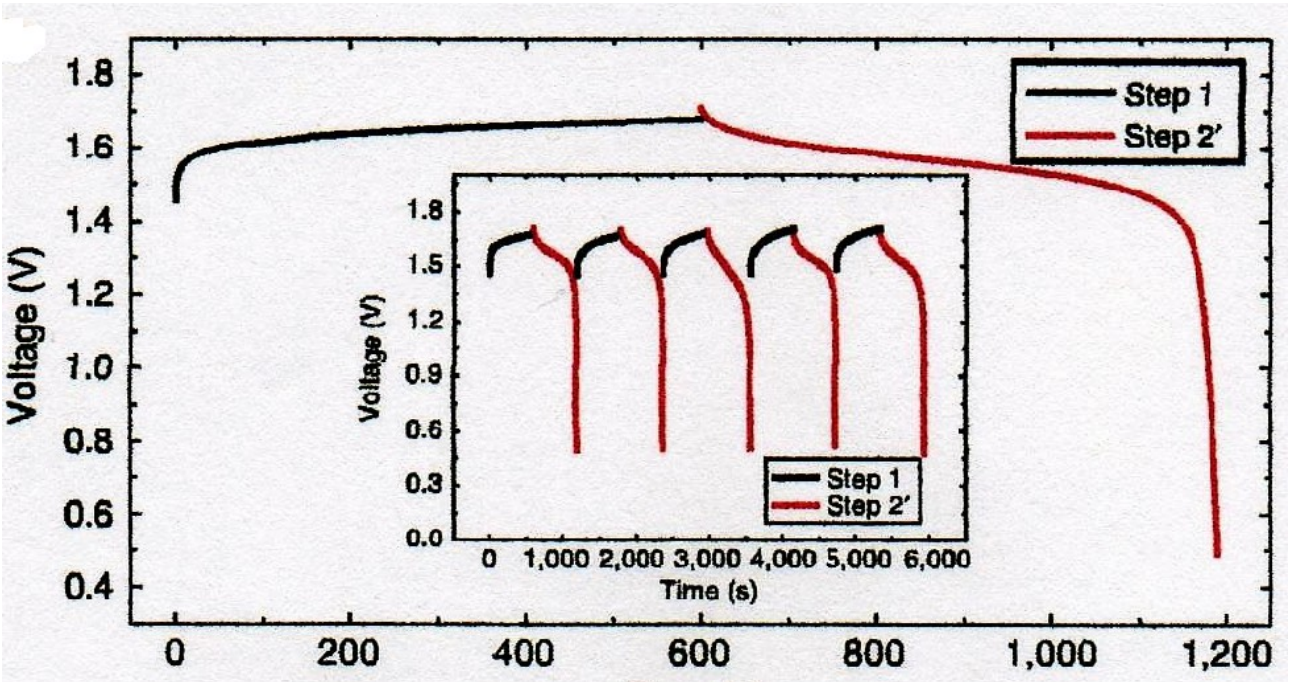

This was taken from a Chines type of SMD, they did not quite get to where I am, but close and a few years behind. They have far better equipment than me and so I'm using it as an outside "replication" of sorts, and a reference. (Faraday efficiency of the hydrogen evolution was computed to be 96%)

This is an expanded view, step 1 is the oxygen charging the nickel hydroxide to nickel oxyhydroxide with hydrogen evolution on the negative electrode, this here is over a time period of 10min, which is not required for SMD, the knee is about 2sec and 1,6v after a few cycles. Step 2 is the discharge with the zinc electrode and driving a load or in SMD, charging a super capacitor or (ESD). The bigger the cell the more hydrogen, higher the energy density obtained by the oxidation of the Ni, and also the power delivered to the ESD on step 2.

A minimum of 30% of the "power" on stage 2 with SMD comes from the cell itself, **the oxygen and the zinc**, the rest comes from the external source, which if you were to calculate the Faraday efficiency for the hydrogen from the external source input, the figure would be well over 120% in relation to the 96% using the power from the ESD discharge.

Until you try a reasonable size lab scale it is difficult to understand the significance. The best industrial electrolysis of water is around 85% and the oxygen is not wanted in most cases but is calculated in the percentage efficiency as product (that is Faraday's law, the sum of the products)

M.J.Nunnerley 2017 Addendum to pdf