



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35.



Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai.

DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUT202 - HYBRID ELECTRIC & FUEL CELL VEHICLE

II YEAR /III SEMESTER

Unit 4- Introduction to Fuel Cells

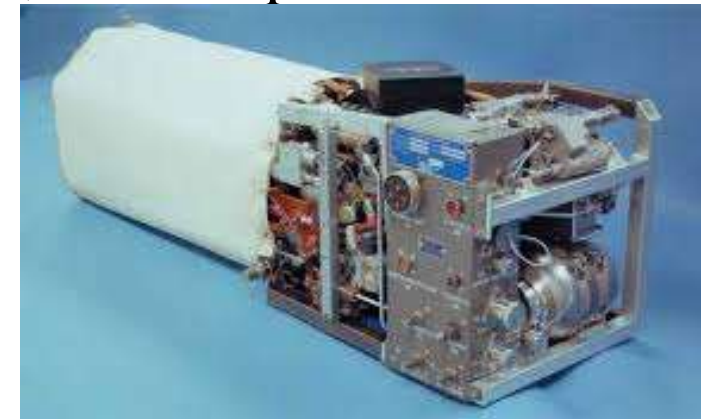
Topic : Alkaline Fuel Cell



INTRODUCTION



- The **alkaline fuel cell (AFC)**, also known as the Bacon fuel cell
- It is one of the most developed fuel cell technologies.
- Alkaline fuel cells consume hydrogen and pure oxygen, to produce potable water, heat and electricity.
- They are among the most efficient fuel cells, having the potential to reach 70%.
- NASA has used alkaline fuel cells since the mid-1960s, in the Apollo-series missions and on the Space Shuttle.





SPECIFICATIONS



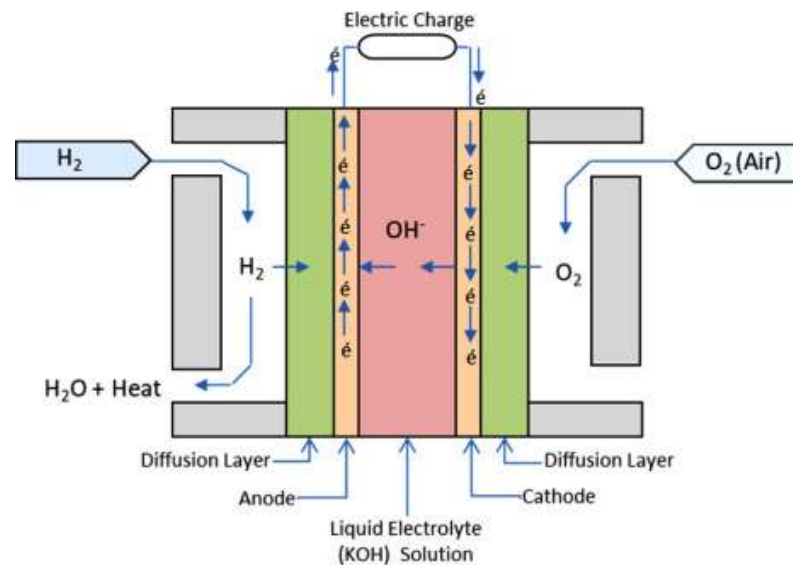
- **Fuel** – Hydrogen
- **Oxidant** – Pure Oxygen
- **Catalyst** – Palladium, Nickel etc.
- **Electrolyte** – Aqueous Solution of Potassium Hydroxide
- **GDL** – Carbon Fiber



CONSTRUCTION



- The two electrodes are separated by a porous matrix saturated with an aqueous alkaline solution, such as potassium hydroxide (KOH).
- The pure oxygen is used in order to avoid Fuel cell poisoning.

