



HYDROGRAPH

CSE: HG | OTCQB: HGCPF | FRA: M98

IGNITING MATERIAL CHANGE

Investor Presentation
March 2024

Forward-Looking Statement

This deck contains certain “forward looking statements” and certain “forward-looking information” as defined under applicable Canadian securities laws. Forward-looking statements and information can generally be identified by the use of forward-looking terminology such as “may”, “will”, “expect”, “intend”, “estimate”, “upon” “anticipate”, “believe”, “continue”, “plans” or similar terminology. Forward-looking statements and information include, but are not limited to: the use of the net proceeds from the previously announced private placement, anticipated benefits resulting from the Marketing Services Agreement, the future exercise of the Options, ability to successfully increase commercial scale production at its manufacturing facility, and the timing thereof, the potential valuation of Company, any EBITDA predictions, the commercialization of HydroGraph’s products that lead to customer contracts resulting in our potential valuation and EBITDA predictions, and the Company’s business plans and strategies.

Forward-looking statements and information are based on forecasts of future results, estimates of amounts not yet determinable and assumptions that, while believed by management to be reasonable, are inherently subject to significant business, economic and competitive uncertainties and contingencies. Forward-looking statements and information are subject to various known and unknown risks and uncertainties, many of which are beyond the ability of HydroGraph to control or predict, that may cause HydroGraph’s actual results, performance or achievements to be materially different from those expressed or implied thereby, and are developed based on assumptions about such risks, uncertainties and other factors set out herein, including but not limited to: HydroGraph’s ability to implement its business strategies; risks associated with general economic conditions; adverse industry events; stakeholder engagement; marketing and transportation costs; loss of markets; volatility of commodity prices; inability to access sufficient capital from internal and external sources, and/or inability to access sufficient capital on favorable terms; industry and government regulation; changes in legislation, income tax and regulatory matters; competition; currency and interest rate fluctuations; and other risks. HydroGraph does not undertake any obligation to update forward-looking information except as required by applicable law. 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.





HydroGraph is the most cost-effective producer of high purity graphene in the industry, with game-changing **environmental** benefits.



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A Global Leading Graphene Manufacturing Company

With a patented, *environmentally friendly* process that produces the highest quality graphene at the greatest cost efficiency, we have begun commercialization.

MARKET POSITION

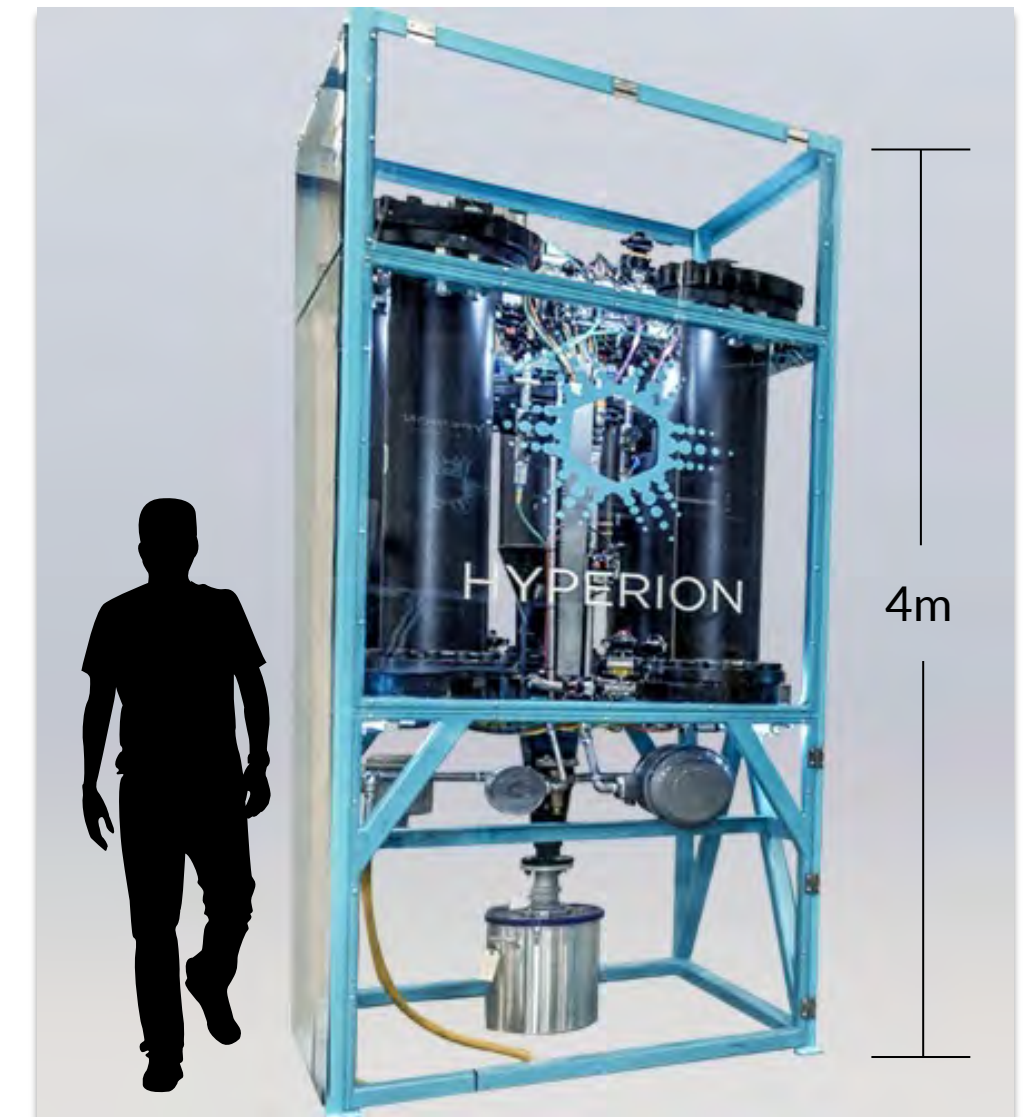
Strong customer response to HydroGraph's product and value proposition

