

TSX-V:GMG  
OTCQX:GMGMF



Graphene Manufacturing Group

# Transformative Graphene Energy Solutions

 [graphenemg.com](http://graphenemg.com)

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Certain statements made within this Presentation constitute forward-looking statements and forward looking information within the meaning of applicable Canadian securities legislation (collectively herein referred to as "forward-looking information"), which can often be identified by words such as "will", "may", "estimate", "expect", "plan", "project", "intend", "anticipate" and other words indicating that the statements are forward-looking, and include but are not limited to statements relating to: (a) GMG's business objectives and goals; (b) GMG's and other parties' planned or contemplated business (THERMAL-XR®, SUPA G® and G® LUBRICANT) and activities and timelines relating thereto; (c) potential applications and expected performance of GMG's products; (d) the development of the Graphene +Aluminum battery; (e) the Company's intention to engage third parties to assist in the development of its products and matters regarding GMG's existing relationships with third party partners; (f) the expectation that GMG will be able to improve its business operations; (g) GMG's expected target markets; (h) the timing, development, testing and commercialization of the Company's prototypes and products; (i) the sales channels and strategic partners the Company will engage in the marketing, sales, and development of its products; (j) the expansion of GMG's existing production facilities including the timing, resulting productivity, and required machinery for any expansion; (k) potential distributor agreements, and the target markets for entering into distributor agreements; (l) the potential production capacity of the Company's existing facilities; (m) the progression of the Company's products along the Battery Technology Readiness Level scale and the Battery Cell Roadmap; (n) the nature and timing of sales to parties which have executed a non-disclosure agreement with the Company; (o) the expectation that the Company's products will be granted the necessary governmental approvals, including of the Environmental Protection Agency (the "EPA") in the USA; and (p) management's confidence in the development and scaling of production processes. Such forward-looking statements are based on a number of assumptions of management, including, without limitation, that the Company's cost and timing expectations are accurate, that GMG will be successful in generating revenue from its existing products, that the Company will be able to complete the development of its Graphene +Aluminum battery, that the Company will be able to achieve the expected results of its Graphene +Aluminum battery, that the Company will be successful in the deployment of its resources and personnel, that results of testing and development data will be consistent with anticipated results and estimates, that the Company will be able to successfully identify and engage strategic partners, that the Company will be able to develop and test prototypes and products on the expected timelines, and that the results will align with management's current expectations, that existing production capability aligns with management's expectations, that an increase in GMG's existing production facility will result in a corresponding increase in production capacity, that the markets and sales channels for the Company's products will develop as expected, that the Company will enter into additional

distributor agreements, that the Company's products will be granted the necessary regulatory approvals, include that of the EPA; and that the Company's operations and ability to develop its products will not be adversely impacted by COVID-19 or the ongoing conflict in eastern Europe. Additionally, forward-looking information involve a variety of known and unknown risks, uncertainties and other factors which may cause the actual plans, intentions, activities, results, performance or achievements of GMG to be materially different from any future plans, intentions, activities, results, performance or achievements expressed or implied by such forward-looking statements. Such risks include, without limitation: (a) GMG's operations could be adversely affected by possible future government legislation, policies and controls or by changes in applicable laws and regulations, or by the failure to obtain all necessary regulatory approvals, including that of the EPA; (b) public health crises such as the COVID-19 pandemic may adversely impact GMG's business and the ability of the Company to develop its products; (c) the volatility of global capital markets; (d) political instability; (e) the failure of GMG to attract and retain skilled personnel; (f) unexpected development and production challenges; (g) GMG could face technology or software disruptions; (h) unanticipated costs; (i) risks relating to the extent and duration of the conflict in Eastern Europe and its impact on global markets; (j) that the Company will be unable to develop, market, and sell its products as currently anticipated; (k) that the Company will be unsuccessful in identifying and engaging strategic partners; (l) that the Company will be unable to acquire equipment to streamline its production process, or that the expansion of the production facility will not result in the benefits currently expected; (m) that companies currently working with GMG will not be interested in purchasing the Company's products; and (n) the risk factors set out under the heading "Risk Factors" in the Company's AIF dated October 3, 2024 available for review on the Company's profile at [www.sedarplus.ca](http://www.sedarplus.ca). Such forward-looking information represents management's best judgment based on information currently available. No forward-looking statement can be guaranteed and actual future results may vary materially. Accordingly, readers are advised not to place undue reliance on forward-looking statements or information. Neither GMG nor any of its representatives make any representation or warranty, express or implied, as to the accuracy, sufficiency or completeness of the information in this Presentation. Neither GMG nor any of its representatives shall have any liability whatsoever, under contract, tort, trust or otherwise, to you or any person resulting from the use of the information in this Presentation by you or any of your representatives or for omissions from the information in this Presentation. The forward-looking statements herein are made as of the date of this Presentation only, and the Company does not assume any obligation to update or revise them to reflect new information, estimates or opinions, future events or results or otherwise, except as required by applicable law. Historical statements contained in this Presentation regarding past trends or activities should not be taken as a representation that such trends or activities will continue in the future. In this regard, certain financial information contained herein has been extracted from, or based upon, information available in the public domain and/or provided by the Company. In particular, historical results should not be taken as a representation that such trends will be replicated in the future. No statement in this document is intended to be nor may be construed as a profit forecast. An investment in the Company is speculative and involves substantial risk and is only suitable for investors that understand the potential consequences and are able to bear the risk of losing their entire investment. Investors should consider the risks set out in the AIF, in addition to many others, and consult with their own legal, tax and financial advisors with respect to all such risks before making an investment.

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# Board of Directors & Advisory Team

## **Craig Nicol | Founder, Managing Director & CEO**

Craig Nicol has a career of over 20 years in delivering large scale innovation including leading multi-billion-dollar gas and LNG value chains in Australia and Asia Pacific and managing sales and marketing teams across Asia Pacific working for Shell International. Craig has a Bachelor of Engineering degree in Manufacturing Systems (Honours) and a bachelor's degree in Business Marketing from the Queensland University of Technology. Craig is the chair of the Advanced Materials and Battery Council. Craig is a member of the Australian Institute of Company Directors (AICD).

## **Jack Perkowski | Chair & Director**

Mr Perkowski founded ASIMCO Technologies in 1994, and from 1994 to 2008, served as the Chairman of ASIMCO's Board of Directors and the company's Chief Executive Officer. Under Mr Perkowski's leadership, ASIMCO became one of the most important players in China's automotive components industry and gained a reputation for developing local management and integrating a broad-based China operation into the global economy. ASIMCO was later sold to Bain Capital in 2010 and is still regarded as one of the most successful automotive component manufacturing companies in China. Prior to this Mr Perkowski was Managing Director of Paine Webber, an investment bank that was eventually acquired by UBS in 2000. In 2009, Mr Perkowski founded JFP Holdings, a merchant banking firm focused on China, where he now serves as Chairman.

## **Bob Galyen | Non-Executive Director**

Bob is a highly experienced executive in the battery energy storage world and science/engineering-based communities. Bob was previously the Chief Technology Officer (CTO) of Contemporary Amperex Technology Company Limited (CATL). CATL is widely known as the largest lithium-ion battery manufacturer in the world – supplying electric vehicles and high-efficiency storage systems. He serves on multiple Committees of Directors and Technical Advisory Boards.

## **Andrew Small | Non-Executive Director**

Andrew was a Founder and Director of Innogence, a SAP Business Intelligence consultancy in Australia which following significant growth was acquired by the Japanese multinational company NTT Data. Andrew has supported and invested in GMG since 2017, remains a significant shareholder of the Company and is committed to actively supporting the Company's drive to deliver on its plans and set it up for the next stage of maturity. Andrew has a Bachelor of Engineering (Manufacturing Systems) and a Bachelor of Business (Marketing) from Queensland University of Technology.

## **Professor Dan Brett | Technical Advisor**

Dan is Professor of Electrochemical Engineering at the University College London (UCL), a top ranked University, where he is a director of the Electrochemical Innovation Lab (EIL) and Advanced Propulsion Lab (APL). He is an academic founder of the Faraday Institution (a UK battery research programme with a consortium of over 20 UK universities and 50 businesses – including 450 researchers) and member of its Expert Panel.



# We develop, make and sell:

All of which are based on Graphene, we produce from Natural Gas.



## THERMAL -XR®

Heat exchanger coatings system

N. America Distribution Partner



Agreements also entered into in several Asian markets

Distribution in USA awaiting EPA approval

Various large OEM's currently in testing stage



## G LUBRICANT

Automotive fluids additives

Testing finalized – sales starting

Testing verified by University of Queensland shows 8.4% fuel saving with G Lubricant Additive at high load in a diesel engine.

Sales now commenced with direct marketing and commercial customers.



## GRAPHENE ALUMINIUM -ION BATTERY

Energy battery storage

Co-developing with



Heavy mobile equipment & grid energy storage applications in the mining and mineral industry



## SUPA G®

Graphene slurry for lithium -ion battery

Undergoing customer testing

Developed out of Graphene Aluminium Ion Battery work program

# What is Graphene?

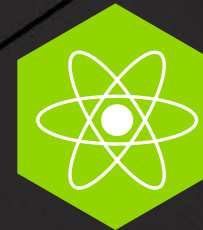
## The carbon wonder product\*

Graphene is the first two-dimensional material and is classed as a “super-material”\* offering many properties.

