Water as Raw Material for an Integral Process of Energy Production

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Nowadays, the clean, feasible and sustainable energy production is a priority to attend the needs of the society, which allows a technological improvement with ecological awareness. The main goal of this project was to design and test an integral process that integrates the dry cell electrolysis generator powered by a pre-charged battery of 12 volts (by a photovoltaic cell) and a boiler in order to produce clean and sustainable energy. The final process is intended to be applied in the energy industry in view of the excessive contamination provided by the combustion of hydrocarbons (CO_2) and the different ways of producing hydrogen. A prototype of the electrolysis dry cell hydrogen generator was manufactured with reused materials (stainless steel, neoprene, acrylic plaques). For the first tests, the prototype was proven at different mass percentages of solutions (distilled water with sea salt). The tests have shown hydrogen production at all percent solutions, except for the concentration of 0 g/l. The stainless steel was dismissed because of the Iron Oxide it liberates when is in water and electrical current is being applied. Based in this results further tests with different materials as catalysts will be defined and the modified four-stroke engine should be replaced by a boiler if it is proven to be less complex and more efficient. This original integral process will be improved in terms of effectivity so it can be applied in the energy industry the next decade.

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