



# **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**

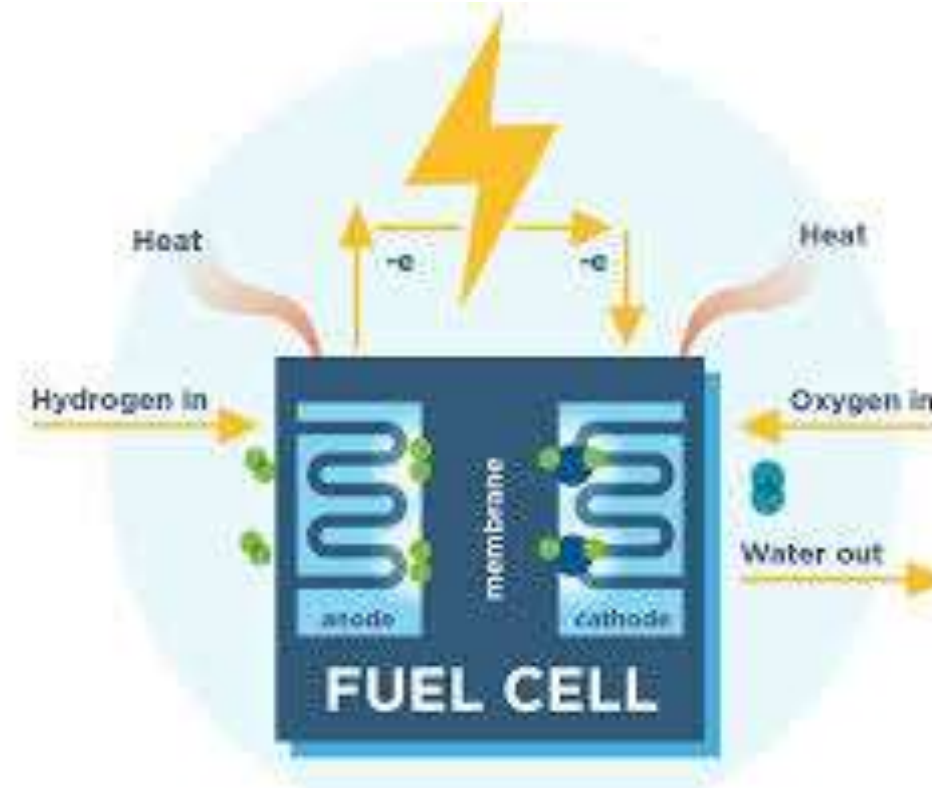
**Topic : Fuel Cell and its working and Fuel Cell Types**

