lithos

Fueling innovation through sustainability

300
million lithium ion batteries will be in use by 2030.

95%
of Lithium-ion batteries end up in landfills

Lithium-Ion Batteries are unsustainable

The lithium used in production has increased from 5160 metric tonnes in 2007 to 19780 metric tonnes in 2017. Lithium ion batteries power our lives and EVs. When discarded, they cause fires, pollute air, water, and soil. Recycling is costly, dangerous and ineffective due to inefficient disassembly.

Automated battery disassembly

Lithos uses machine learning and robotics for safer, more efficient recycling. We then use pro-hydrometallurgy to recover materials.

1 Machine Learning

We use computer vision and YOLO algorithm to classify and process components efficiently in automated disassembly. The lack of flexibility in automated disassembly processes has been a long-standing gap, which we are addressing.

2 Robotics

Robotic arms carefully remove wiring and casing to disassemble battery cells, which are separated by removing foam or plastic. Cell voltage is tested for safety before they are recycled or repurposed.

3 Pyro-Hydrometallurgy

Disassembled batteries undergo pyrometallurgy to remove 90% of less valuable materials, followed by hydrometallurgy to recover up to 99% of materials by dissolving anodes and cathodes. This is a more efficient and eco-friendly approach than using either method alone.

Impact

By using robotics, Lithos expects to increase battery recycling efficiency **10X**, from 12 to 100 batteries in the same time frame. Lithos makes recycling **70% cheaper** and **10X faster**. We reduce the need for environmentally damaging **mining by 90%**, recovering a rough estimate of **millions to tens of millions of dollars in materials.**

73.7%
more cost effective recycling by reducing labor costs and needs for human interventions.

Bradley Zamft

Project Lead at X, the Moonshot Factory

"The greatest strength is the identification of problem. It's a big problem, big market, high impact, and in need of disruption."