

a. Influential factors

Cell design: Chemistry, form factor, formation protocol



Cell quality: Defects, conformance



Module/pack design:

s/p configuration, thermal management, pack balancing



Cell operating limits:

Charging limits, voltage limits



End-user behavior:

(Dis)charging rates, usage per day



External environment:

Temperature, vibrations, humidity



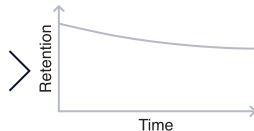
b. Performance degradation



Side reactions on the electrode particles



Active material loss



c. Functional failure



Insufficient electrode overhang



Tab weld failure



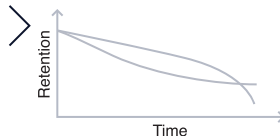
Metallic particle contaminants



Open-circuit failure



Short-circuit failure



d. Safety event



Short-circuit failure



Car crash



Casing or seal failure



Thermal event



Gassing



Leak

Severity

Likelihood