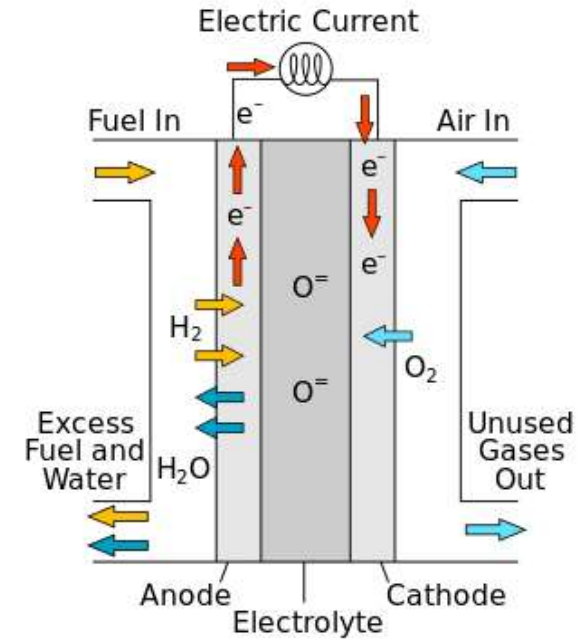
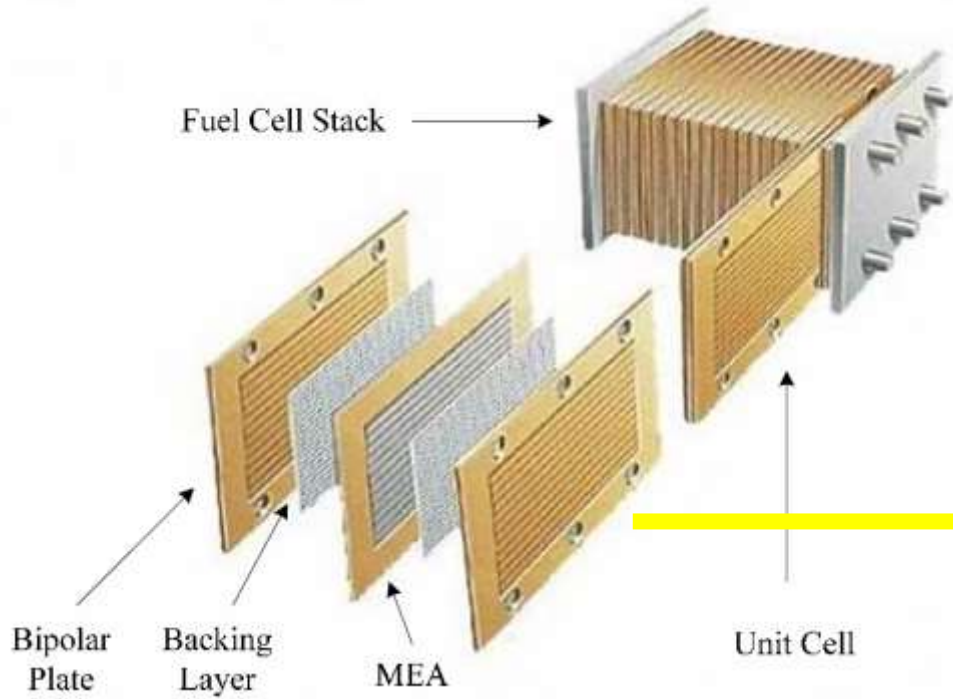
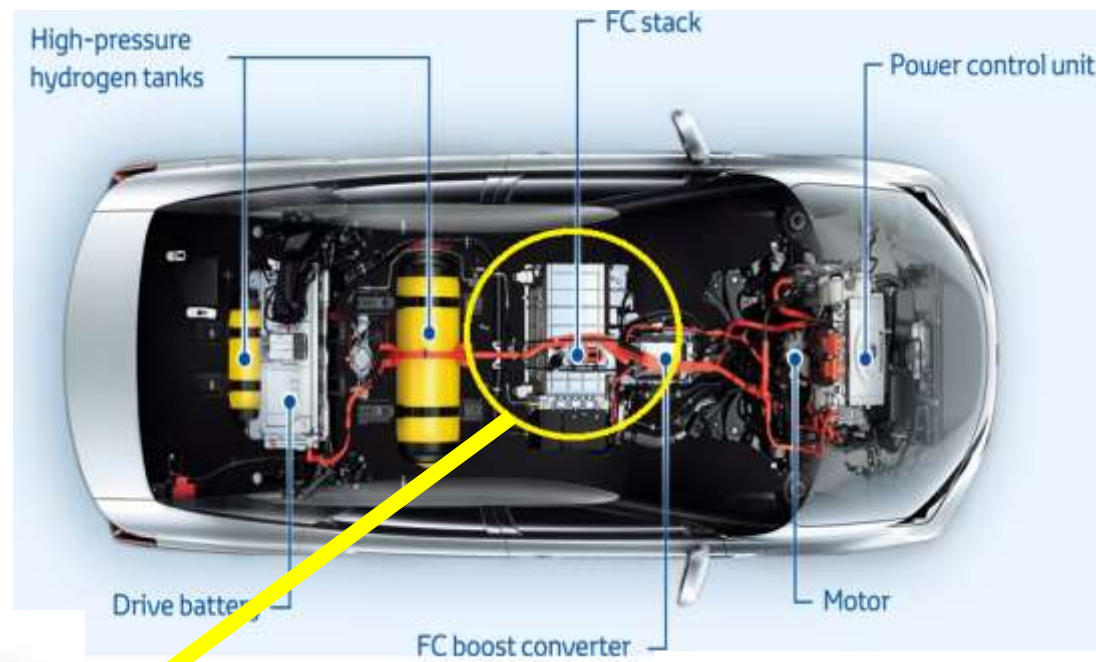


# WHAT IS A FUEL CELL?



*“A fuel cell is an electrochemical cell that converts the chemical energy of a fuel and an oxidizing agent into electricity through a pair of redox reactions”*