- Patented Hyperion system produces 99.8% pure graphene with a high value to price ratio
- The Hyperion System is compact and modular, allowing flexibility to build close to the customer, minimizing supply chain risk
- Can be nano-engineered for various applications, enabling integration of graphene into a multitude of materials
- Most environmentally friendly process in the world
- Engaged with 50+ customers
 - 20 different applications
 - 23 testing agreements/NDAs signed
 - 20 customers testing graphene in their products

ECONOMICS

A \$2.5B graphene market opportunity

- Uniquely positioned for multiple high growth, multibillion-dollar markets
- Positioned to be the global leader in producing pure graphene at scale
- Each Hyperion System can produce over 10MT/year and about \$2M in graphene sales with only \$150k in CapEx required
- EBITDA margin over 40%
- ~\$8M in Hyperion System CapEx will generate ~\$100M in graphene sales, +\$40M in EBITDA annually



HydroGraph's Hyperion System
10 tonne/yr capacity



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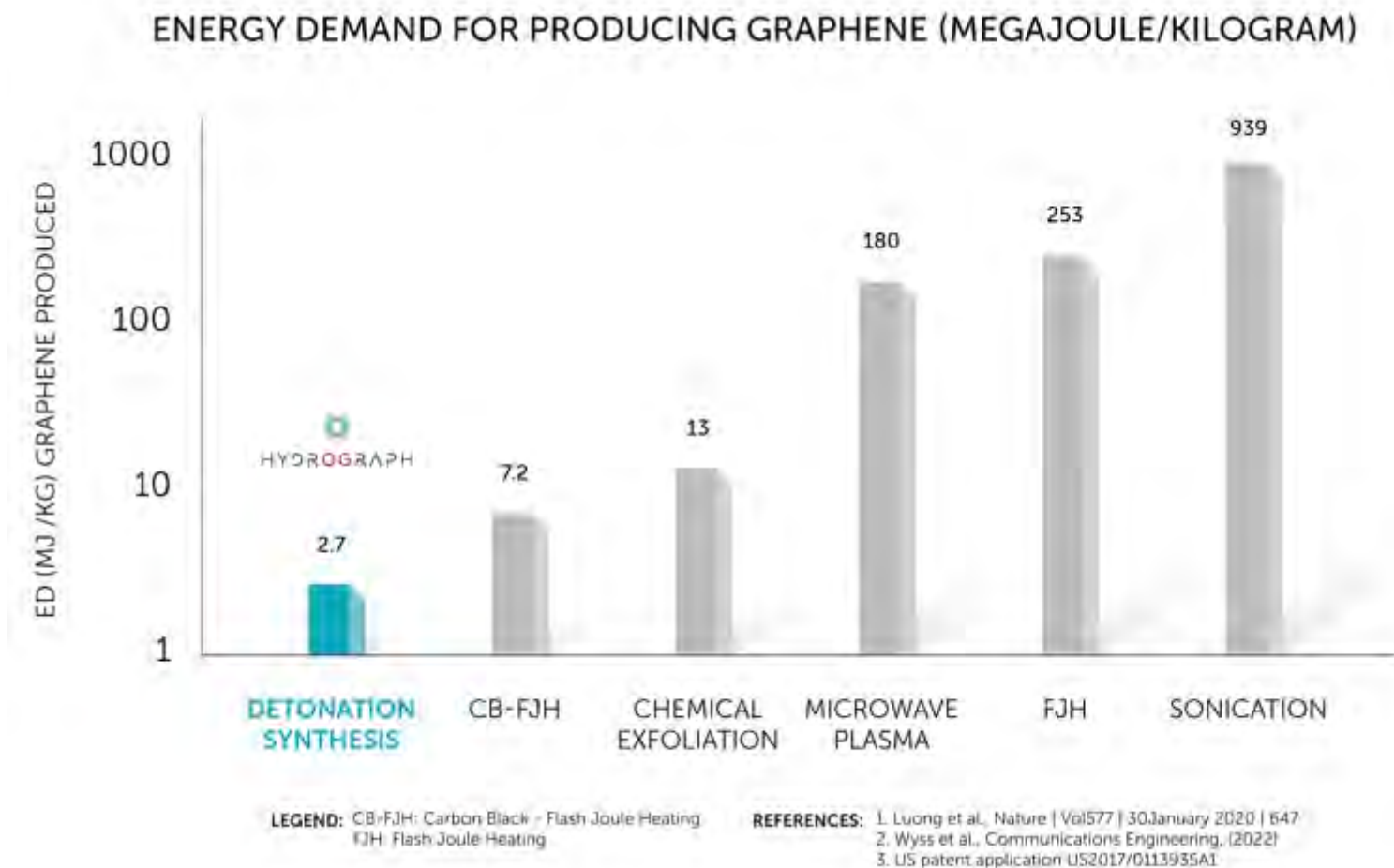
The HydroGraph Graphene Revolution – Igniting a Greener World