GMG focuses on Ion Storage, Superior Thermal Conductivity, and Enhanced Lubrication.

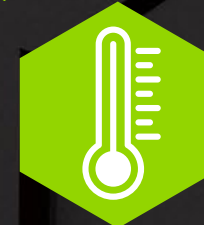
GMG Graphene has significant potential to enhance the performance of a wide range of materials and is expected to drive development of disruptive technologies and transform industries. It is classified as a nanomaterial (i.e. its dimension is on the nanoscale between 1-100nm) and looks like black powder.

\*Nobel Prize refers to Graphene a wonder material. A wonder product or super material is any material with remarkable physical properties. This can encompass a wide range of materials, from those that are incredibly strong or hard to those that are excellent conductors of electricity or heat.



### Ion Storage

High density capacity for ion storage



### Thermal Conductivity

Extreme Heat Diffusivity



### Enhanced Lubrication

Extreme lubrication & wear reduction



### Weight Aspect Ratio

Up to 300m<sup>2</sup>/gm of surface area



### Melting Point 950 °C+

Stability in oxygen free environment



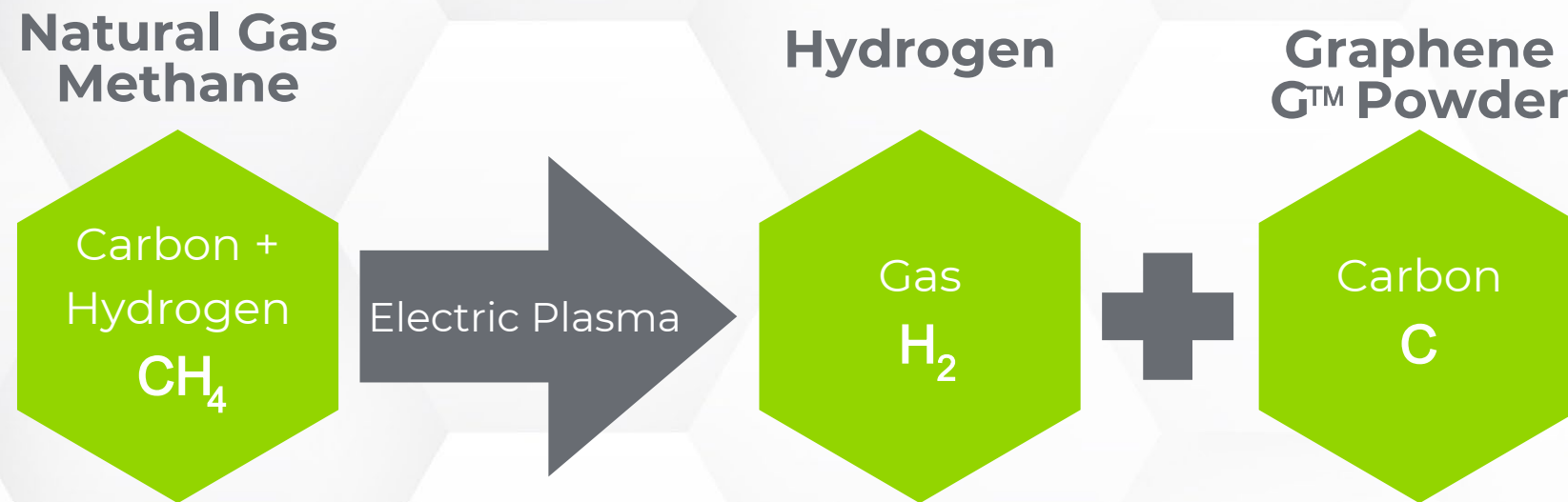
### Tensile Strength

Very strong when integrated into materials



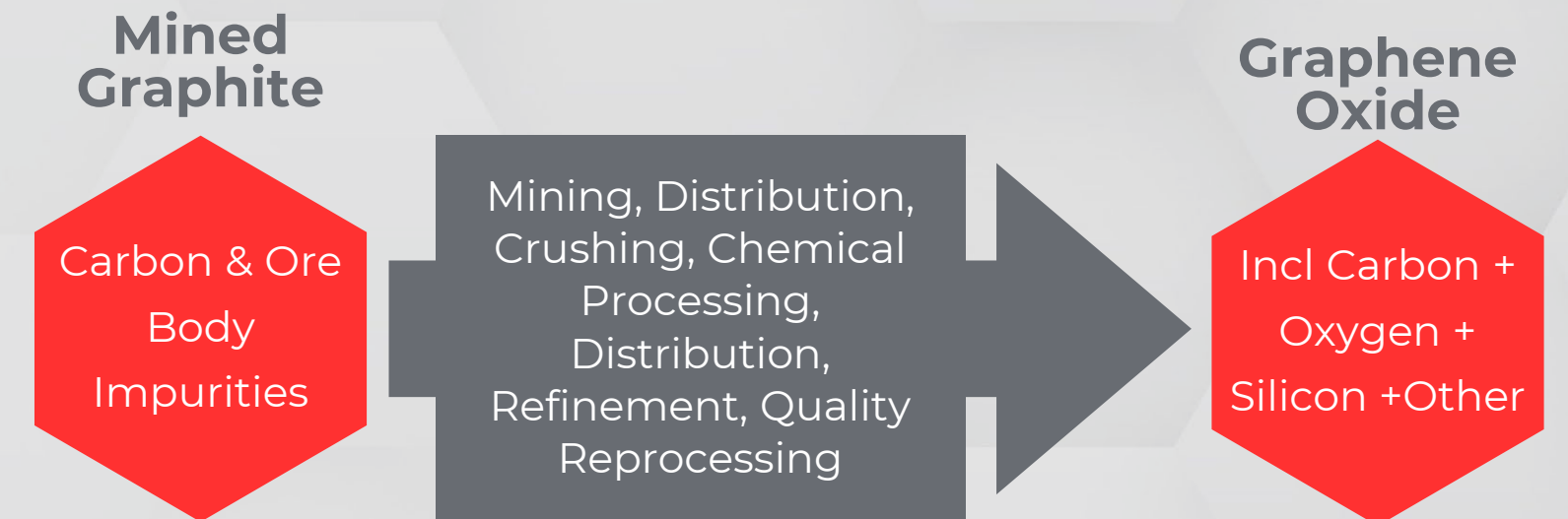
# GMG's Graphene Competitive Advantage

## GMG Graphene Production



- Instantaneous & Continuous
- Low-Cost Inputs and Setup
- Unconstrained Fast Scalability (after validating quality)
- Controlled Definability
- High-Quality Grade Graphene (University Verified)
- Cogeneration Capabilities
- Low environmental footprint

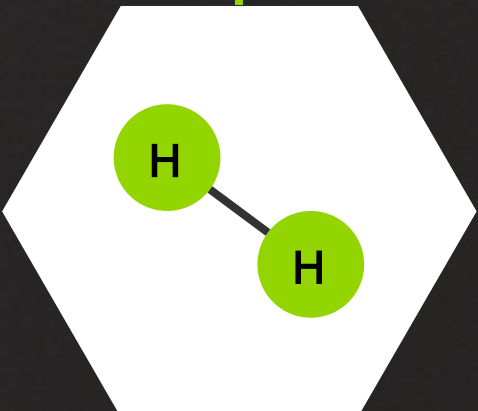
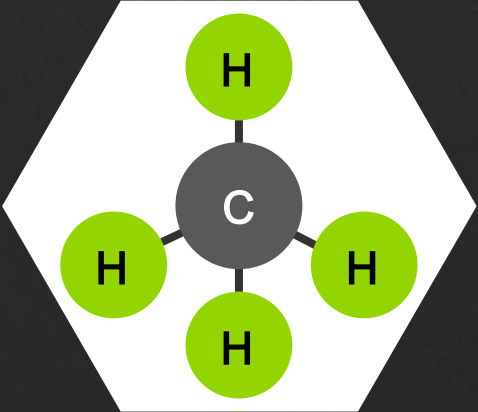
## Other Graphene Production



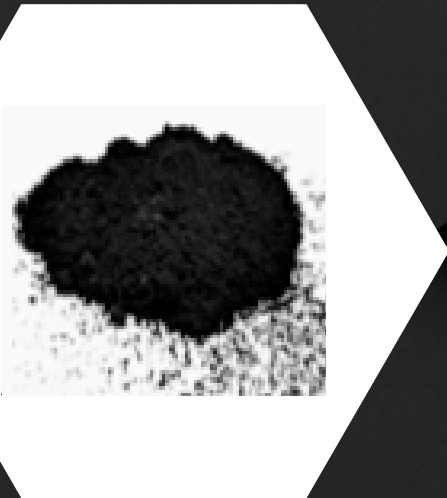
- Mining Constraints & Gestation
- High-Cost Inputs and Setup
- Constrained Scalability
- Variable Definability
- Impurities form Graphene Oxide
- Environmental Footprint

# GMG Operations

NATURAL GAS



HYDROGEN enriched Natural Gas



GRAPHENE MANUFACTURING PLANT

2023 | Phase 1  
Operational



HEAT EXCHANGER COATING

Coating Blending Plant (<2% Graphene)

1 Million Litres p.a.  
Operational



@LUBRICANT

Lubricants Blending Plant (<1% Graphene)

Pilot Blend Plant  
Operational



GRAPHENE SLURRY

(~90% Graphene)

Pilot Production Plant  
Operational



ALUMINIUM-ION BATTERY TECHNOLOGY

(~50% Graphene)

Battery Development Centre  
Operational



Graphene Manufacturing Group

# G<sup>®</sup> Lubricant Performance

**Graphene from G<sup>™</sup> LUBRICANT lowers the coefficient of friction in the critical boundary lubrication zones of pistons**

~ 30% of fuel burned in an engine is to overcome internal friction.