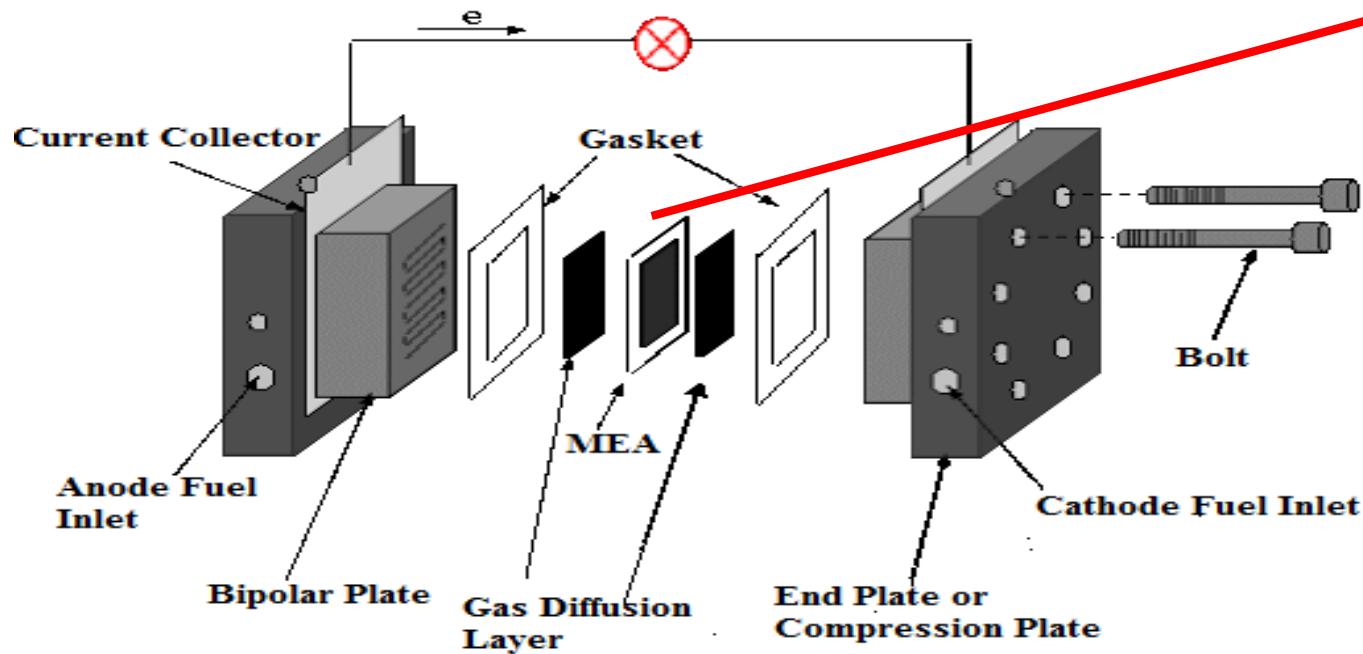
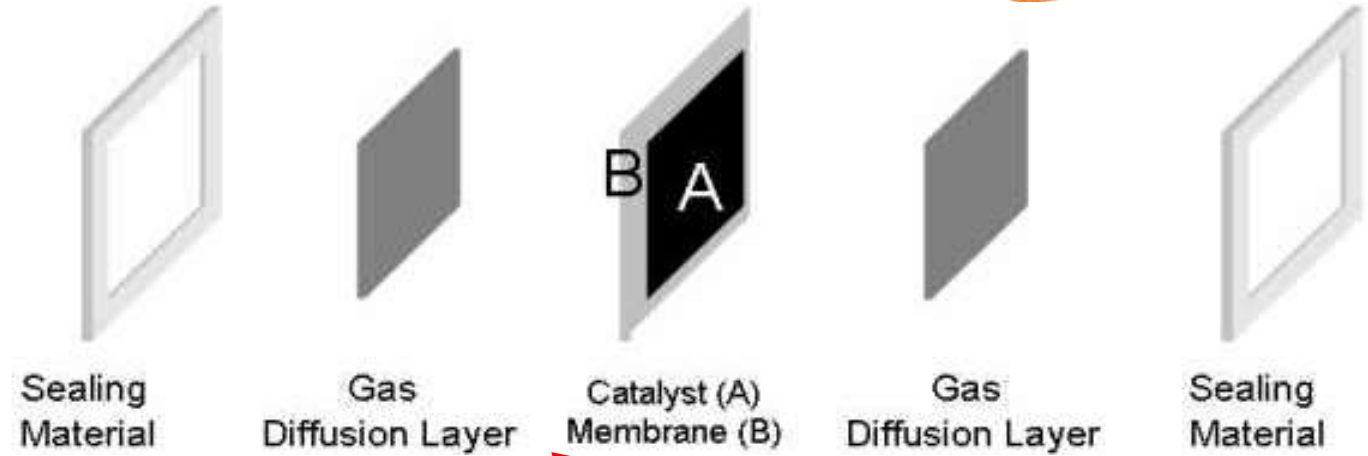