HydroGraph produces pristine graphene with the smallest environmental footprint

- Each Hyperion System saves 1,000 tonnes of CO₂ equivalent emissions
- No chemicals or solutions as part of the process
- No greenhouse gas emissions
- Minimal energy consumption

And helps customers reduce their environmental footprint. For example:

- HydroGraph increases the mechanical properties of materials such as concrete, cement and composites by 30% to 50%, requiring less of the original material to be produced
 - Reduces 450 kg of CO₂ per tonne of concrete produced – 2 billion tonnes of concrete produced annually
 - Converting 1% of total concrete production to use graphene will reduce CO₂ emission equivalent to taking 2.7 million cars off the road each year
- HydroGraph increases the life of lubricants by 24x, requiring less disposal and cleanup of spent lubricants



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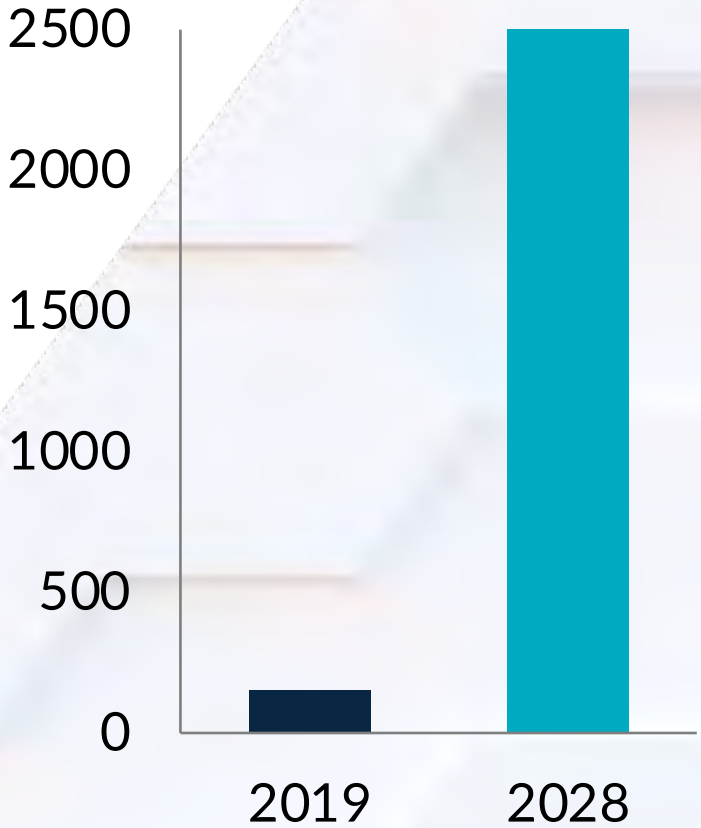
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Graphene: The “Wonder” Material Of The Future Made Available Today

