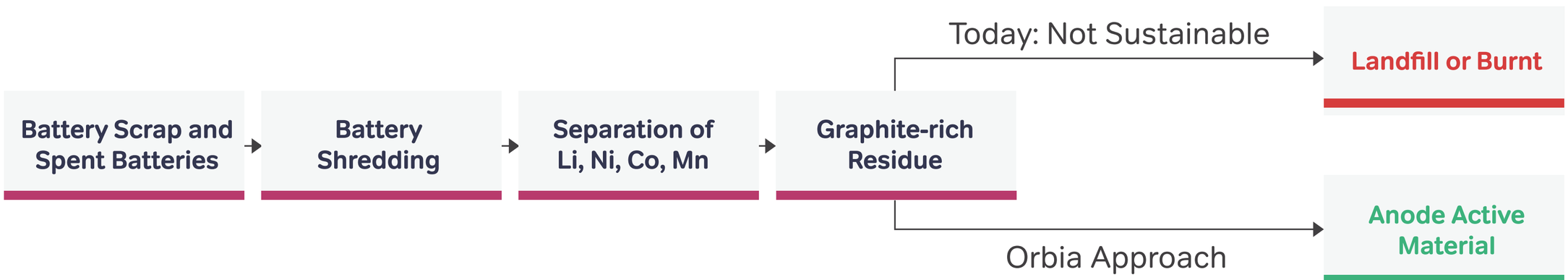
orbia | Fluor & Energy Materials

# Sustainable Anode Material from Recycled Batteries

Orbia Fluor & Energy Materials (Orbia F&EM) has developed new technologies to recycle graphite from spent (scrap, manufacturing reject or end-of-life) batteries back into anode active material.

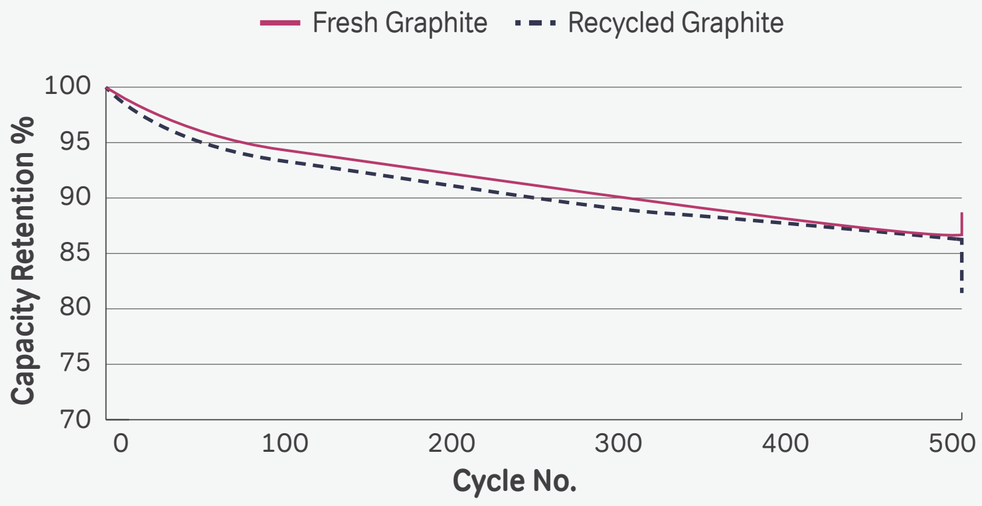
Recycled graphite anode active material has been shown to have identical performance to fresh graphite anode active material.

Orbia F&EM has access to high quality reagents (HF & HCl), experience, and existing permitting required for purifying and upcycling recycled graphite.



