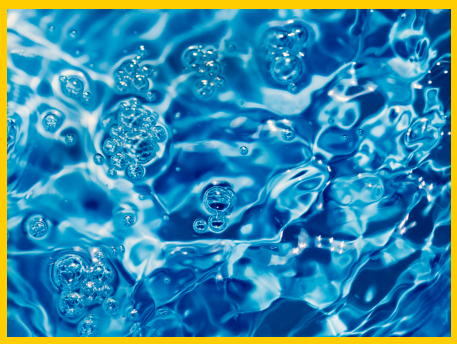
Apparatus for The Electrolytic Production of Hydrogen, Oxygen, and Alkalinized Seawater

Case ID: UA 452-19

BACKGROUND

The electrolysis of water, process of using electricity to decompose water into oxygen and hydrogen gases, was developed in the 1800's. However, the decomposition of pure water into gases at standard temperature and pressure is not favorable thermodynamically. Therefore, electrolyte selection is necessary to be able to achieve successful electrolysis.



DESCRIPTION

An inventor at the University of Alaska has developed a new electrolytic ion exchange module that has the ability to produce, separate, and store the generated oxygen and hydrogen gases. Additionally, instead of utilizing pure water, this device can utilize seawater. The produced hydroxide ions pass through the anion exchange membrane into a central seawater compartment, which reduces the pH while increasing the alkalinity of the seawater. The seawater is then neutralized, which allows it to be returned to the ocean.

ADVANTAGES

- Ability to utilize seawater
- Can return the alkalinized seawater to the ocean

APPLICATIONS

- Generation of hydrogen and oxygen gases
- Electrolysis of seawater

PATENT STATUS

- US Patent Appl. No. 16/924,319
- Filed on July 9, 2020

INVENTORS

Andrew McDonnell

CONTACT

Mark Billingsley
mbillingsley@alaska.edu
907.474.2605