



Salgenx

tech

CFB Technology

Structured Data

3/29/2023

608-238-6001 [ TEL ]

greg@salgenx.com [ Email ]



This webpage QR code

```

<script type="application/ld+json">
  {
    "@context": "http://schema.org",
    "@graph": [
      {
        "@type": "Organization",
        "@id": "https://salgenx.com/#organization",
        "name": "Salgenx",
        "url": "https://salgenx.com",
        "sameAs": [
          "https://www.instagram.com/salgenx/",
          "telephone": "608-238-6001",
          "email": "greg@salgenx.com",
          "logo": "https://salgenx.com/logo.png"
        ]
      },
      {
        "@type": "WebSite",
        "@id": "https://salgenx.com",
        "url": "https://salgenx.com",
        "name": "CFB Technology",
        "description": "NaCl based flow battery technology."
      },
      {
        "@type": "NewsArticle",
        "mainEntityOfPage": {
          "@type": "WebPage",
          "@id": "https://salgenx.com/tech.html",
          "headline": "CFB Technology",
          "image": "https://salgenx.com/images/20230325-salgenx-liquid-electrode-x1.png",
          "datePublished": "2023-03-29T08:00:00+08:00",
          "dateModified": "2023-03-29T09:20:00+08:00",
          "author": {
            "@type": "Organization",
            "name": "Salgenx",
            "url": "https://salgenx.com"
          },
          "publisher": {
            "@type": "Organization",
            "name": "Salgenx",
            "logo": {
              "@type": "ImageObject",
              "url": "https://salgenx.com/logo.png"
            }
          }
        }
      }
    ]
  }
</script>

```

NaCl based flow battery technology.

PDF Version of the webpage (first pages)

## Liquid Electrode

Under development is using centrifugal adhesion and flow dynamics to contain catalyst as an alternative to plating solid, porous, or flow-through electrodes.

This method is a game changer since little to no electrode manufacturing or preparation is needed. Maintenance free and easy to replace. Coded material can be time referenced for born-on and expiration or replacement date.

Almost any catalyst can be used. This is perfect for just-in-time experimentation and battery manufacturing since there is no time lag if preparing electrodes from a supplier.

We first used this to make a proof-of-concept to make hydrogen (H<sub>2</sub>) in water electrolysis. H<sub>2</sub> production was actually increased using this process, compared to standard electrode and electrochemistry.

3/29/2023

3/29/2023

3/29/2023

## Saline pool as energy storage or simultaneous Desalination Device

We can extend the applications for the saltwater battery to include making recreational pools a dual use for energy storage when not in use.

The saltwater battery in the ocean or brine pools can also be used to make fresh water simultaneously.

NID has a remarkable energy efficiency (0.74 kWh/m<sup>3</sup> for seawater-level NaCl) with the possibility of a high water recovery rate (maximum: 95% water recovery - source acsomega.6b00526).

Using a heat pump for vapor distillation or using battery process. For SWB-D system, sodium ions are solidified on the anode and chloride ions migrate to the cathode compartment to maintain charge neutrality while partial energy used during desalination is stored in the SWB anode. Unlike LIB (Lithium Ion Battery) or SIB (Sodium Ion Battery), SWB (Seawater Battery), and SWB-D (Seawater Battery Desalination) have an open-cathode compartment. In addition, sodium super-conducting separator (NASICON) is used for SWB and SWB-D, whereas a separator is used for LIB or SIB.

## **As a simultaneous Thermal Storage Device**

Considered a hybrid between a standard flow battery and a thermal storage device, the battery provides simultaneous heat or cold liquid storage as well as electrical energy storage.

The Cogen Battery has a variety of applications which include:

- storage of thermal energy (heating or cooling) from unused thermal resources
- storage of electrical power for backup power and grid strength
- utility grid power rate mining opportunities to store off-peak low cost power for later use during demand (on-peak) hours
- storage of thermal energy for Organic Rankine Cycle (ORC) power production while simultaneously storing the electrical output from the turbine generator
- using off-peak low cost power to make heating and cooling for later use
- reducing peak demand utility rates by peak energy shaving

## Turn Brine Pools into Batteries

Salton sea.  
Ocean water.  
Oil and gas producer water.  
Brine remediation.  
Powerplant cooling tower brine pool and boiler effluent use.  
Reverse osmosis (RO) and ion exchange waste/reject streams.  
Chlor-alkali and chemical plant waste.  
Acid rock and mine drainage.  
Food preservation and manufacturing waste streams.  
Desalination waste from potable water creation.  
Farming irrigation runoff.

## Heat Pump

A heat pump is almost exactly like a ORC (Organic Rankine Cycle) system, which uses phase change to provide work to produce heat or cooling.

In the case of a ORC system, the pressure reducing valve is replaced with an expander which mechanically rotates a electrical generator to make power.

A heat pump has a high COP (Coefficient of Performance - is defined as the relationship between the power (kW) that is drawn out of the heat pump as cooling or heat, and the power (kW) that is supplied to the compressor) when compared to resistance heating.

We have also been able to have a high COP with our cavitating discs in liquids that cavitate (water, CO<sub>2</sub>, and refrigerants).

The advantage of a heat pump is that you can use off peak power to produce heating or cooling into a liquid, and then use that thermal resource during the on peak hours for huge cost savings. We term this utility grid price arbitrage.

## Saltwater Battery

The Salgenx saltwater battery is a flow battery system, which requires two large tanks that hold fluid electrolytes. One tank is dedicated to salt water (add NaCl to water). The saltwater tank may be used for thermal storage. Fluids are circulated through electrodes, which regulate the input and output of electricity from the battery. The battery does not use a membrane, which is common on a redox flow battery. The absence of the membrane saves huge up front purchase costs, maintenance, and consumable expenses.

The amount of electrolyte flowing in the electrochemical stack at any moment is rarely more than a few percent of the total amount of electrolyte present (for energy ratings corresponding to discharge at rated power for two to eight hours). Flow can easily be stopped during a fault condition. As a result, system vulnerability to uncontrolled energy release in the case of RFBs is limited by system architecture to a few percent of the total energy stored.

The energy capacity is a function of the electrolyte volume and the power is a function of the surface area of the electrodes.

## **Using Wind Turbine or RAID Tribo Wind Generators direct into Saltwatery Batteries**

Because we can use seawater as the electrolyte, offshore wind turbines and RAID tribo effect wind wall generators can store their power onsite.

This on-demand onsite power storage can also be used to produce and store fresh water offshore (desalination at point of use and power production).

In the future large battery bank power transfer ships and fresh water tankers can harvest the stored power and water.

No need for underwater cables or pipelines for fresh water.

These floating power and water islands could circle the global providing resources anywhere. Old tankers or cruise ships could be converted to power and water production facilities.