# MAIN PARTS FOR FUEL CELL WORKING

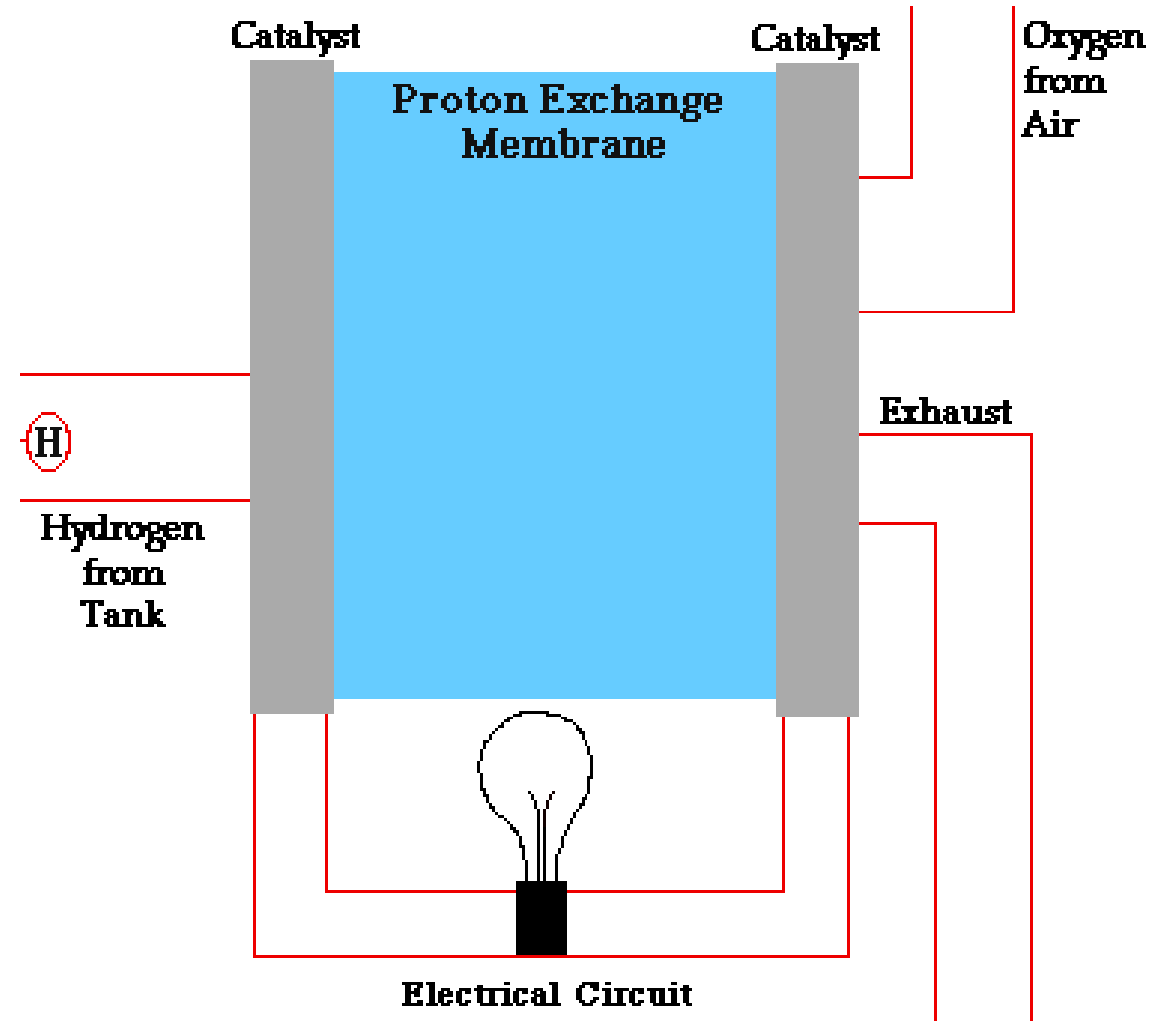


- Anode ←
  - Cathode ←
  - Electrolyte →
- Catalyst
- Membrane





# FUEL CELL WORKING





# TYPES OF FUEL CELL



## BASED ON ELECTROLYTE USED



- Proton Exchange Membrane fuel cell
- Solid Oxide fuel cell
- Alkaline fuel cells
- Molten carbonate fuel cell
- Phosphoric acid fuel cell
- Methanol type fuel cells





# BASED ON TEMPERATURE



- Low Temperature Fuel Cell
  - ❖ Proton Exchange Membrane fuel cell
  - ❖ Alkaline fuel cells
  - ❖ Methanol type fuel cells
- Medium Temperature Fuel Cell
  - ❖ Phosphoric acid fuel cell
- High Temperature Fuel Cell
  - ❖ Solid Oxide fuel cell
  - ❖ Molten carbonate fuel cell







# BASED ON TYPE OF FUEL AND OXIDANT



- Hydrogen – Oxygen Fuel Cell
- Hydrogen rich gas – Air Fuel Cell
- Ammonia – Air Fuel Cell
- Synthesis gas – Air Fuel Cell
- Hydrocarbon gas – Air Fuel Cell





## REFERENCE

- <https://www.youtube.com/watch?v=9cWG6-d4A9I>
- <https://www.energy.gov/eere/fuelcells/fuel-cells#:~:text=A%20fuel%20cell%20consists%20of,is%20fed%20to%20the%20cathode.>
- <https://www.youtube.com/watch?v=tajigZ2e6tQ>



**THANK YOU !!!**