

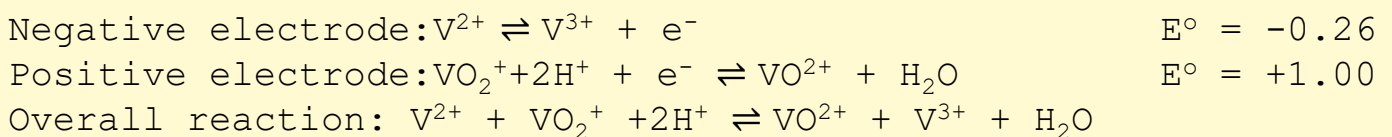
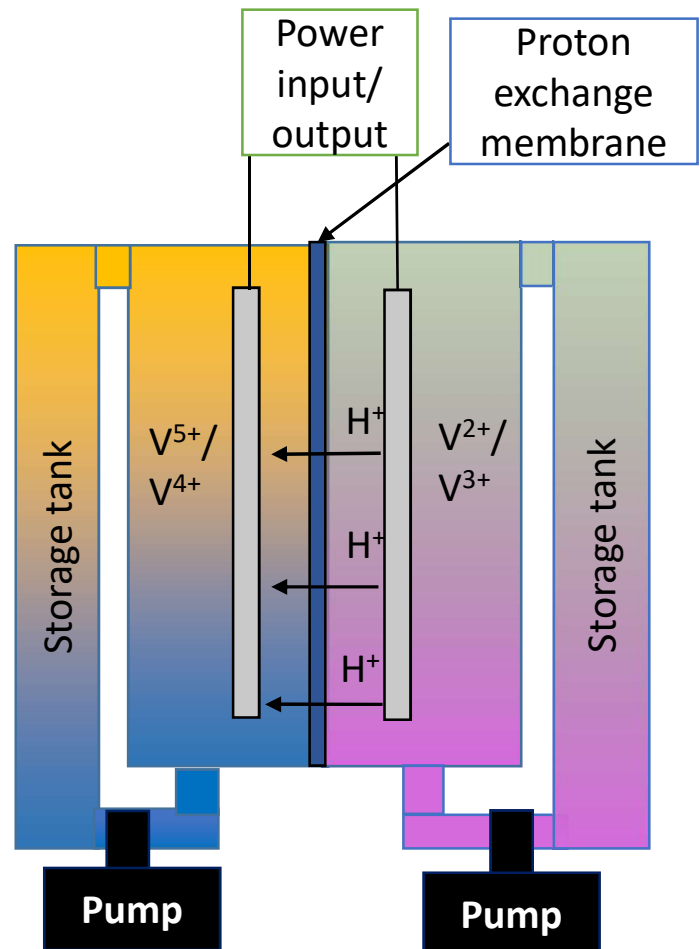
Advanced Case study: Vanadium redox flow batteries

The abundance of oxidation states available in vanadium make a "redox flow" battery possible.

Let's break down its operation from the most reduced ion first. Imagine power is supplied to the cell.

- 1) V^{2+} is oxidised to V^{3+}
- 2) Protons travel through the proton exchange membrane, to balance the charge.
- 3) V^{5+} is reduced to V^{4+}
- 4) The pumps circulate the oxidised or reduced solution into a storage tank.

To use this as a battery, the reverse process takes place.



What is the maximum voltage that could in theory be produced from this cell?

What causes the efficiency to decrease in this cell?

What limits the amount of energy this cell could store?