



India's First MWh-Scale Vanadium Redox Flow Battery (VRFB) | National Current Affairs | 12 Nov 2025

Why in News?

Union Minister for Power and Housing & Urban Affairs inaugurated **India's first megawatt-hour (MWh) scale Vanadium Redox Flow Battery (VRFB)** in Greater Noida.

Key Points

- **About:**
 - The **3 MWh Vanadium Redox Flow Battery (VRFB)** is developed by **National Thermal Power Corporation (NTPC)**'s **NETRA (National Energy Technology Research Alliance)**
 - It aims to demonstrate **Long Duration Energy Storage (LDES)** technology for large-scale renewable energy integration and grid stability.
- **Vanadium Redox Flow Battery (VRFB):**
 - It uses **vanadium ions in different oxidation states** to store and discharge electricity efficiently.
 - The system offers **long operational life**, and **excellent scalability** compared to lithium-ion batteries.
 - **Non-flammable electrolytes** make it safer for large-scale energy storage applications.
 - It is well-suited for **grid-scale renewable energy storage, microgrids, and peak-load management**.
 - VRFBs are increasingly viewed as a **sustainable alternative** for integrating intermittent renewable sources like solar and wind into the grid.

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