More than 60% of engine friction is generated in the piston area.



G<sup>®</sup> Lubricant is mixed into engine oil at a 1:100 ratio.

G<sup>®</sup> Lubricant contains ~ 1% GMG Graphene

So the end mixed ratio of GMG Graphene to engine oil is 1:10,000

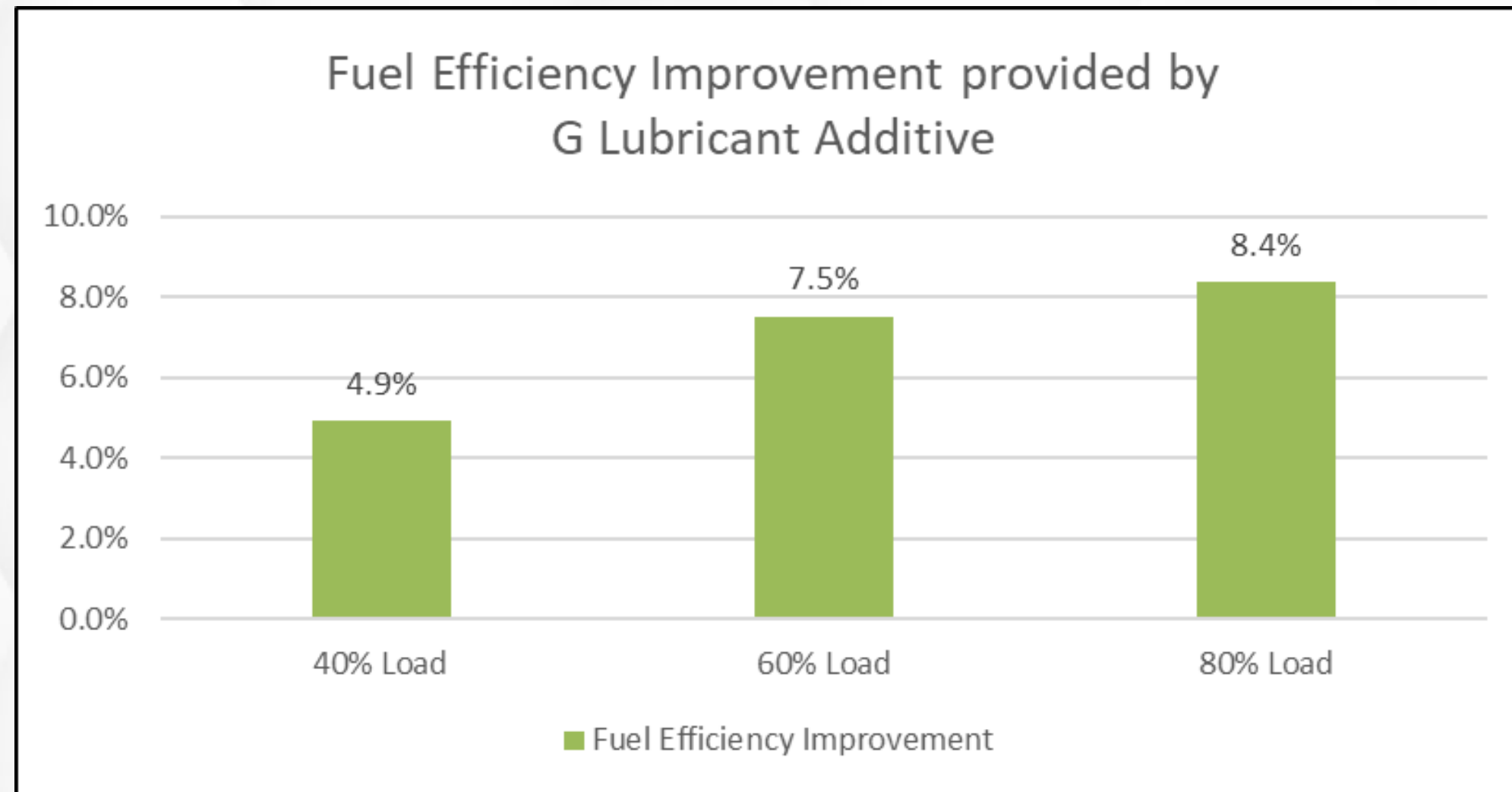
Global Direct Marketing of 500 ml pack was launched on 24 Feb 2025:  
<https://buy.stripe.com/3csg0z3SG5V49CUdQR>

\* Results vary and the figures are sourced from client performance testing, GMG 4 ball wear testing, and third-party laboratory testing on a variety of base oils and fully formulated engine oils with 0.01% GMG Graphene.

Note: the Company notes that the data presented here should be considered preliminary, and that test results are not necessarily indicative of realized performance.






# G<sup>®</sup> Lubricant provides up to 8.4%\* fuel savings in diesel engines



\*Verified by the University of Queensland  
Fuel saving increases as the load increases.

# G<sup>®</sup> Lubricant - a large cost saving opportunity for fleet businesses



Parameter	Light Commercial	Rigid Truck	Articulated Trucks
Vehicle			
Average Diesel Used (litres/100 km)	12.8	28.6	53.1
Oil Used per Change (litres)	5	15	50
Average Oil Used per Truck pa (litres)	7.7	31.6	391.6
Average Distance per Truck pa (km)	15,305	21,057	78,331
Average Fuel Used pa (litres)	1,959	6,022	41,594
Average Fuel Cost per Truck pa AU\$ (using Fuel price of AU\$ 1.95/litre)	\$3,810	\$11,713	\$80,900
<b>Potential 8% Fuel Savings pa AU\$</b>	<b><u>\$304</u></b>	<b><u>\$937</u></b>	<b><u>\$8,090</u></b>
<b>G<sup>®</sup> Lubricant</b> cost each vehicle pa AU\$ when priced at 10% of fuel saving	AU\$ 30	AU\$ 93	AU\$ 809
Payback Period for owner (days)	37 days	37 days	37 days

# Graphene Slurry for Lithium-Ion Battery

- GMG's Graphene Slurry is an additive for Lithium-Ion Batteries
- It can be used as a Cathode Additive (1%) and/or after further development work it has potential for an Anode Alternative to Graphite - which is largely export controlled from China

**SUPA G**®

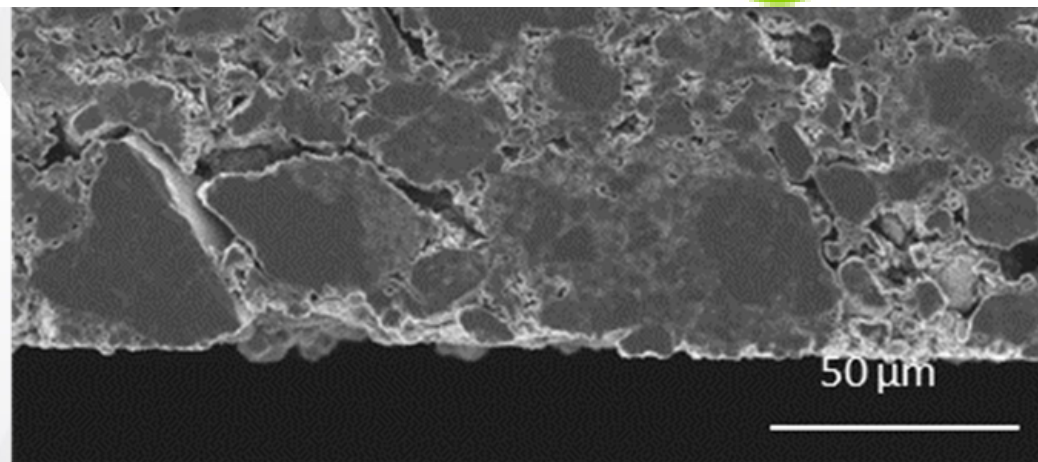
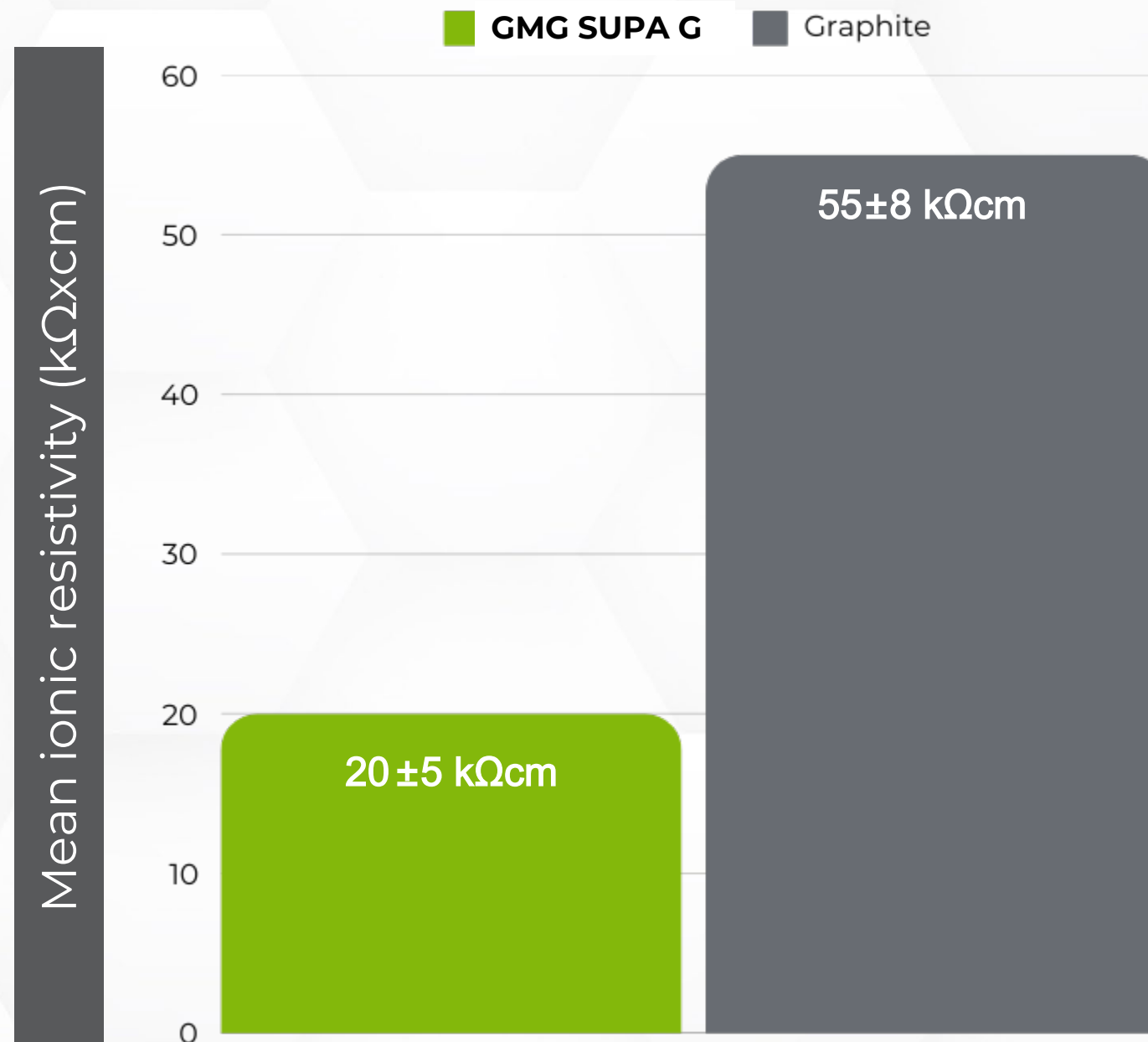