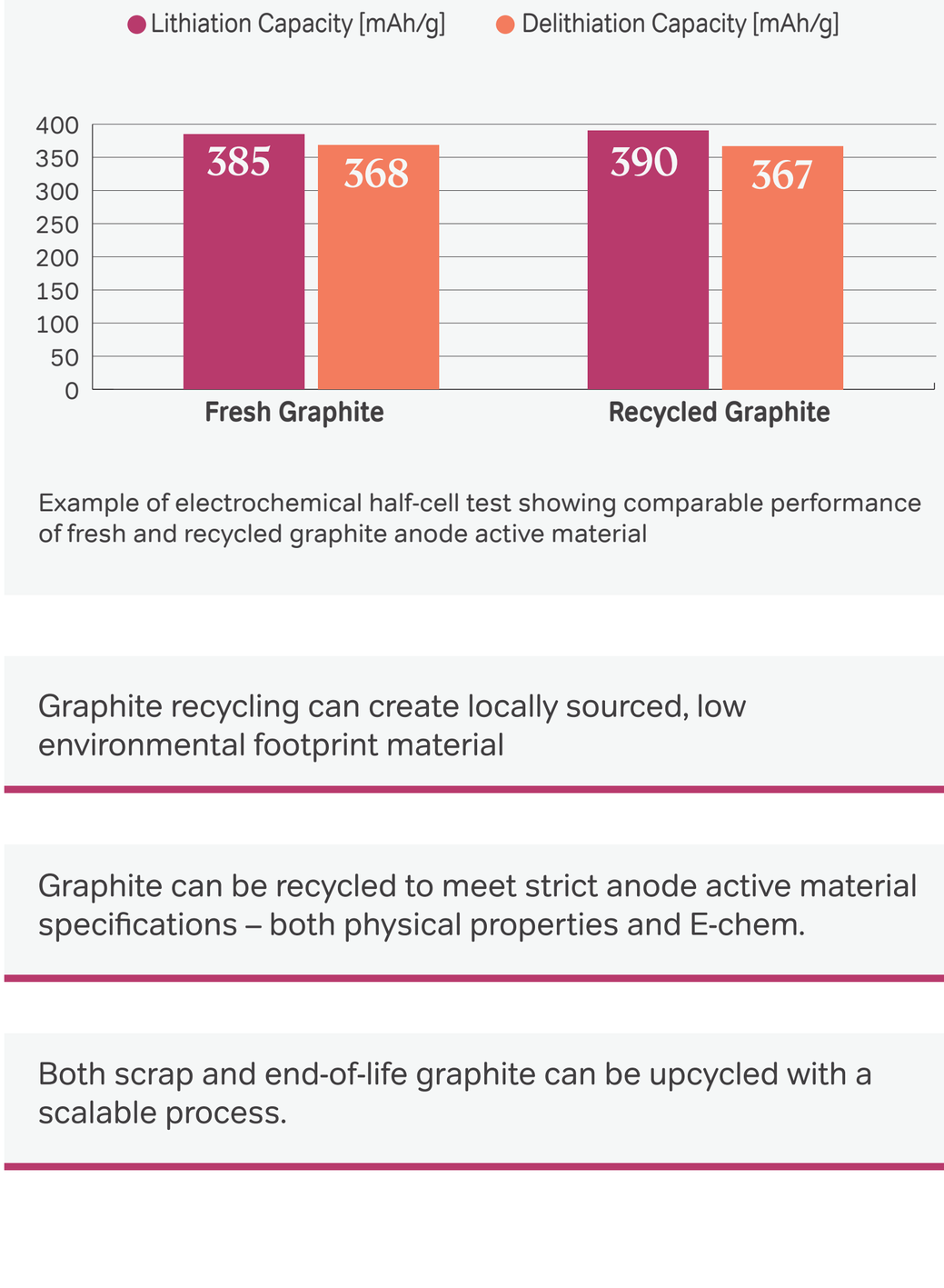

| | Fresh Graphite | Recycled Graphite |
|---|---|---|
| Particle Size D50 um | 11-13.5 | 11-13 |
| Tapped Density g/ml | >1 | >1 |
| Surface Area $m^2/g$ | <3 | <3 |
| Purity % | >99.9% | >99.9% |

## Recycled Graphite has the same Cycle Life as Fresh Graphite




Example of cycle life of recycled graphite compared to fresh graphite measured in 100 mAh pouch cell. LFP Cathode, 1C charge/discharge 3.6 V – 2V, 45°C

## Recycled Graphite has the Same Capacity as Fresh Graphite




Example of electrochemical half-cell test showing comparable performance of fresh and recycled graphite anode active material

Graphite recycling can create locally sourced, low environmental footprint material

Graphite can be recycled to meet strict anode active material specifications – both physical properties and E-chem.

Both scrap and end-of-life graphite can be upcycled with a scalable process.