Graphene strengthens and extends the life of substances, reducing waste and lowering carbon emissions generated in the production of various everyday materials, including lubricants, composites, coatings, concrete and cement



PROPERTIES	FACTS	APPLICATIONS
STRENGTH	200x stronger than steel	Composite materials and alloys – rubber, plastic, aluminium & concrete
FLEXIBILITY	Can bend & stretch to 120% of original size	Coatings, additives & wearable technologies
THERMAL CONDUCTIVITY	10x conductivity of copper	Composite materials – concrete, coatings, polymers, etc.
IMPERMEABILITY	Hydrogen atoms cannot penetrate its structure	Filters, water purification, gas storage and hydrogen fuel cells
ELECTRICAL CONDUCTIVITY	1,000x current capacity of copper	Longer battery life, semi-conductors
ELECTRONIC BEHAVIOUR	Electrons can move at near light speed through it	Improved speed/efficiency for computer chips
OPTICAL PROPERTIES	Highly transparent	Thinner, lighter screens & transparent tensile coatings



The global graphene market size was valued at \$90M in 2019 and is projected to reach \$2.5B by 2028, growing at a CAGR of 50% from 2020 to 2028
(Allied Market Research)

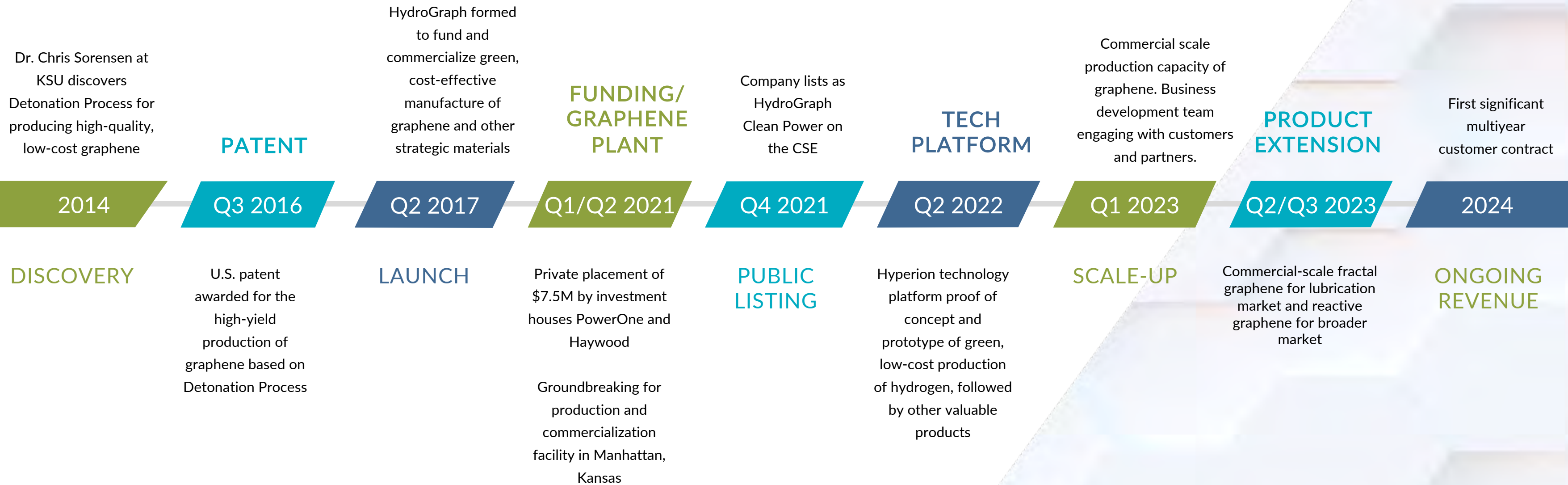


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Roadmap to Commercial Production

Product testing completed, ready for commercialization



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Best-in-Class Executive Team



Kjirstin Breure
Interim CEO

A 15-year background in emerging technologies and portfolio management, with experience in investor relations; on HydroGraph board since lab scale. Former Director of Operations for Frontline Crossings and Chief Operating Officer with Omada Technologies. Master's in materials science and engineering.



Bob Wowk
CFO

More than 30 years of experience as a finance and biz dev executive with previous roles held at Linde and Air Products. 10 years in CFO roles with small and mid-size companies. M.B.A. in finance from Wharton and a civil engineering degree from Lafayette College.



Ranjith Divigalpitiya
Chief Science Officer

More than 25 years as a physicist. Invented 3M's graphene-like carbon coatings and contributed to 190 invention submissions and 20 granted U.S. patents. Authored more than 33 peer-reviewed papers and teaches at Western University, Canada. Master's of science and Ph.D. in solid state physics.

