce our carbon footprint, brown, blue and green hydrogen have become increasingly important tools in the transition away from fossil fuels. However, brown hydrogen is produced from natural gas through a process called steam methane reforming. This method releases carbon dioxide (CO2) as a byproduct and although it may (or may not) result in lower emissions than traditional fossil fuels, it's still not ideal. This becomes blue hydrogen if some form of carbon capture is used to prevent the CO2 from being emitted to the atmosphere, but that obviously adds to the overall cost.

SunHydrogen is working on green hydrogen which is produced through electrolysis powered by renewable sources such as wind, solar, or hydroelectric power. Green hydrogen is considered environmentally friendly, emitting no greenhouse gases during production or consumption. But there can still be challenges given a vast majority of today's green hydrogen producers transport their product over long distances, so although the hydrogen itself is green, the delivery and transport infrastructure creates a higher carbon footprint.

That's where SunHydrogen is developing the game changing solution to become the best of the greenest. It all starts with their Photoelectrosynthetically Active Heterostructures (PAH), which is a fancy, and hard to pronounce name for the nanoparticles the Company uses. Each PAH nanoparticle is a microscopic machine, composed of multiple layers enabling the solar electrolysis reaction to take place. It's a process similar to what happens inside a plant cell during photosynthesis. Billions of microscopic nanoparticles split apart water at the molecular level, extracting hydrogen with the added benefit that SunHydrogen's technology can utilize water of varying purities versus conventional electrolyzers that require high-purity water for operation.

But what happens when the sun isn’t shining? No problem, the prototype hydrogen generation panel (see below) was also designed to support 24-hour operation even when the sun is not shining, by powering the catalyst and membrane integration assembly with renewable grid electricity from wind or hydropower sources.

Source: SunHydrogen, Inc. Feb 7, 2023 Press Release
It would seem that SunHydrogen has thought of almost everything. Now all they have to do is take that last step from prototype to commercial-scale hydrogen panels. The good news is, with over US$30 million in cash and several ongoing joint venture collaborations they are well positioned to make this a reality.

SunHydrogen, Inc. trades at a market cap of US$77 million.