

**americanmanganeseinc.com**

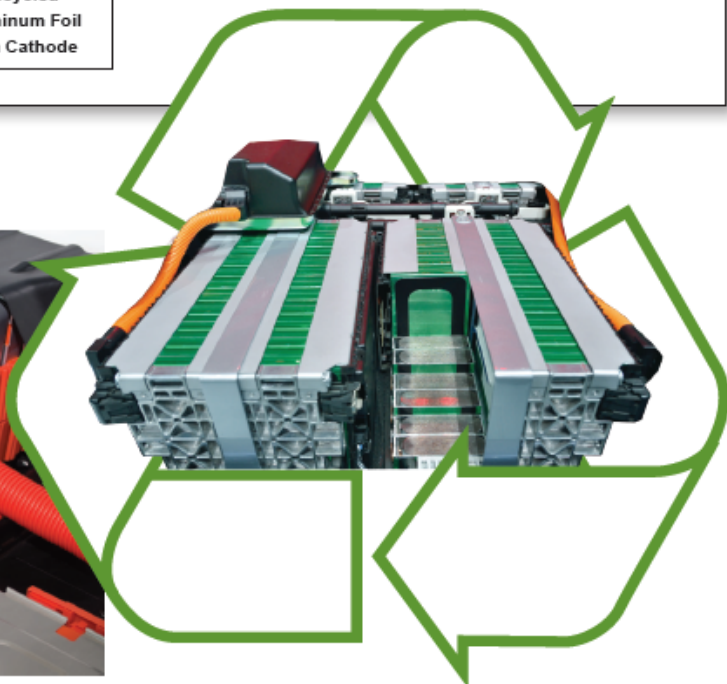
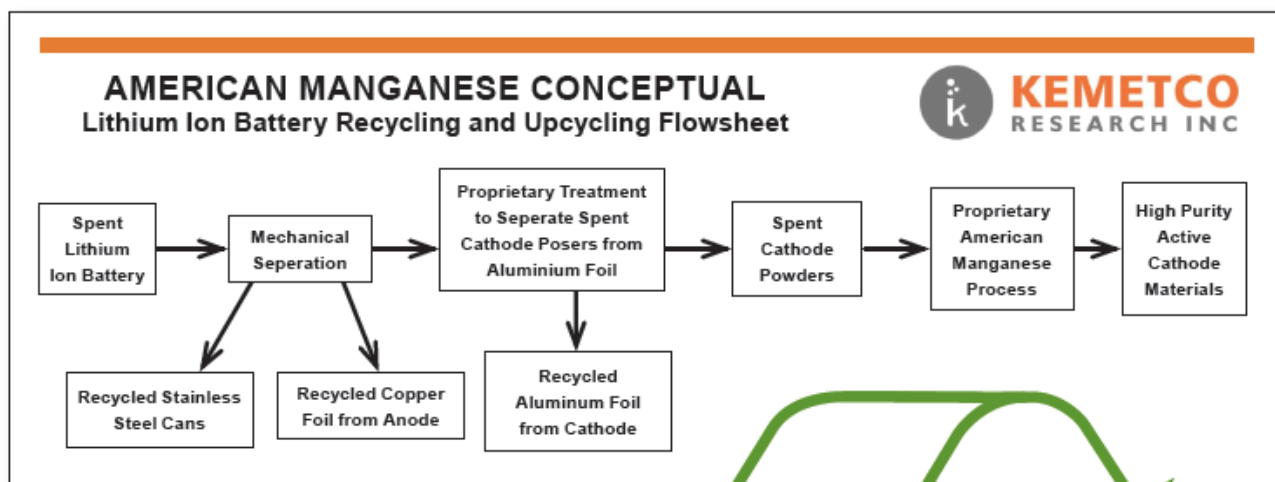
## *A Critical Metal Company Focusing on Recycling Lithium Ion Electric Vehicle Batteries*