- Multiple start-up experiences
- +100 years of combined industry experience

- Proven track record of success in scaling technology
- CN +\$1.6M personal funds committed to date



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Experienced Technical, Business Development and Finance Team



Stephen Corkill
VP Operations

More than 25 years' experience with machine design, fabrication and industrial R&D. Over 20 years in software development, project and finance management, solid modeling design and development. Developed HydroGraph's current production equipment and building hydrogen production prototype. Is a physics research assistant at Kansas State University.



Chris Sorensen
VP R&D

Invented HydroGraph's Hyperion technology. Holds seven patents with five pending, authored over 330 peer-reviewed papers, and been cited over 21,000 times. Is Distinguished Professor Emeritus and Distinguished Teaching Scholar Emeritus in physics and chemistry at Kansas State University. Has a Ph.D. in physics.



Carl Kernizan
VP Business Development

Senior leader in the lubricants industry with over 30 years of pioneering product development, technical sales and business growth across the Americas and Europe. Expert in grease manufacturing. Winner of NLGI's prestigious Golden Grease Gun Award and holds multiple patents. Ph.D. in physical chemistry.



Mathew Lee
Chief Accounting Officer

Over 15 years of experience in audit, finance, financial reporting and operations management. Leads HydroGraph's financial reporting, cash management and productivity improvements with previous roles at Manning Lee Management, AP Capital Management, Raymond James Ltd. And Smythe LLP. Holds certificate as a CPABC chartered professional accountant.



Stefan Bossman
Lead Chemist

Has authored over 200 peer-reviewed papers and holds 14 patents. Is Distinguished Professor Emeritus in chemistry at Kansas State University. Record of successful collaborative work in nanoresearch in Germany and the United States. Has Ph.D.s in organic synthesis, nanotechnology and physical organic chemistry and chemical engineering.



Randall Zajac
Dir. of Business Dev. –
Composites & Resins

More than 10 years' experience with composite process, mechanical and application engineering, R&D and business development. Previous roles at TPI and A. Schulman, Inc., including forged composite products for Callaway and Lamborghini. Master's in business management and bachelor's in plastics engineering technology.



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CHAMPIONX



WARREN OIL

tpi COMPOSITES

KANSAS STATE UNIVERSITY

Johnson Controls

NOVIAN HEALTH

AMI
Advanced Manufacturing Institute

QUANTUM COMPOSITES

RAYMOND JAMES
FINANCIAL, INC.

TIMKEN

Lubrizol

The HydroGraph Graphene Revolution

HydroGraph's disruptive patented technology uniquely positions the company for multiple high-growth markets in the production of graphene, and other strategic materials, **igniting a less carbon-intensive world.**



