

Abstract Submitted
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Carbon-negative Fuel from Stranded Energy with Carbon Sequestration JAMES VAN VECHTEN, ROBERT GRAUPNER, Puregeneration (UK) Ltd. — Stranded energy can be captured as nitrogen based fuels (ammonia, urea, guanidine) produced from hydrogen from saltwater electrolysis. The use of electro dialysis enables the co-production of NaOH(aq) and HCl(aq) together with oxygen and hydrogen. The NaOH can capture atmospheric CO₂ as sodium carbonate or sodium bicarbonate and together with HCl and basaltic local rocks can produce a range of valuable commodity chemicals. Depending on the form of the sequestered carbon, either 2 or 4 moles of CO₂ can be captured for each mole of hydrogen gas produced. The nitrogen based fuels can be used to power conventional thermal engines or solid oxide fuel cells. They can also be used as fertilizers, thereby avoiding the release of CO₂ during their conventional production using natural gas or coal. With care the produced NaOH or carbonates may be used to counter ocean acidification

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