**AMERICAN**  
MANGANESE INC.

**Phone: 778-574-4444**

**Ticker Symbol: TSX-V: AMY | PINKS: AMYZF | FRANKFURT: 2AM**



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# SUMMARY

- Leader in Lithium Ion Electric Vehicle Battery Recycling
- Mining Batteries Eliminates Mining Ore
- Valuable Cathode Materials (Cobalt) Delivered to Our Door Step (\$3.00/lb Tipping Fee)
- Business Opportunity in Recycling Plants
- Equity Investment Participation in Disruptive Technology Critical to the Production of Electric Cars

# AMERICAN MANGANESE INC. - SHARE CAPITAL

## Shares Structure – April 3, 2017

|   |                  |
|---|------------------|
| Market Cap Undiluted-----                 | \$30.0 Million   |
| Diluted -----                             | \$35.8 Million   |
| Basic Issued and Outstanding Shares ----- | 139,647,169      |
| Warrants and Options Shares-----          | 31,059,790       |
| Fully Diluted -----                       | 170,706,959      |
| Warrants and Options Diluted \$-----      | \$3,472,308      |
| 52-Week High/Low -----                    | C\$0.38 - \$0.01 |
| Listing: Common Shares -----              | TSX.V: AMY       |
| Pink Sheets: AMYZF.pk Frank: 2AM          |                  |



# BIOGRAPHY OF THE PRESENTER

## LARRY W. REAUGH

**President and Chief Executive Officer  
of American Manganese Inc. from February 1998 to present.**

Mr. Reaugh has fifty-three years' experience in the mining industry and for the past thirty-five years he has been the CEO and President of several exploration, development, production companies and 12 years in internet and technology companies listed on the TSX, TSX Venture and NSDAQ exchanges.

Several of his companies have made significant discoveries, three of which (gold) went on to be producing mines.

Through his career, Mr. Reaugh has raised in excess of \$300 million for junior resource mining companies. Part of this is the \$25 million dollars raised for AMY over the past eighteen (18) years.



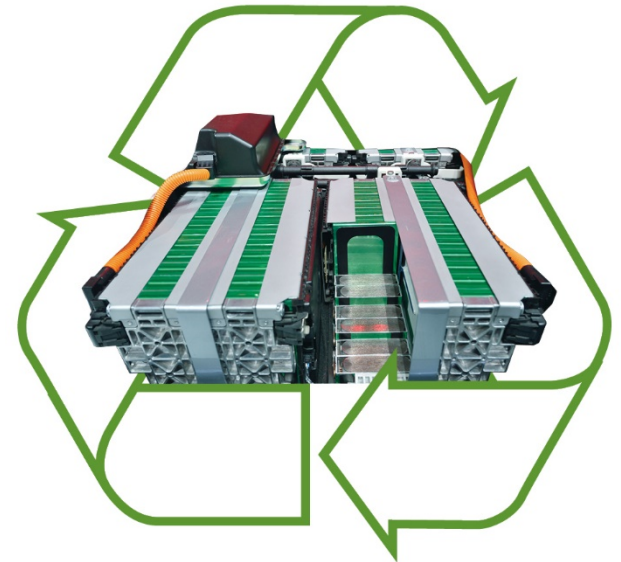
# CORPORATE OBJECTIVE and STRATEGY

## CORPORATE OBJECTIVE

A diversified critical metals company focusing on upcycling Lithium Ion Electric Vehicle Batteries.

## CORPORATE STRATEGY

To recycle valuable cathode materials for the global lithium electric vehicle battery industry. The process eliminates the need for heat and furnaces, as the recovery of the metals take place at ambient temperatures. The result is a cleaner, environmentally sustainable, robust recycling alternative to current disposal methods.





# TECHNOLOGY HISTORY

The recycling opportunity currently underway has its roots in American Manganese Inc.'s technology for economically producing Electrolytic Metals (EM) from very low grade deposits located at Artillery Peak, Arizona. Normal process utilize grades from 35-55% Mn whereas Artillery grades range from 2-3%. Artillery Peak is the largest deposit of Manganese in the U.S. with a potential of billions of pounds available. Partially answers U.S. concern for Strategic Metals.