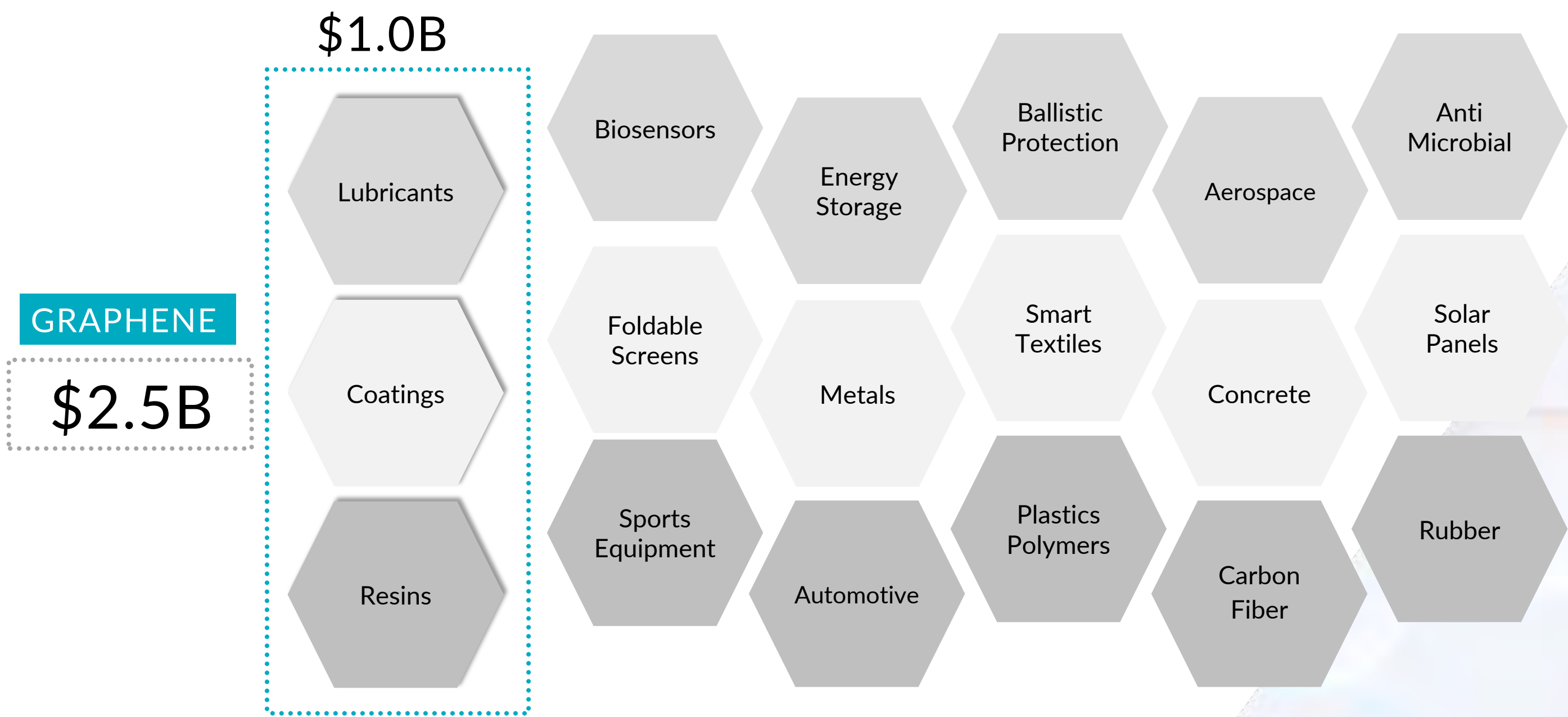
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The Market Opportunity

Stronger than steel, more conductive than copper, yet thinner than paper – graphene is the material of the future made available today

Markets and Applications



HydroGraph's Hyperion process produces the purest (99.8%) graphene, and the company's "reactive graphene" product has a reactive shell that allows it to chemically combine with other materials

This flexibility makes it the best graphene solution for countless applications.

Lubricants, coatings and resins are three large, early addressable markets.



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Source: <https://www.digitaltrends.com/cool-tech/what-is-graphene/>

Future Market Opportunities & Partnerships

Graphene demand is ready for commercial scale

Lubricants

Coatings

Resins

Primary Target Markets

\$1.0B

Estimated HydroGraph
Priority Market Size By 2028

Capturing priority markets:

- Testing ongoing
- End-user highly values enhanced material properties; high-price elasticity
- Leverage internal resources from R&D to application development to business development
- Drive customer adaptation of HydroGraph's graphene
- Work closely with customers to optimize graphene integration in customers' materials

