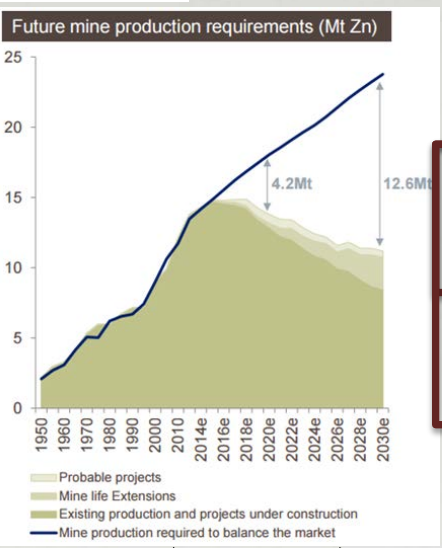


Zinc metal extraction from alkaline battery waste by pyro-chemistry

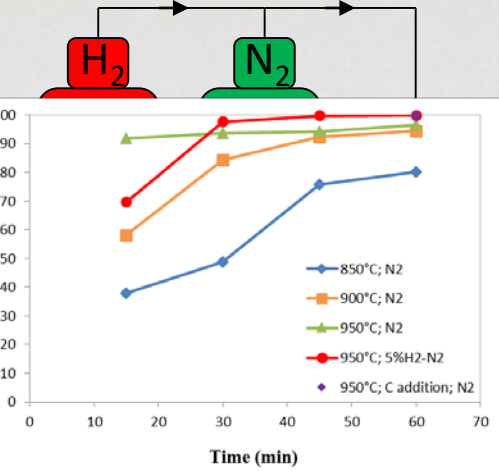
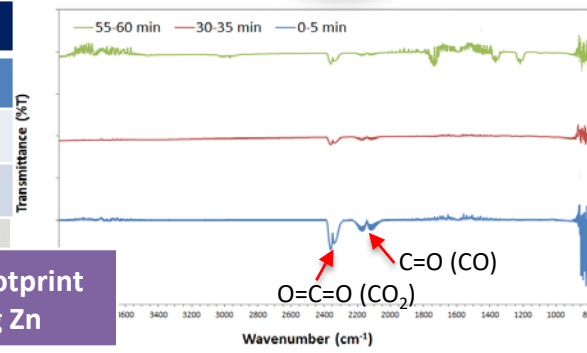


Consumption of alkaline batteries (million units)

	2014	2015	2016
Western Europe	295	280	280
Global	9250	9000	9000

1170 metric tones of Zn
 2100 metric tones of MnO

Sample	Carbon footprint g CO ₂ /g Zn
Carbon reaction	1.22
H ₂ reaction	0.48



- I. Process Optimization**
 - ✓ Reducing Agent
 - ✓ Type of Gas
 - ✓ Feeding Amount
- II. Process Validation**
 - ✓ Energy Consumption
 - ✓ Gas Emission

III. Product Characterization