The process is patented in the U.S., China and South Africa. American Manganese was successful where the U.S. Bureau of Mines tried and failed to produce EM economically for approximately sixty years. Kemetco recognized the process could be adapted to Recycling Electric Vehicle Batteries.



# RECYCLING TECHNOLOGY

The following achievements have been realized as follows:

- Cathode materials such as lithium and cobalt have returned extractions of 100%.
- Precipitation tests have recovered 100% of cobalt and 87% of the lithium. Leaching tests have been completed on Nickel and Manganese giving 100% recovery.
- Production of rechargeable Lithium Cobalt prototype button batteries have been successfully completed.
- A US provisional patent was applied for on November 11, 2016.

# THE PROBLEM

- Currently Recycling EV Batteries Consists Of Storage (Landfill) and/or Pyrometallurgical Processes (Burning In Smelters)
- China Has Legislated That All EV Manufacturers And Importers Come Up With A Feasible Recycling Program
- European Union Has Set A Timeline For Battery Manufactures And Importers To Recycle Spent Lithium Ion Batteries
- Canada Has Three (3) Provinces (British Columbia, Manitoba and Quebec) With Mandatory Recycling Programs
- In the US there is no Federal Regulations for Battery Recycling, some States do.

# THE OPPORTUNITY

**American Manganese Inc. Has Developed A Robust Recycling Solution that is Closed Loop and Reduces the Need For New Mines, Landfill Waste, Energy Consumption, Co<sub>2</sub> Emissions and Critical and Strategic Metal Consumption.**



# CUSTOMERS

- Battery Manufactures
- Electric Vehicle Manufactures
- Commodity Firms wanting Off-take Agreements
- Mining Companies (company presenting at the Cobalt Institution in Morocco May 17, 2017)
- Large Corporations looking to partner on our Technology
- Mining Companies Expanding into Different Mining Streams.
- Oil Companies expanding into alternative energy

# MARKET SIZE

- 2015 - 276,000 EV Batteries reached the end of Life
- 2020 - 356,000 will reach their end of life
- 2025 - 849,000 will reach their end of life
- 2040 – Estimates of 40 million EV Vehicles will be in service
- Emerging Lithium Ion Storage Batteries opens a huge new area of opportunity

# RECYCLING COMPETITORS

|   | PROOF OF CONCEPT                                   | PATENTS   | RECOVERIES                               |               | *RECOVERY METHOD  |
|---|--|---|--|---------------|---|
|   |  |   | COBALT                                   | LITHIUM       |   |
| <b>AMERICAN MANGANESE INC.</b><br>SURREY, B.C. CANADA | Completed  | US Patent Application<br>Applied for: November 11, 2016 | 100%                                     | 87%           | Hydro Metallurgy  |
| RETRIEVE  | Completed  | Not Found   | Small Amount<br>Not Recovered            | Not Recovered | Hydro Metallurgy  |
| WORCESTER POLYTECHNIC INSTITUTE                       | Completed?<br>No Information                       | US Patent Application<br>Applied for: November 22, 2016 | Not Reported                             | Not Reported  | Hydro Metallurgy  |
| INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA             | Completed  | Not Found   | < 25%                                    | < 50%         | Hydro Metallurgy<br>Plus High Cost Calcining                  |
| BURNING BATTERIES IN SMELTERS ANYWHERE IN THE WORLD   | Current Method<br>of Disposal of<br>Most Batteries | Not Patentable  | 40 - 70%<br>Not Reusable<br>in Batteries | Nil           | High Cost of Smelting<br>'Not Environmentally<br>Responsible' |

## RECYCLE VS. REUSE

2016 was a breakout year for the plug-in Vehicle Market which enabled cost reductions in Lithium Ion Batteries. Reuse has many Pro's and Con's such as reduces cycle-life. Reuse would delay but not eliminate the need for battery recycling.

