



Company Overview

Pure Battery Technologies Pty Ltd ("PBT") is a Brisbane, Australia based nickel and cobalt refiner of nickel intermediate product called MHP.

<u>Vision:</u> Integrated battery material producer / cost and technology (IP) leader for Lithium Ion Batteries (LIB).

Strategy:

- (i) Commercially produce premium NiSO₄ product to generate cash flow
- (ii) Directly precipitate NMC battery materials from MHP
- (iii) Apply technology portfolio to recycled battery material.

Status of Strategy Implementation:

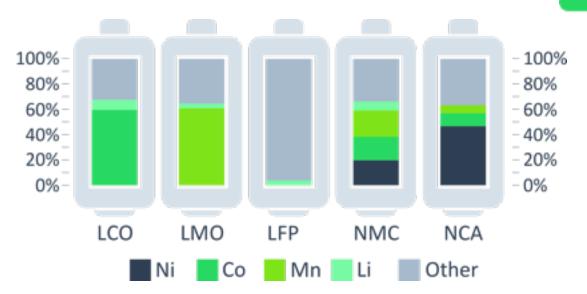
- Pilot Plant (NiSO₄) completed and best in class sample product produced
- PBT confirmed significant **environmental and commercial** benefits and advantages **(70% less capex and opex)** of our approach. Feasibility Study for operational plant completed and peer-reviewed.
- PBT also confirmed ease in applicability of our IP to NMC and battery recycling.
 Collaborating with leading University Australia and US and industry partners globally in R&D partnerships.

PBT Board in market and discussion with investors to capitalize the business with funding of up to U\$150m.

EV Battery Chemistry trending towards high Ni Content

Nickel & Cobalt (NCA & NMC) required in leading cathode chemistry for EV Li-ion batteries

Composition of major battery cathodes



Source: Avicenne, Macquarie Research, 2017

Shift towards high Ni Content **EV** batteries

Source: Golden Road Inc

- Superior energy density
- Increased range
- Mitigating cost of cobalt
- Security concerns of Co supply

Base metal cost

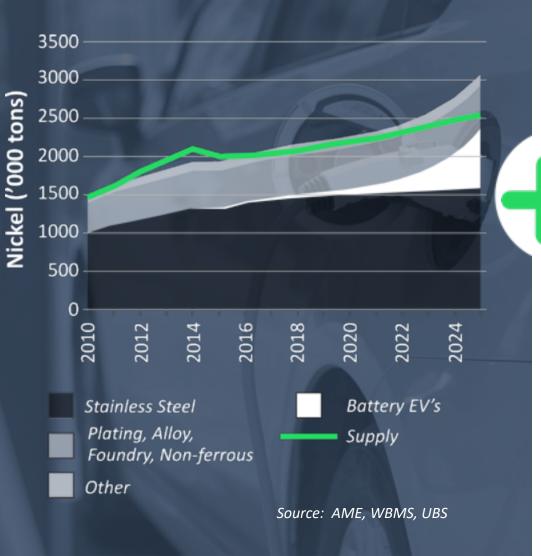
Li-ion batteries high in Nickel offer long range at low cost



EV range

Nickel - The essential metal for new premium precursors

Nickel Demand and Supply



Estimated nickel market impact of EVs by 2025

+13m

EV output growth (EV & PHEV p/a)

+35%

Ni market demand growth from EV's

+730ktpa

Ni demand from EV batteries

~50%

Global Ni supply unsuitable for EV batteries

Li-ion batteries require high purity nickel feedstock

Source: UBS Research, BHP

Strategic Market View (simplified)

China / Asia

- **R&D** and Policy Development
- **Large LIB Market**
- **Production Focus**
- **Emerging Recycling Focus**

Europe

- R&D
- **Large LIB Market**
- Recycling focus #1

North America

- R&D
- **Moderate LIB market**
- **Recycling emerging**

Indonesia / PNG / New Caledonia

Mining focused supply

Australia

- **PBT Headquarters**
- **R&D Centre IP Protection**
- **Small market**
 - **Some Supply**





