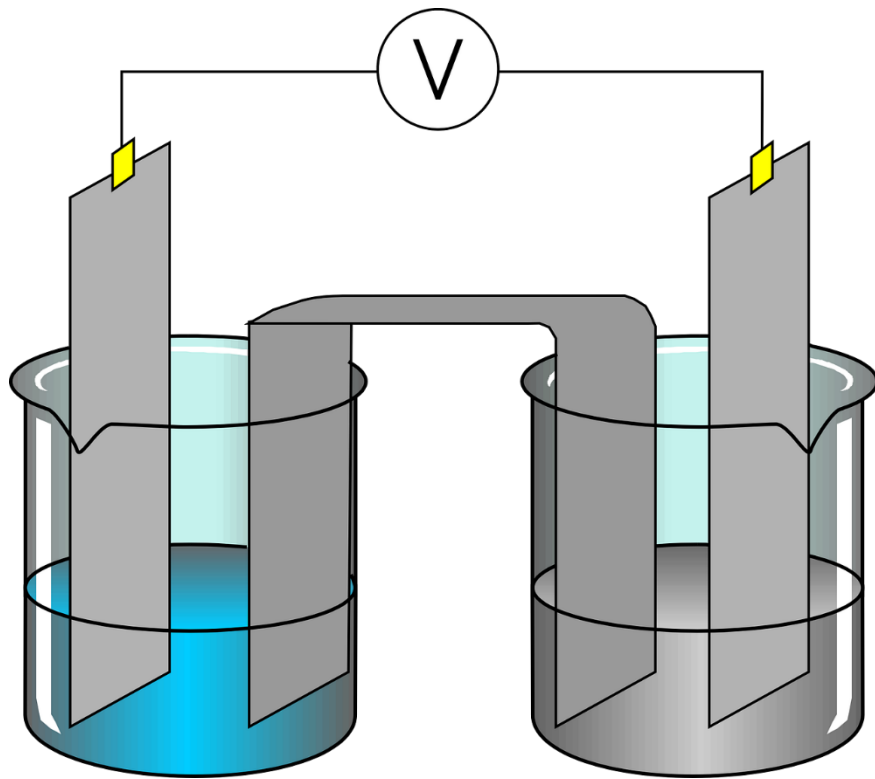


# FLOW BATTERY



**PRIORITY NUMBER:**

102018000004325

**KEYWORDS:**

Electrochemical cell

Ionic membrane

Electrolite

Selectivity

Ionic conduction

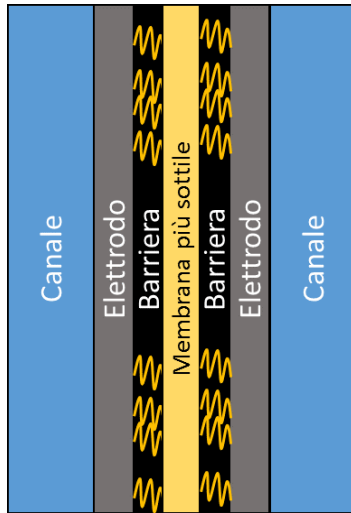
A flow battery is an electrochemical cell in which the charging and discharging processes take place through oxidation-reduction reactions.

The novelty of this invention consist in coupling the central membrane with two layers (on the two membrane sides) of a porous barrier material with inhomogeneous ion selectivity.



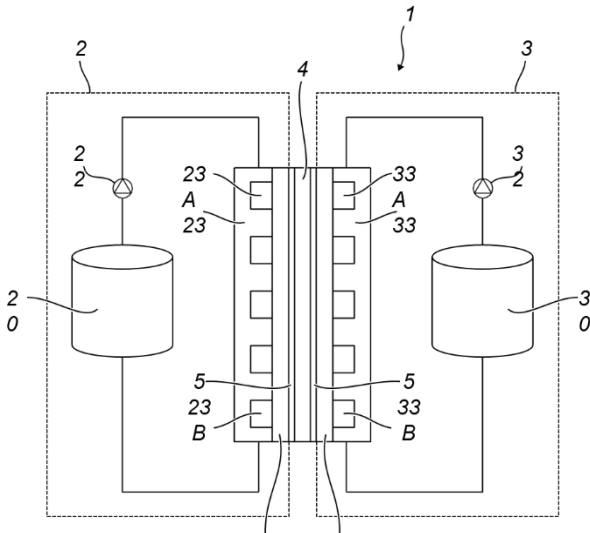
[www.pmi-network.eu](http://www.pmi-network.eu)

# FLOW BATTERY



## DESCRIPTION:

A problem found in these types of cells is the fact that the membrane that separates the half-cells is not selective to the passage of redox ions, thus reducing the useful capacity of the battery. A typical solution for this problem is the use of thicker membrane or additional membrane with smaller pore size. However, these solutions also partially block transport ions, causing ohmic losses. They also modify homogeneously the selectivity over the entire membrane surface, the ion concentration is variable from area to zone instead. In this case the membrane is coupled with two layers with inhomogeneous ion selectivity. In particular, the barrier material blocks the ions more in those areas where their concentration is greater and less where the concentration of the ions is lower. In this manner the exchange ions are blocked less avoiding ohmic losses.



## ADVANTAGES:

- A good compromise between ion selectivity good ionic conductivity;
- The thickness of the membrane can be greatly reduced.

## APPLICATIONS:

- Battery for energy accumulation;
- Battery for electrical vehicles.