Image: Cross-section prepared using wide-beam Ar+ ion polishing EDX pixel assignment filtered with 95% confidence interval threshold



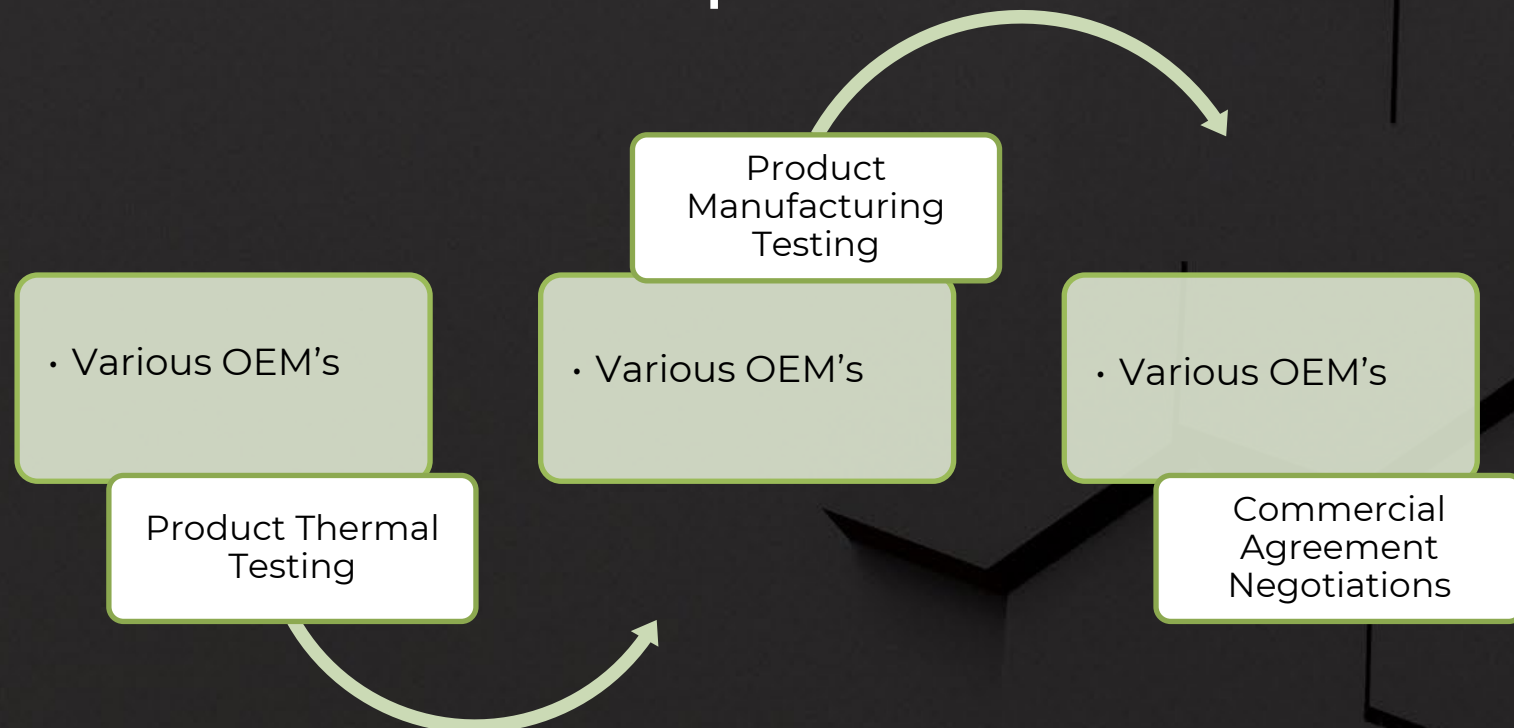
World Leading University study showed SUPA G® has very attractive properties:

- Apparent ionic resistivity 2.5× lower than compared to typical graphite electrode
- Multimodal active particle distribution (~20 um large particles + sub-1 um particles)
- Calendaring does NOT significantly damage the binder layer

# Thermal XR Commercial Progress

Some of our customers trialing TXR are considered world market leaders in their industry and bring considerable large scale opportunity potential