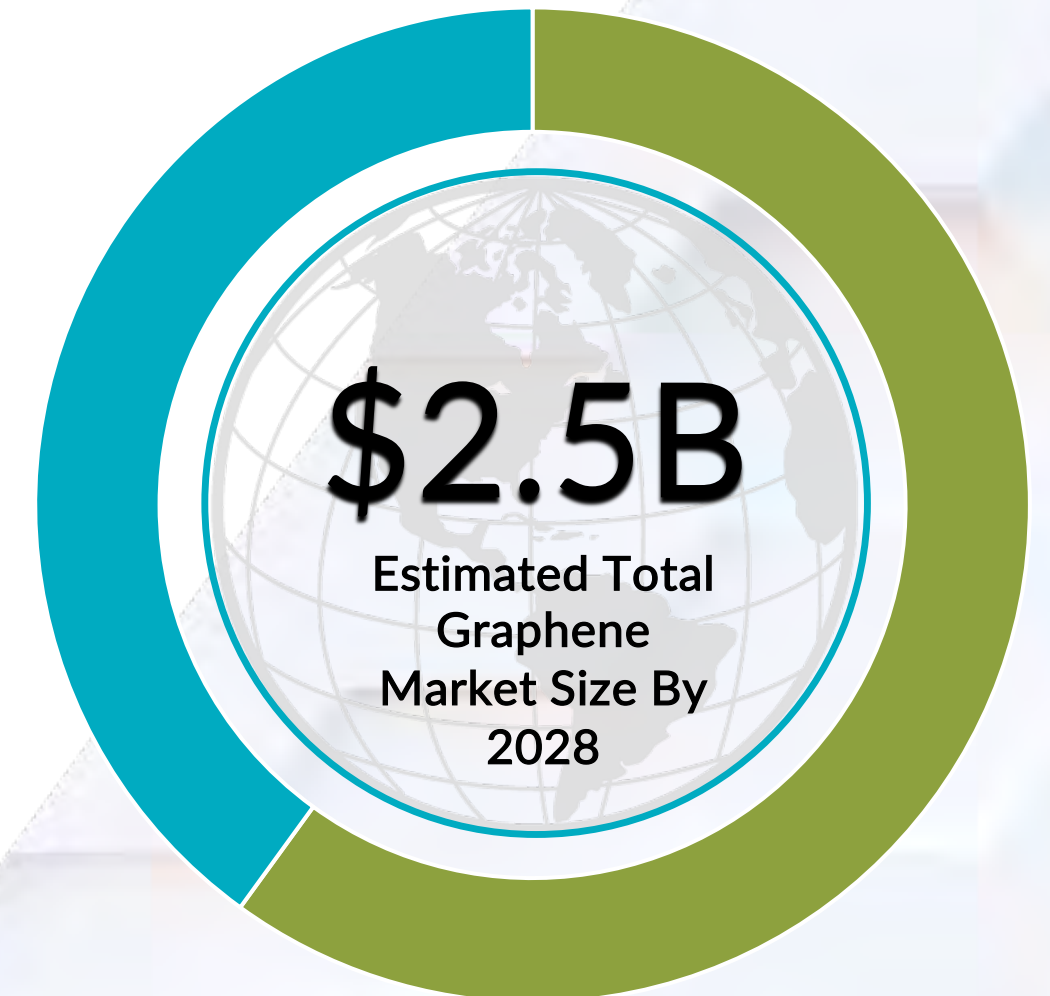
Secondary Market Opportunity

\$1.5B

Future Secondary
Market Size by 2028

Pursue secondary market partners with existing market competencies:

- R&D
- Application development
- Channel to market



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Application Focus Areas

Lubricants

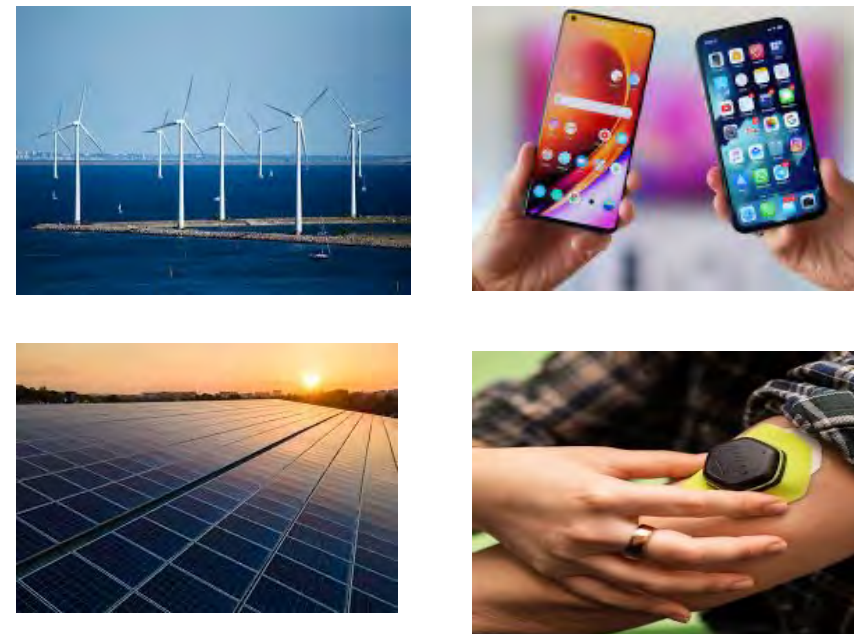


**\$3.2 Billion Graphene
Addressable Market**

Customer Value Proposition

- Reduces wear by over 80%
- Extends life by over 24X
- Increases lubricity by over 70%
- Provides anti-corrosion properties, reducing lubricant breakdown
- Environmental benefit: longer life means less oil extracted and less spent oil to be disposed of

Composites



**\$0.8 Billion Graphene
Addressable Market**

Customer Value Proposition

- Increases electrical conductivity by 8 orders of magnitude
- Improves thermal conductivity by 14%
- Increases strength by 25% to 35%
- Lightweighting
- Anti-corrosion, provides protective barrier blocking moisture and corrosive agents
- Environmental benefit: reduces amount of material need by ~30%, reducing CO₂ emission