*\*Management & Kemetco's Examination of recycling and Hydro Metallurgy of our competitors has shown no overlapping chemistries with our Technology. American Manganese's process strongly suggests leadership in the Competing Technologies*

# BATTERY CHEMISTRY and ECONOMICS

At current metal prices, the gross contained metal value of the cathode materials in a typical 85 kWh electric vehicle (EV) battery pack, weighing about 500 kg, for the most popular battery chemistries are estimated as follows:

|                               | BATTERY CHEMISTRY |            |          |           |           | IN BATTERY<br>TOTAL<br>VALUE | BATTERY \$6.60/kg<br>TIPPING<br>FEE |
|-------------------------------|-------------------|------------|----------|-----------|-----------|------------------------------|-------------------------------------|
|                               | LITHIUM           | COBALT     | NICKEL   | MANGANESE | ALUMINIUM |                              |                                     |
| Price (\$/kg)*                | \$42.29           | \$54.00    | \$10.14  | \$1.98    | \$1.80    |                              |                                     |
| Lithium Cobalt (LCO)          | 11kg              | 93.7kg     | 0kg      | 0kg       | 0kg       |                              | \$3.00/lb                           |
| Est. Value                    | \$465.19          | \$5,059.80 | \$~      | \$~       | \$~       | \$5,524.99                   | \$3,300.00                          |
| Nickel Manganese Cobalt (NMC) | 9.7kg             | 27.5kg     | 27.4kg   | 25.6kg    | 0kg       |                              |                                     |
| Est. Value                    | \$410.21          | \$1,485.00 | \$277.84 | \$50.69   | \$~       | \$2,223.74                   | \$3,300.00                          |
| Nickel Cobalt Aluminium (NCA) | 8.5kg             | 10.9kg     | 57.7kg   | 0kg       | 1.7kg     |                              |                                     |
| Est. Value                    | \$359.47          | \$588.60   | \$585.08 | \$~       | \$3.06    | \$1,536.20                   | \$3,300.00                          |

## Tonnes of Cobalt per 100,000 batteries

LCO 9,370 tonnes    NMC 2,750 tonnes    NCA 1,090 tonnes

*\*Converted from carbonate to metal prices for Nickel, Aluminium are sourced from Kitco.com; for Electrolytic Manganese Dioxide at USGS; for Lithium sourced from the Outsiders Club, and Cobalt from infomine.com*



## CATHODE MATERIALS ARE CRITICAL and STRATEGIC

- Cobalt: Currently in deficit supply, critical for Lithium Ion Batteries and up over 150% in the past year to \$24.50/Lb. \$54.00/Kg. (U.S.) - (\$54,000/tonne)  
*Present Price \$25.40/lb - \$56.00/Kg (U.S.) - (\$56,000/Tonne)*
- Lithium: predicted to be in deficit supply trading at \$9,000/tonne. In some cases \$20,000/tonne in China
- Nickel: Possibly entering deficit supply trading at \$11,000/tonne
- Manganese: bullish reports for electrolytic manganese dioxide for battery storage will significantly boost consumption. Currently \$2,000/tonne
- Aluminum: Currently \$1,950/tonne

# COBALT PRODUCTION DYNAMICS

While global production of refined cobalt surged from 52,400 tons in 2005 to 99,000 tons in 2015, the bulk of the increase was attributable to new capacity from African copper mines. In addition to rigorous regulatory issues for companies that buy metals from African miners, metal production from African mines is not necessarily reliable.