## TXR Customer Adoption Process



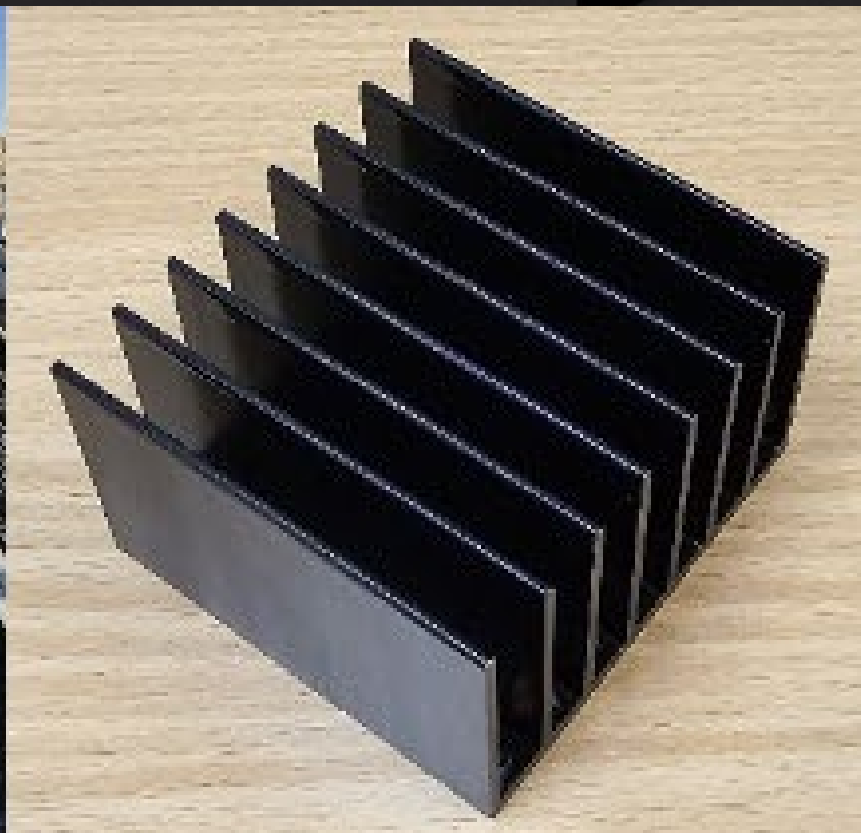
AIR CONDITIONERS

INDUSTRIAL PLANTS

HEAT SINKS FOR ELECTRONICS

DATA CENTRES

REFRIGERATION



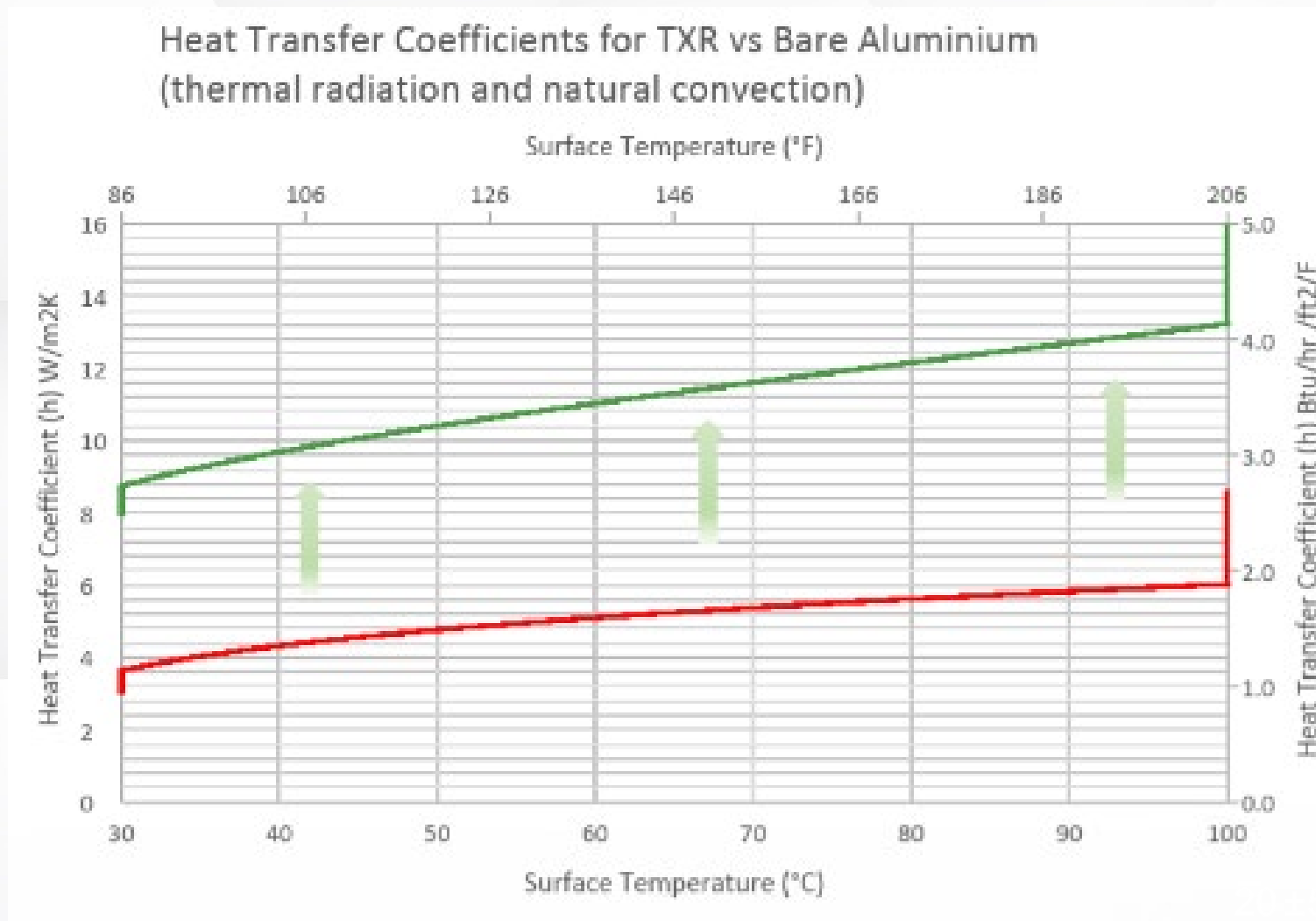
# Winner Product of the Year



GMG's  
**THERMAL-XR®**  
Awarded Product of  
the Year at the AIRAH  
2024 Awards



# TXR Doubles Heat Transfer\* with over 15,000 Hours of Corrosion Resistance



GRAPHENE MANUFACTURING GROUP, WO# C-0258657

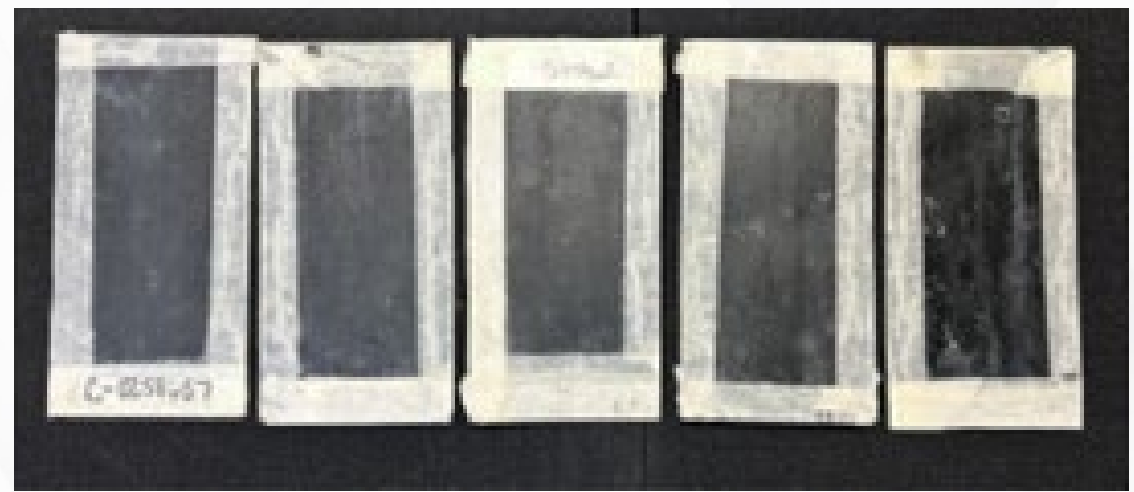


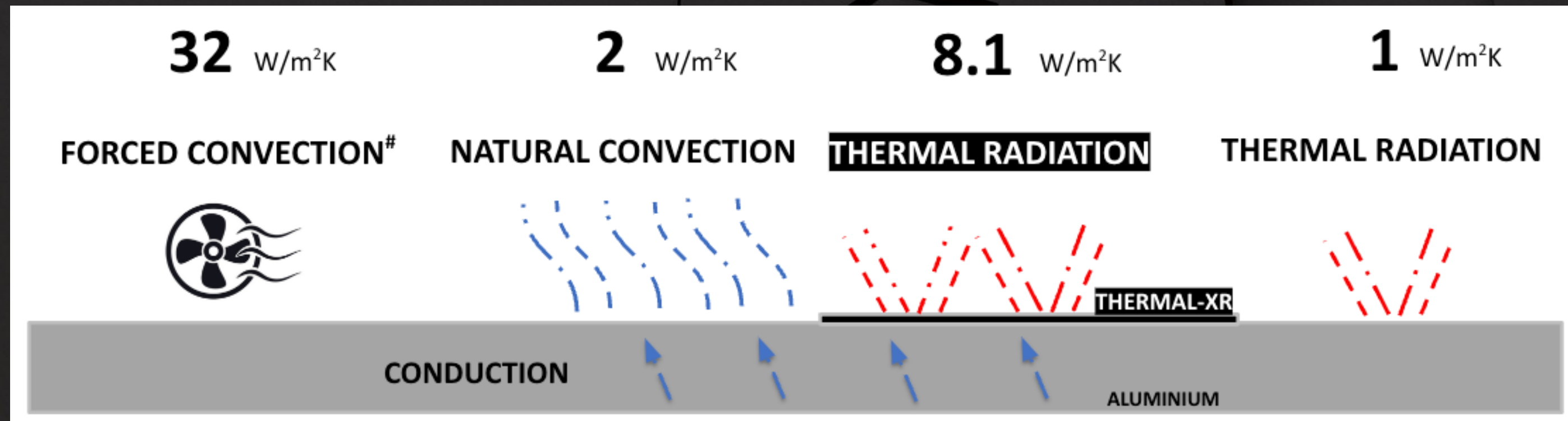
Figure 2- Samples After 15,000 Hours of Exposure

TXR doubles the heat transfer rate  
\*at 60 degrees Celsius or 140 degrees Fahrenheit

TXR successfully passed 15,000 hours of salt sea spray testing in third party independent laboratory (ASTM B117)

Natural Convection Model Notes:  
 1. Radiation heat transfer coefficient for TXR calculated using an emissivity of 0.95 (conservative) and 0.11 for BARE.  
 2. Radiation coefficient calculated with  $h_R = \epsilon_s \sigma (T_s^2 + T_\infty^2)(T_s + T_\infty)$ .  
 3. High emissivity => significantly more radiated heat.  
 4. Natural convection coefficient evaluated with Nusselt number correlation for flat plate with hot side facing down.

# Thermal-XR Graphene Coating Adds Thermal Radiation to Forced and Natural Convection



- **Convection** is the passing of heat in a fluid (e.g. air or water)
- **Conduction** is the passing of heat through a solid material
- **Thermal Radiation** is the passing of heat in the form of waves or particles

\*Based on Internal GMG testing and calculations for 720 mm wide aluminium plate on ceramic kiln and thermal radiation calculations.  
#Forced Convection value is for 5 m/s of air speed.

