**Experiment (10) Using the battery pack to perform Electrolysis (no sun or no wind)**

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**(i) Components Used**

* Horizon Electrolyzer Module
* Hydrogen and Oxygen Gas Cylinders
* Battery Pack (as DC power source)
* Connecting wires (Red and Black)
* Circuit terminal board
* Mounting bases and electrolyte tubes

**(ii) Objectives**

* To simulate electrolysis in the absence of renewable energy sources like sun or wind
* To observe water splitting using a constant DC supply (battery pack)
* To collect and store hydrogen and oxygen gases for later use in a fuel cell

**(iii) Procedure**

1. We made sure the battery pack was set up on the terminal board and securely wired for output.
2. The red (positive) and black (negative) wires from the battery were connected to the electrolyzer module’s corresponding terminals.
3. The electrolyzer was connected via tubing to two water-filled cylinders meant for collecting hydrogen and oxygen.
4. The battery was turned ON to supply power.
5. As the current flowed through the electrolyzer, electrolysis of water began — generating hydrogen gas at the cathode and oxygen gas at the anode.
6. The gases were collected and visibly stored in the attached cylinders.

**(iv) Observations**

* Gas bubbles were seen forming within seconds, confirming the electrolysis reaction.
* Hydrogen filled one cylinder at approximately twice the volume of oxygen in the other — validating the chemical ratio H₂:O₂ = 2:1.
* The reaction proceeded continuously as long as the battery was active.

**(v) Precautionary Measures**

* We ensured battery pack output matched electrolyzer voltage/current requirements.
* We verified polarity to avoid damage to the electrolyzer module.
* We avoided short circuits or wire tangling.
* We ensured tight tubing to prevent leakage of hydrogen and oxygen gases.
* We conducted experiments in a ventilated space to avoid gas accumulation.