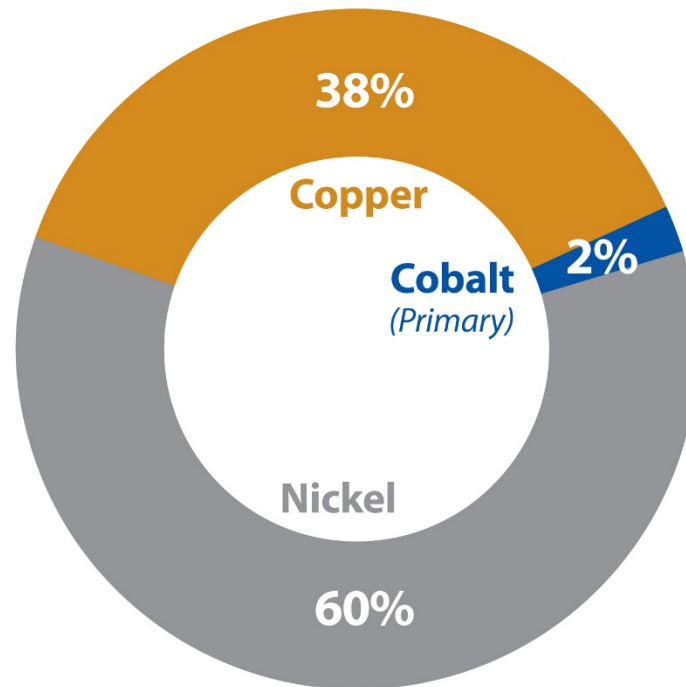
According to the Cobalt Development Institute, the battery industry uses 41% of global cobalt supplies. Over the next 10 years, that percentage will increase to about 65%. While there is limited competition in the global markets for lithium. Cobalt provides the high energy density for Lithium Ion Batteries.

Tesla cannot launch a \$35,000 Model 3 without a Giga-Factory that's operating at or near its design capacity of 35 GWh per year. This will require about 7,800 tonnes of cobalt per year.

The bottom line for investors is, “AMY’S EV Battery Recycling Plan will could alleviate the cobalt shortage and replace a large percentage of future mining requirements.”