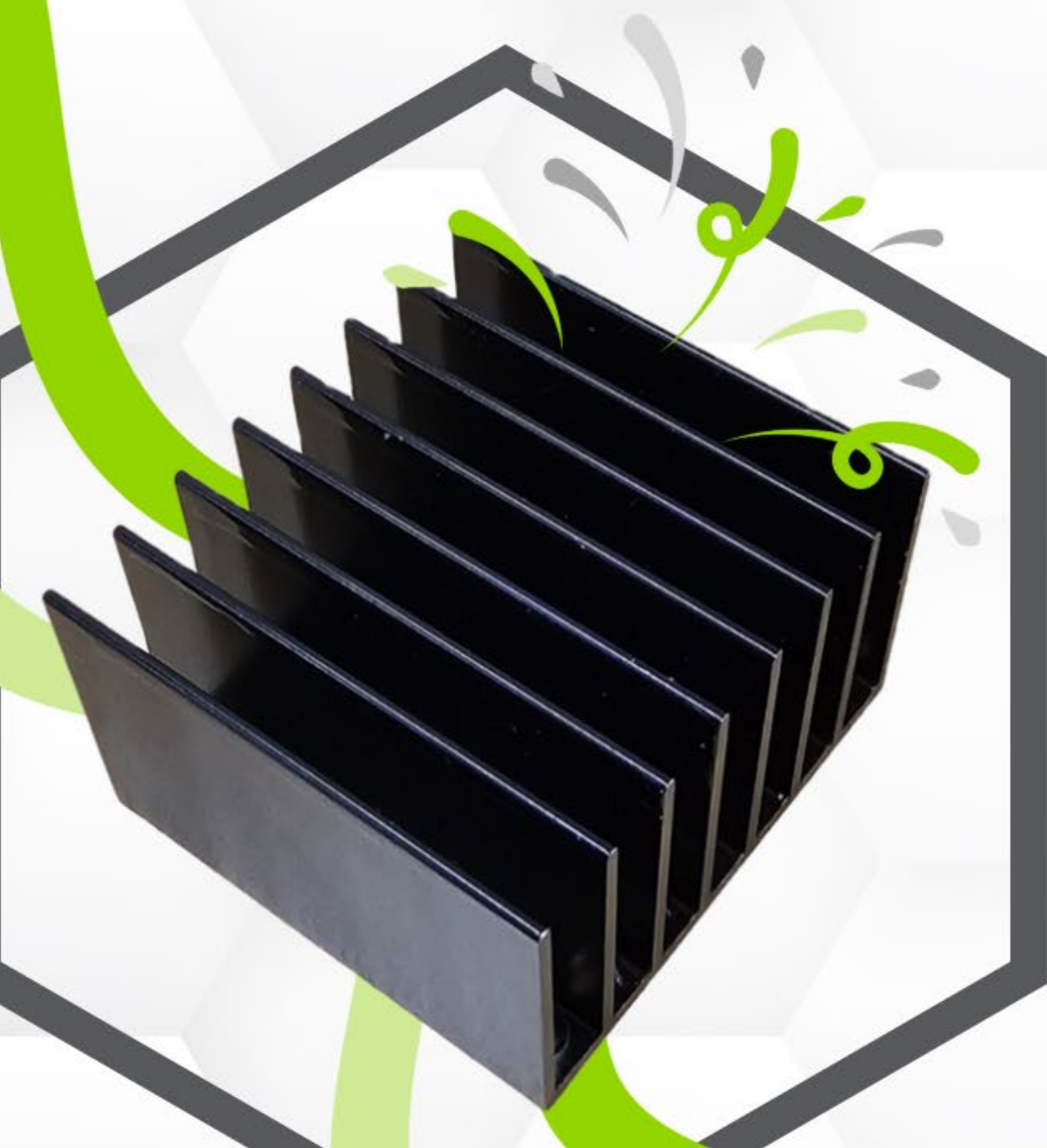
# Breakthrough Technology for Electronics Heat Sink Miniaturization and Efficiency

Heat sinks are a critical component of modern electronics, but they come with various challenges, especially as devices become smaller, faster, and more powerful.

 **GMG's breakthrough technology** 

GMG's THERMAL -XR® offers heatsinks up to 39% size reduction whilst providing the same thermal performance.

This has the potential to not only cut material costs but also unlock new opportunities for compact and efficient electronics designs, addressing the rising thermal management demands of the global printed circuit board market.





# THERMAL-XR® Distribution



## Distribution/Logistics

### Nu-Calgon is GMG's exclusive distribution partner for AFTER MARKET HVAC in North America

- Nu-Calgon is the largest specialty chemical provider to the HVACR market
- 37 person sales team; 4000 distribution points
- Cool Worx is Nu-Calgon's private brand name for TXR
- Nu-Calgon introduced Cool Worx to the HVACR industry at the Chicago AHR Expo in January, generating tremendous interest

### GMG is distributing TXR directly and through distribution partners in other markets globally

## Regulatory

THERMAL-XR is approved for sale in Australia, Canada, Mexico, and China; Europe, Chile, Thailand, Singapore and South Korea.

The U.S. EPA requested a full Pre-Manufacture Notice (PMN) resubmission for Thermal-XR. This enables a comprehensive examination and the possibility of flexible approval conditions not available under a PMN LVE.

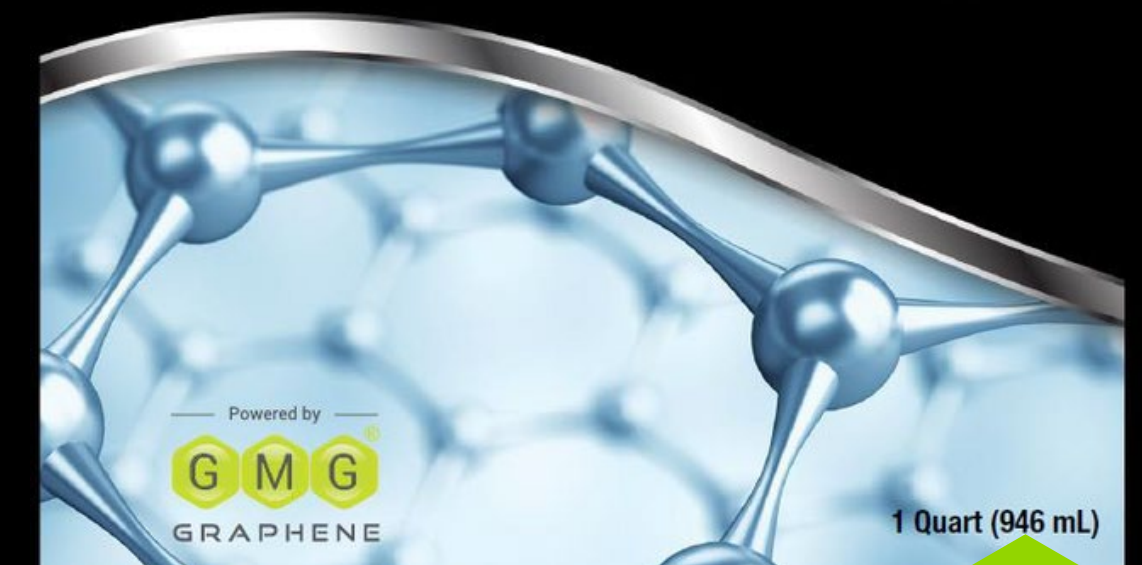
Supplying USA Customers for R&D purposes for now.

4158-20

 Nu-Calgon

**COOL WORX™**  
Thermal Conductive Coating For HVAC/R Coils

- ◆ Saves Energy-Improves Coil Performance
- ◆ Provides Long-Term Corrosion Protection
- ◆ Extends Equipment Life



# Graphene Aluminium Ion Battery Advantages

## Battery Performance

- 1 Very Fast Charging/Discharging (60 times)\*
- 2 Long Life (>1000 full cycles)
- 3 Economic Energy Density at high charging speeds
- 4 Battery Thermal Management Likely Not Needed

## Supply Chain

- 5 Supply Chain Simplicity (< 1 km vs 50,000 km)
- 6 Availability of Raw Materials and their Reserves

## Health, Safety and Environmental

- 7 Product Supply Environmental Concerns
- 8 Recyclability of Product
- 9 Safety of Product Regarding Fires and Toxicity