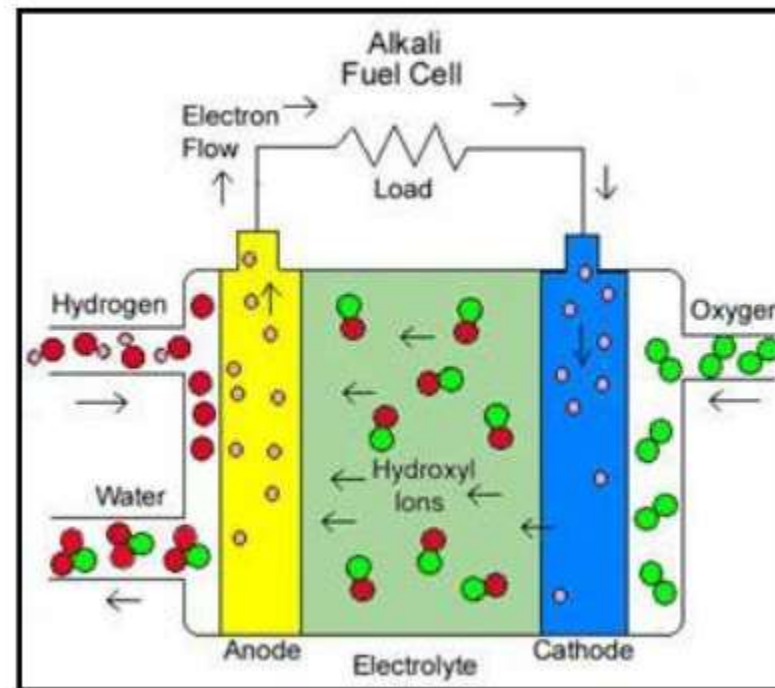




CONSTRUCTION

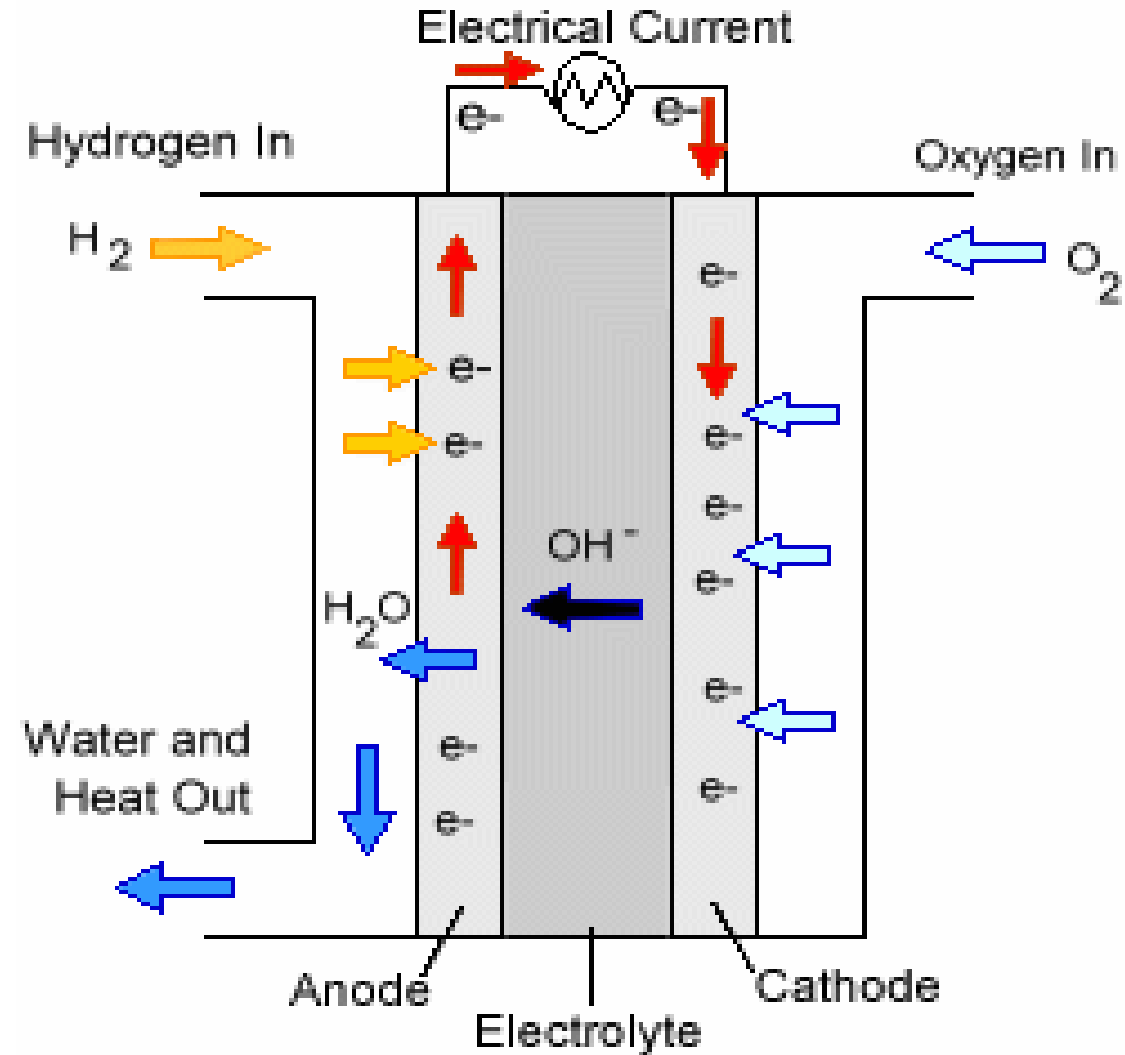


- It has three openings, one for the inlet of the hydrogen fuel
- The second opening is for the inlet of oxidant.
- The third opening is for exiting the water from the cell as by product





FUEL CELL WORKING





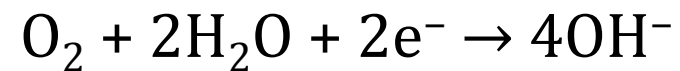
CHEMICAL REACTION



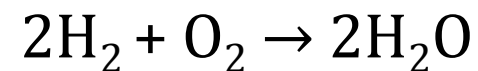