# COBALT PRODUCTION

**Most Cobalt production is mined as a by-product**

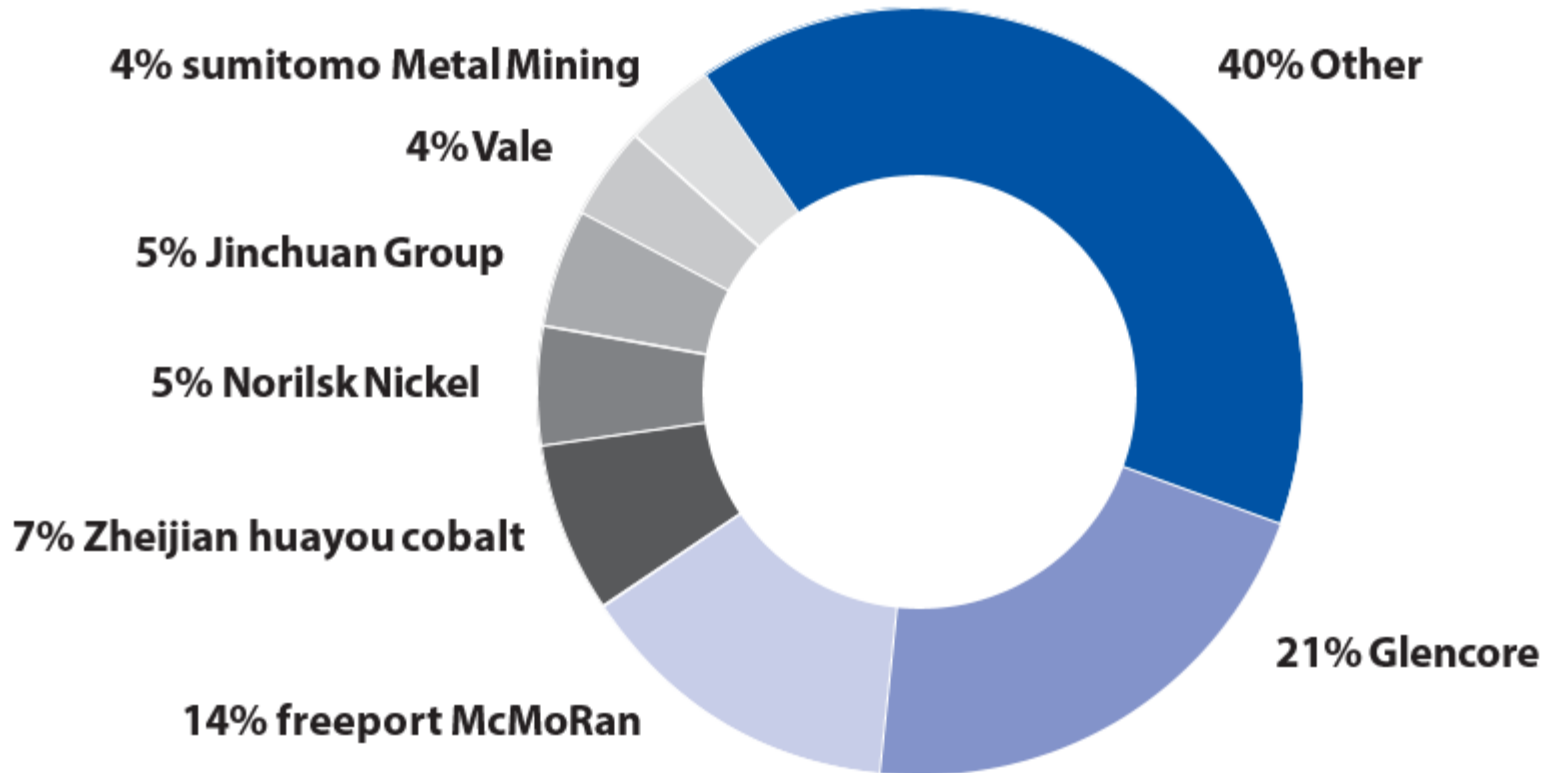


This means it is hard to expand Cobalt production when more is needed

# COBALT 12 YEAR CHART



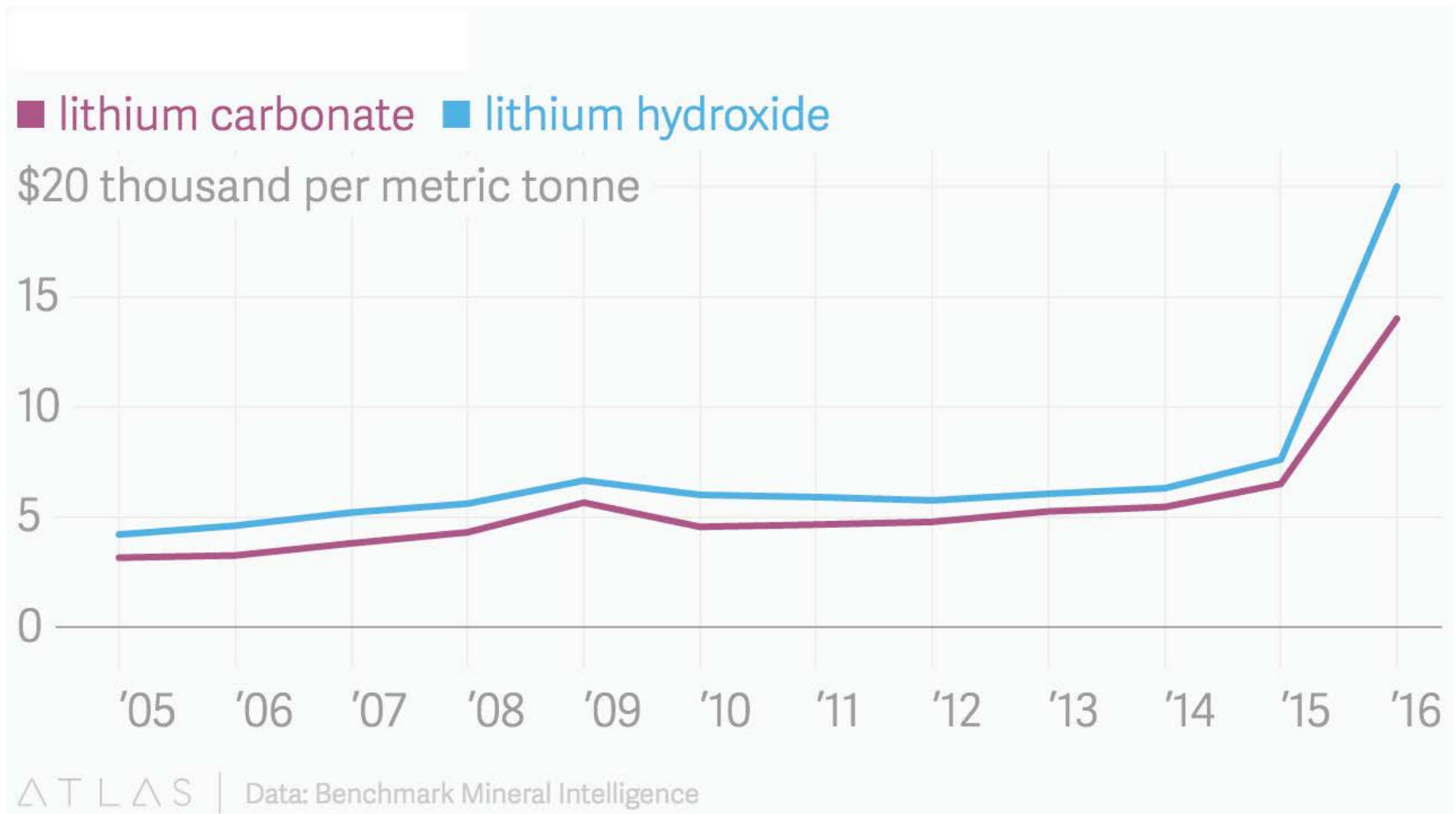
## COBALT 100,000 TONNES PRODUCED ANNUALLY