## Capex/Cost

- 10 Battery Structural CAPEX Cost Advantages
- 11 Lower bill of material cost

### Current Expectations



### Targeted Battery Use Case:

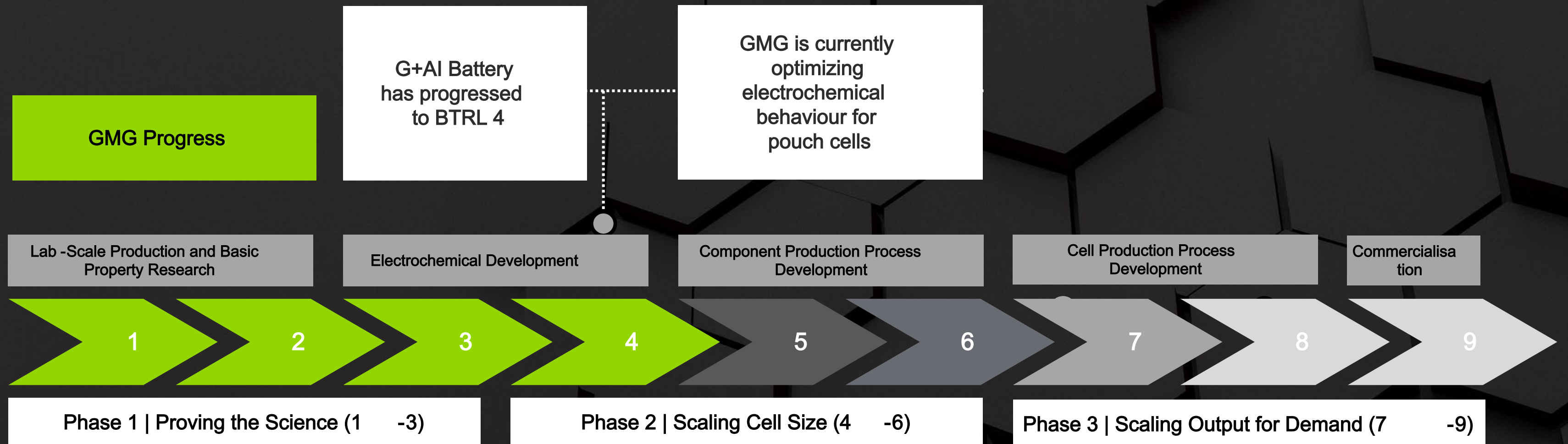
- Business/Industrial use vehicles
- Safety First – no Lithium chemical fires
- Similar recharging time as diesel refueling (~5 mins)
- Long life cycle > 1000 cycles ++
- Energy Density enough to be economic
- High recyclability of materials
- Strategic Supply Chain and Simplicity
- High value / Low overall cost (when produced at scale)

Source:

\*University of Queensland validated GMG testing data based on industry standard estimate methodology from coin cells using a reducing factor of 2.3.



# Battery Technology Readiness Level (BTRL)



BIC Indiana is a world leading battery innovation centre which has completed over 500 battery development projects to date

## COLLABORATION:

- CELL MODEL & DESIGN
- ELECTROLYTE DEVELOPMENT
- CATHODE MANUFACTURING
- CELL ASSEMBLY
- MATERIAL SUPPLY
- SEMI AUTOMATED CELL PLANT

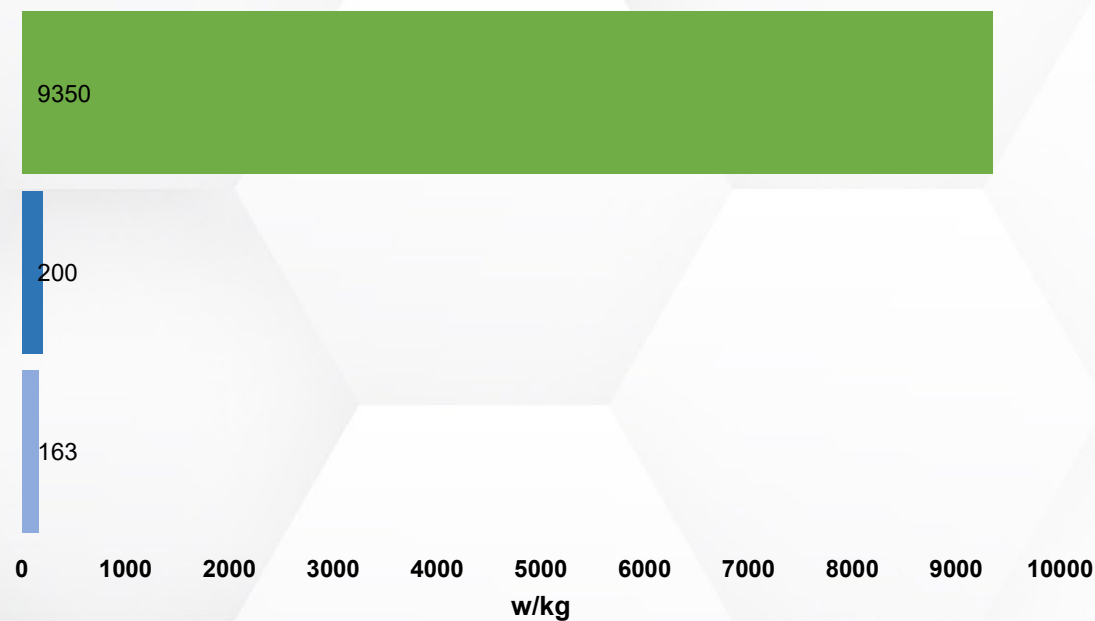


GMG has engaged BIC with a monthly fee service to support BTRL 4 to 8 battery development.

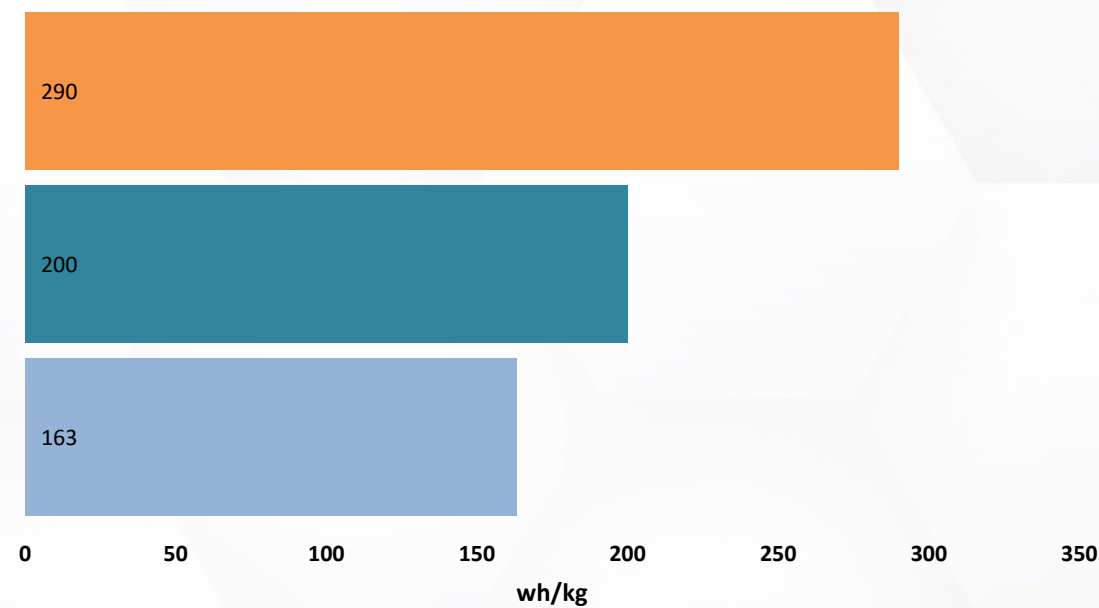
# NEXT GEN. SUPER FAST CHARGING, SAFE, SIMPLE & CIRCULAR GRAPHENE ALUMINIUM ION BATTERIES

## Coin Cell Data and Calculations

### Power Density (W/kg)



### Energy Density (Wh/kg)



- GMG + UQ Graphene Aluminium Ion\*
- Lithium Manganese Nickel Cobalt Ion (NCM) @ 1C#
- Lithium Iron Phosphate (LFP)\$

Pouch cell performance data is yet to be announced as currently progressing through weekly battery sprints

Source:

\*University of Queensland validated GMG testing data based on industry standard estimate methodology from coin cells using a reducing factor of 2.3.

#CATL 3.7V 65Ah NCM Lithium Battery Cell - (lifepo4-battery.com) on 29/09/22

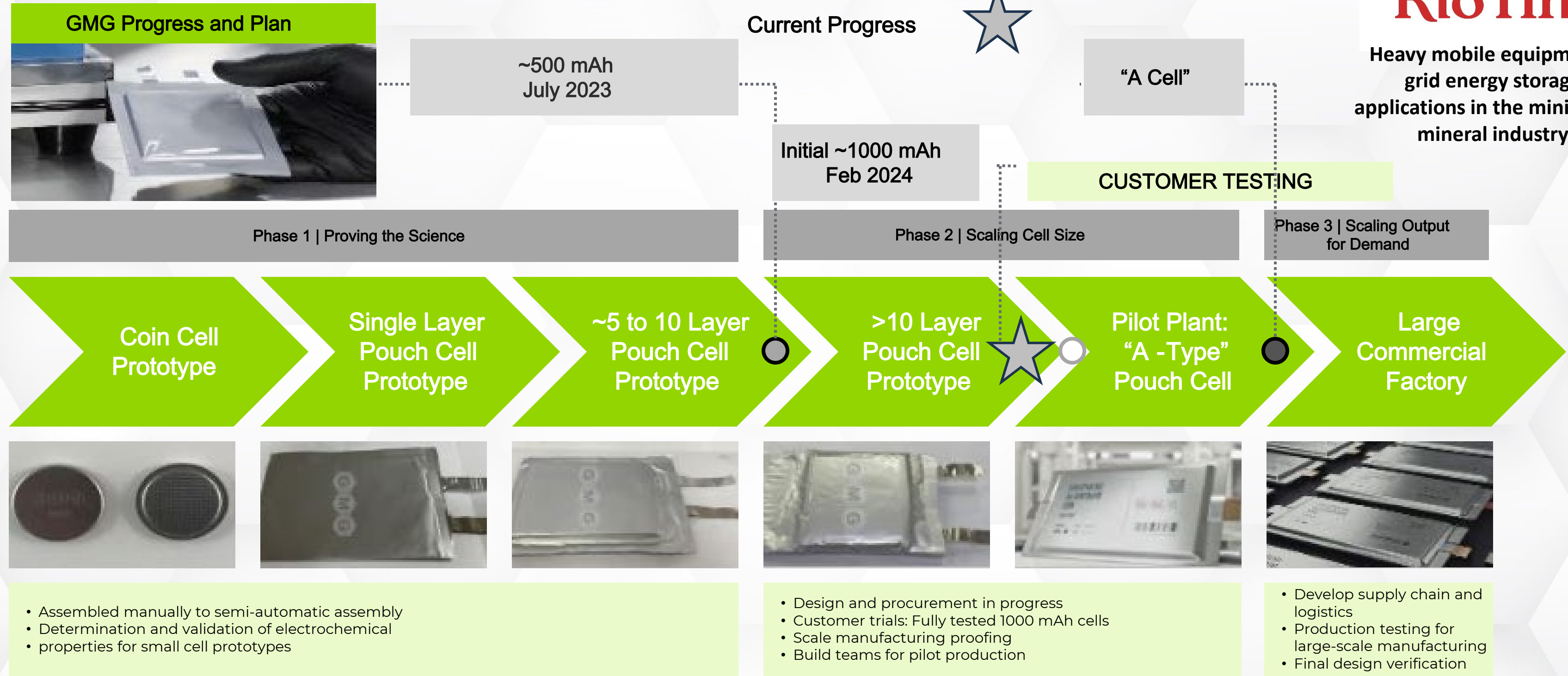
\$ CATL 3.2V 150Ah LiFePO4 Battery Cell - (lifepo4-battery.com) on 29/09/22



