



A New Way of Generating Energy

H2 Innovation Lab (H2IL), a New Zealand based R&D company, developed what could be acclaimed as the most cost efficient and versatile means of sustainable hydrogen energy production. The fully patented technology has 14 years of extensive development including verification testing. Now in its final stage, H2IL plans to have the technology ready for commercialization by mid 2021.

The technology splits sea or rain water into pure hydrogen much more efficiently than conventional electrolyzers. The electrochemical cell is so unique that scientists have categorized it as a revolutionary mix of voltaic and electrolytic cell science.

When power is applied, charged oxygen ions are released and bond with the anodic alkaline electrolyte. A redox reaction occurs in the galvanic cell resulting in a substantial internal charge buildup between the electrodes. The charge is strong enough to split the electrolyte into large amounts of hydrogen and oxygen. Before the oxygen ion oxidizes at the anode it forms a bond with the electrolyte to increase the cell potential rather than releasing and mixing with the output gas. The process continues, consuming the OH⁻ ion to boost the voltaic charge of the Galvanic Enhanced Electrolyser releasing a very high volume of hydrogen for the low input catalyst charge.

The cell is fully scalable to even replace fossil fuel burners in large power plants. The largest unit H2IL have developed to date is a 1 cubic meter cell that produces 2Kg/h of hydrogen for just 2.1 kWh input power. Galvanic metal is the main fuel supplying more than 90% of the internal charge. The quick change galvanic metal electrode are priced at just \$0.34c per Kg of hydrogen or \$10 per megawatt of energy and are exchanged every 30 to 60 days.

The cell is manufactured with low cost materials including the electrodes. The COP is a fraction that of conventional PEM type electrolyzers. The technology is a perfect candidate for energy storage positioned further down the grid and eliminating gas transportation. However, it also lends itself to self-sustaining, on-site gas and power generation. The input power is so low that a small portion of the output hydrogen can be converted back to power the cell thus enabling self-sustaining energy generation. H2IL have proven this capability in published CCTV verification footage.

David Hendrick, a spokesman for H2IL, states “Like self-sustaining nuclear reactions, energy is not being created, but simply transferred from one form (metals) to another and supporting the laws of thermodynamics”.

This is not just another electrolyser, but a whole new way of generating energy. H2IL are taking expressions of interest in technology acquisition including patents and IP takeover. The focus is toward international corporation large enough to commercialize and integrate the technology into the many hydrogen based application worldwide.