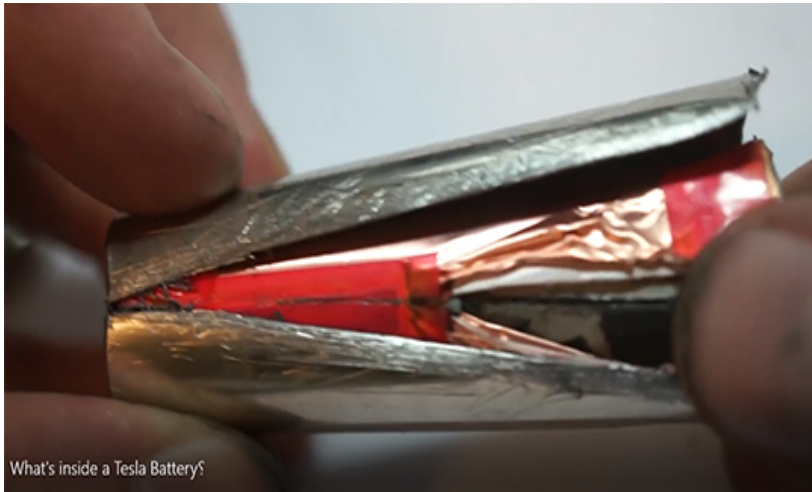
96% of Cobalt Comes as a By-product of Mining Nickel and Copper Deposits.  
56% is Produced In The Democratic Republic Of Congo a Country Sanctioned  
for Human Rights Abuse.

50% of The World Cobalt is Refined in China.

# GLOBAL LITHIUM PRICES



# DISASSEMBLY OF A TESLA BATTERY



The Company is collaborating on Automating a Disassembly Line for Lithium Ion Battery Cells



# MILESTONES

- Completed Proof of Concept - 2016
- Filed for US Provisional Patent - 2016
- Raised a minimum of \$2,000,000 - 2016
- Completed Leaching Precipitation Testing on Lithium/Cobalt - 2017
- Complete Leaching Precipitation Testing on Nickel/Manganese - 2017
- File for Full U.S. Patent and Other Jurisdictions - 2017
- Raise from \$10-\$25 Million dollars with Participation Partner - 2017-2018
- Begin Pilot Plant build from Pilot work - 2018
- Design Battery Disassembly Plant - 2018
- Hire Engineering Firm to Estimate Costs of Operating and Capital Costs - 2018-2019
- Complete Environmental Permitting - 2019
- Raise Capital and Build Operating Portable Plant - 2019-2020

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- Business Opportunity in Recycling Plants
- Equity Investment Participation in Disruptive Technology Critical to the Production of Electric Cars

## FURTHER INFORMATION

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