# Pouch Cell Prototype Scale-Up Process Plan

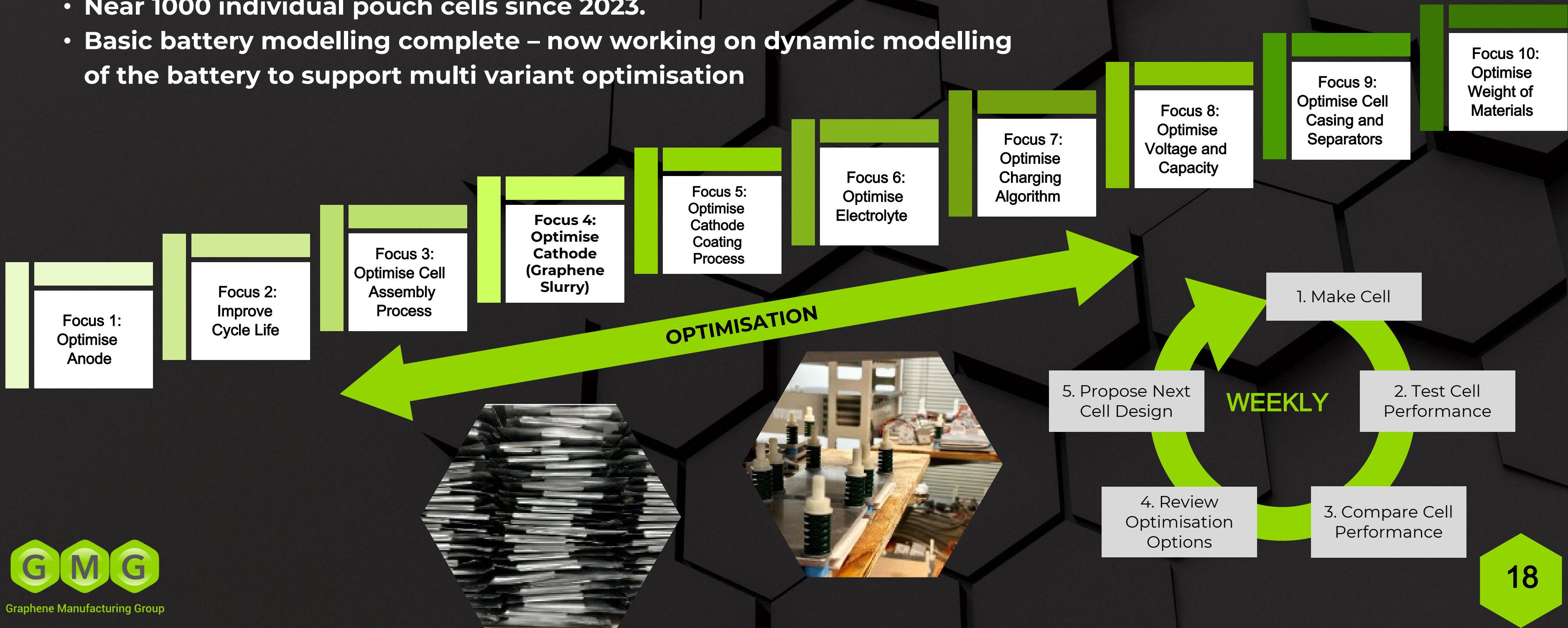
**RioTinto**

Heavy mobile equipment & grid energy storage applications in the mining and mineral industry

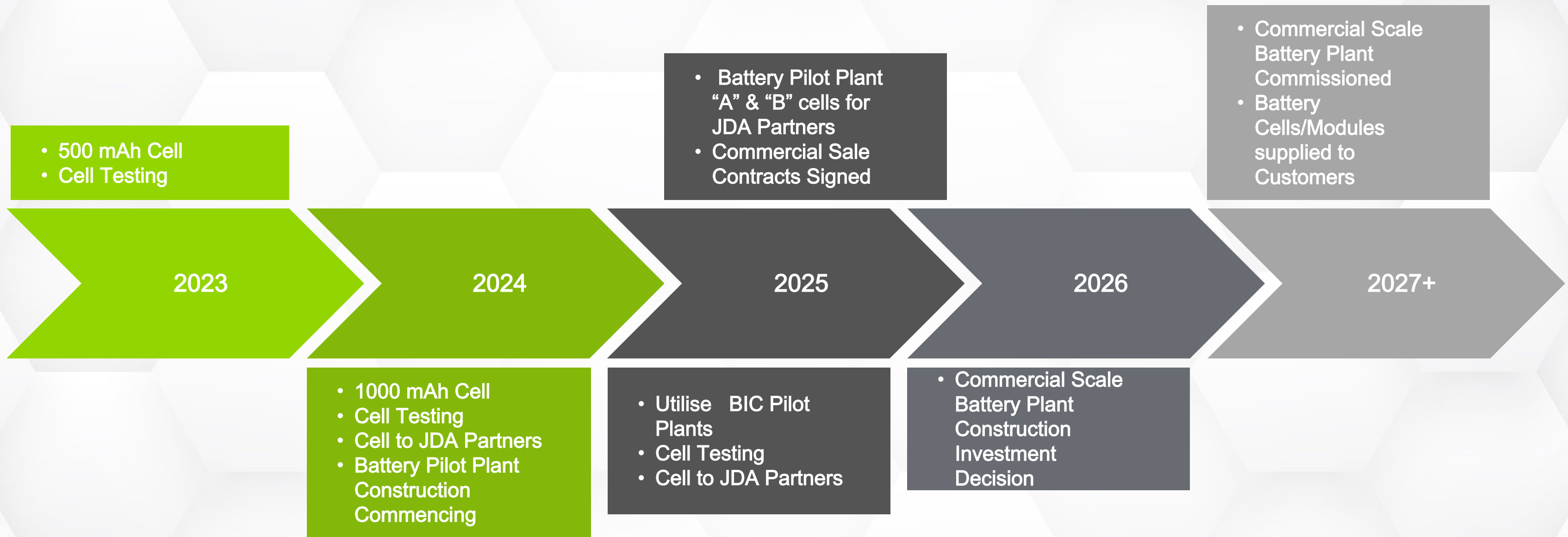


# Battery Progress Update: Pouch Cell Sprints

- 250 individual scientific experiments in pouch cells since 2023
- Near 1000 individual pouch cells since 2023.
- Basic battery modelling complete – now working on dynamic modelling of the battery to support multi variant optimisation



# Battery Cell Roadmap



# Maturing **Financial** Capability



## Build Revenue

Maturing sales and marketing team, processes and systems

New Distributors in Asia & North America (Awaiting EPA Approval for USA)

NDA's with global companies targeting increase in sales



## Develop

First leading segment partner Rio Tinto JDA (AU\$ 6M)

Exploring JDA's with other global sector leaders for the battery.



## Partner

Australian Government R&D Tax Rebate Support (2024: AU\$ 2.8M)

Exploring Grants and incentives

AU\$2M Qld Government Grant for up to 50% of Battery Pilot Plant



## Cash on Hand

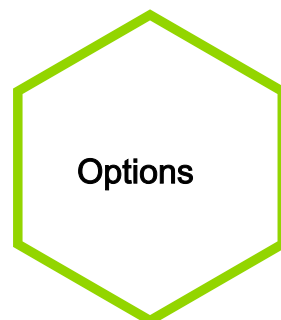
AU\$4.7M <sup>(a)</sup>

Canada's  
TSX-V  
(TSX Venture) Exchange

GMG



97,684,443 <sup>(a)</sup>



3,772,742 <sup>(a)</sup>



~C\$102 M <sup>(b)</sup>



8,815,421 <sup>(a)</sup>  
945,500 <sup>(a)</sup>





TSX-V:GMG



Graphene Manufacturing Group

# Transformative Graphene Energy Solutions

**INVESTOR RELATIONS**

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