MHP Conversion - Still In Its Infancy

Global MHP Operations

- Mostly remote and risky operations
- Cheap Default Product
- Large Capex
- Low returns through the cycle
- Long time to market
- Most fail to then make acceptable battery supply chain products or if so at exorbitant costs

MHP Conversion



- Dirty
- Environmentally Unfriendly
- Historically Complex
- CAPEX Extensive

Where Supply Meets Demand

Battery / Automotive / Consumer





























"Have \$ - Want Product"

Well funded players compete to

SECURE UNDERSUPPLIED PRODUCT

Summary and Advantages of the PBT Process

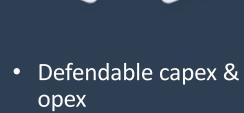


- <u>Simple one step fully globally patented process</u>. No solvent extraction (SX) required.
- MHP refining via PBT game shift: Focus effort on elegantly eliminating 2-5% of the impurities in the material instead of complex treatments in extracting 50% of the treated mass volume.
- Metal separation focus: strong, clean and immediate separation of nickel and cobalt.
- High nickel recovery with valuable side stream of unique cobalt concentrate.





- Fast (~1 hour)
- Extremely Simple
- No heat, no pressure
- No toxic / flammable elements



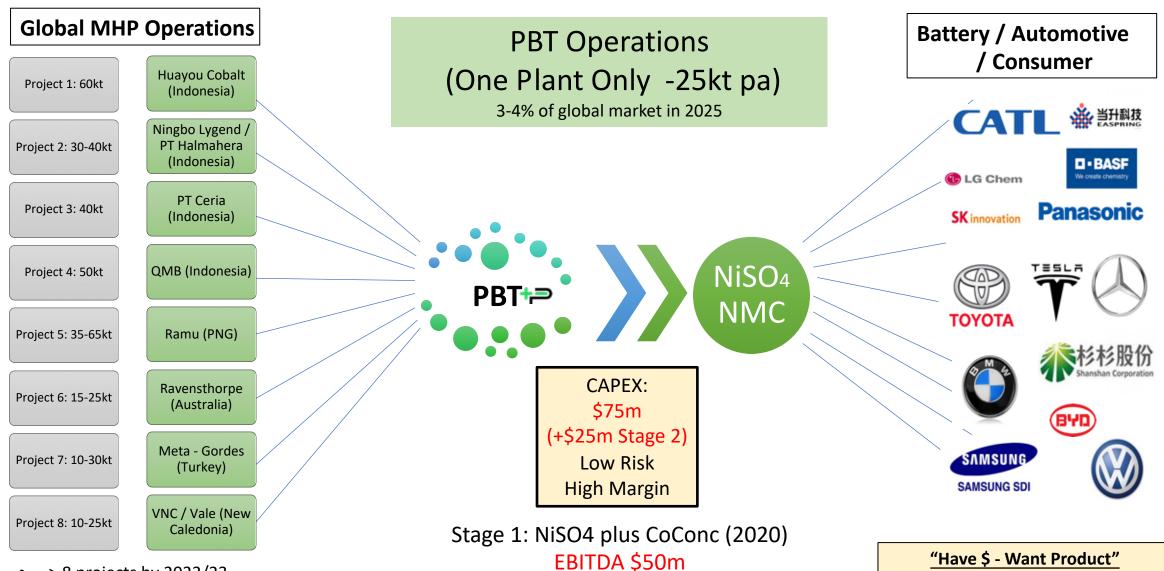
Profit

- Sidestream process: high cobalt recovery
- Upstream flexibility



- Energy Efficient
- No Solid Waste or Tailings (cobalt conc. sold)
- Compact: very small footprint
- Lowest environmental footprint in class

PBT Market Opportunity – SINGLE PLANT ONLY



Stage 2: NMC (2022)

EBITDA \$100m

> 8 projects by 2022/23

Min 200kt Ni in MHP

"Have \$ - Want Product"

Well funded players compete to SECURE UNDERSUPPLIED PRODUCT

Current Product Development (Pilot Plant)



MHP -> Cobalt Concentrate + NiSO₄



Five different peer products, PBT on the right. Crystal sizing to improve with commercial crystallizer.