➤ **At the anode**



➤ **At the Cathode**



➤ **Overall Reaction**

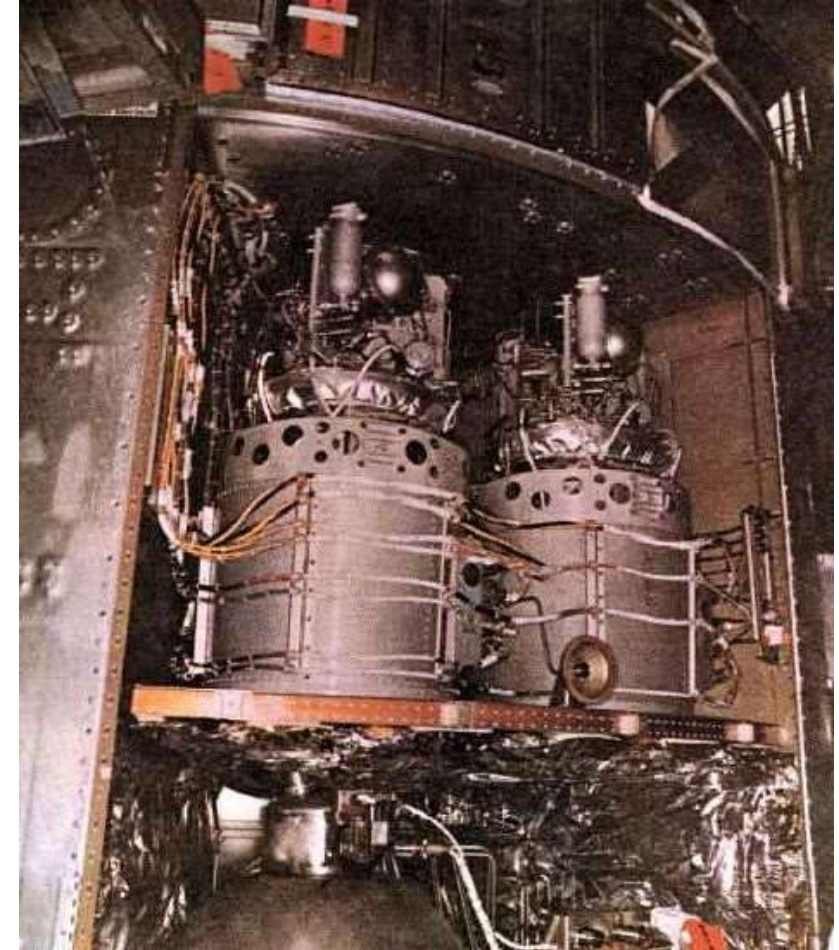




APPLICATIONS



- Space Craft Applications
- Electric Power Generation
- Boats





REFERENCE



- <https://www.youtube.com/watch?v=UMscrOtM7ok>
- https://en.wikipedia.org/wiki/Alkaline_fuel_cell#:~:text=Because%20of%20the%20alkaline%20chemistry,phthalocyanines%20at%20the%20cathode%2C%20due.



THANK YOU !!!