RESULTS COMP TABLE -NiSO₄ Product Specs

Components (ppm)	Global Mean	Global Best	PBT (05/2019)
Ni	22.0 (wt.%)	22.3 (wt.%)	22.3 (wt.%)
Co	<50	<2	<1
Mn	<4	<1	<1
Fe	<6	<1	<1
Cu	<6	<1	<1
Zn	<5	<1	<1
Pb	<5	<1	<1
Al	<20	<1	<1
Ca	<50	<1	<1
Mg	<50	<1	<20
Cr	<10	<5	<1
Cd	<6	<1	<1
Na	<260	<5	<50
Si	<30	<10	<10
K	<1000	<10	<1
Cl	<10	<10	<10
Insolubles	<27	<3	<5

PBT comparison to peer group of 20 commercially available NiSO₄ products – "Best in Class"

PBT Engineering / Project timeline



- Feasibility Study completed
- Land identified and secured
- Major equipment identified and vendors engaged to feasibility level quotations
- Geotechnical study completed on site
- Project approvals timeline developed

June 2019

- Peer / Fatal Flaws Review
- Identification of further works required following peer review
- Evaluation of EPCM groups

July 2019

- Major vendor equipment test work initiated
- First round of filter test work completed
- Example product samples begun
- Contract negotiation of EPCM group for FEED contract

August 2019

- EPCM / FEED
 Engineer engaged
- FEED scope of work and schedule developed and initiated
- IX circuit test work and design

Oct - Nov 2019

- Funding Event
- Begin EPCM
- Place order for EPCM / EPC contractor
- Place order for piling and concrete works
- Place major supplier contracts
- Engage electrical suppliers
- Initiate project approvals process

September 2019

- Construction subcontractors engaged and evaluated
- Site Survey complete
- Plant Risk Review
- Piling design
- Crystalliser vendor data obtained for detailed FEED
- Complete example product production

Funding Round 2H 2019 - underway

Funding Targeted: <u>U\$150 million</u>

Use of Funds:

- U\$85 m CapEx (incl. contingency) for Townville NiSO4 plus Cobalt Concentrate Plant
- U\$65 m Townsville working capital (including start-up provisions)
- U\$10 m Corporate Development to accelerate development of NMC and Recycling

Source of Funds:

- Equity / JV contributions: U\$50m
- Debt (project finance incl R&D tax credits), trade finance facilities: U\$100m

Sourcing Party / Parties:

- Capex: Strategic / Financial Investors, Traders, NAIF*, CEFC**
- Trade Finance / Working Capital: Suppliers, Off-take parties, Tolling Arrangements

^{*} NAIF- Northern Australia Infrastructure Facility - \$5bn Australian Government Funding (Long Term Debt)

^{**} CEFC – Clean Energy Finance Corporation - \$20bn Australian Government Investment Arm (Project Debt/ R&D Credit Finance)

Key Risks & Mitigation

RISK	ANALYSIS	MITIGATION
MHP Supply	Short term issue	Education of MHP producers, use tolling arrangements, multigeographic customer and supplier mix
Alternative solutions in EV / Energy Storage	Hard to foresee details	Develop new products, lead cost curve, recycling solution
Novelty of Technology	External perception / devil's advocate	IP protection, integrating existing process guarantee packages following our elegant patented process approach

SUMMARY AND CONSIDERATIONS

- Global MHP production ramping up.
- PBT demonstrates best in class NiSO4 (purity) with its noveland elegant process.
- PBT confirms big environmental and commercial benefits and advantages (Capex and Opex) and completed FS.
- PBT able to generate substantial returns short term and beyond
- Lab and pre-pilot work confirms applicability of our processes to NMC and battery recycling.
- PBT raising first significant round of funding



- PBT is teamed up with one of the best global Hydromet Teams
- Very experienced advisory board and global execution team
- Industry experts and participants accessible
- Started selection of reliable partners with capital and market reach



- Prompt plant build will speed up first cash flow and market share
- First plant will also facilitate collaboration with new MHP sources
- NMC and recycling the ultimate target
- Target NASDAQ listing in 2021 / 2022



- World chasing recycling
 no good backend
 solution available
- Focus on hydromet versus pyromet
- PBT can provide recovery and rerefining direct or via MHP route





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