EMI



**\$1 Billion Graphene
Addressable Market**

Customer Value Proposition

- Meets 80 dB requirement for EMI shielding of consumer electronics, automotive and aerospace applications
- On track to meet 120 dB requirement for EMI shielding for military applications
- Demand growth driven by increase in wireless devices and future autonomous driving, all requiring increased protection
- Provides anti-corrosion properties via a protective barrier blocking moisture and corrosive agents

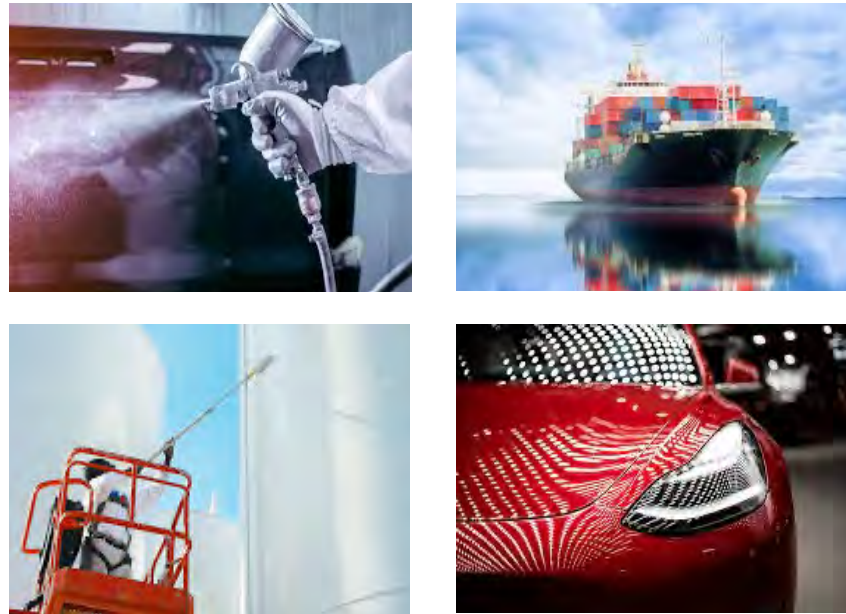


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Application Focus Areas

Coatings



**\$0.9 Billion Graphene
Addressable Market**

Customer Value Proposition

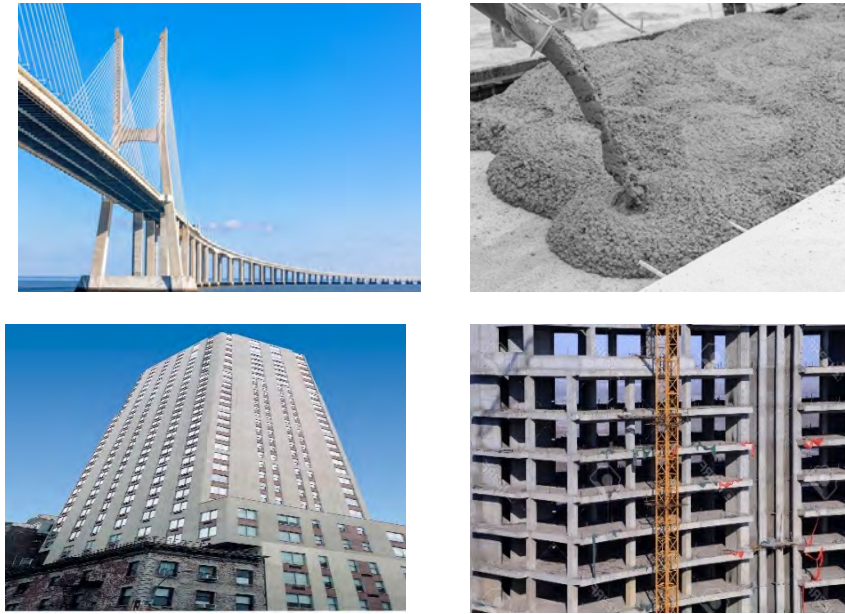
- Enhanced durability: improves mechanical properties and resistance to wear
- Lightweighting
- Enhanced electrical conductivity, increases the flow of electric current
- Anti-corrosion, provides protective barrier blocking moisture and corrosive agents
- Improved thermal conductivity, dissipates heat and prevents overheating



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Cements & Concrete



**\$2.4 Billion Graphene
Addressable Market**

Customer Value Proposition

- Increases strength by 30%
- Reduces 446 kg of CO₂ for every tonne of concrete produced – 1% market penetration is equivalent to taking 5.4 million cars off the road
- 3X faster cure period
- Reduces water permeability, lowering exposure to freeze/thaw damage and rebar exposure to corrosive agents

Energy Storage



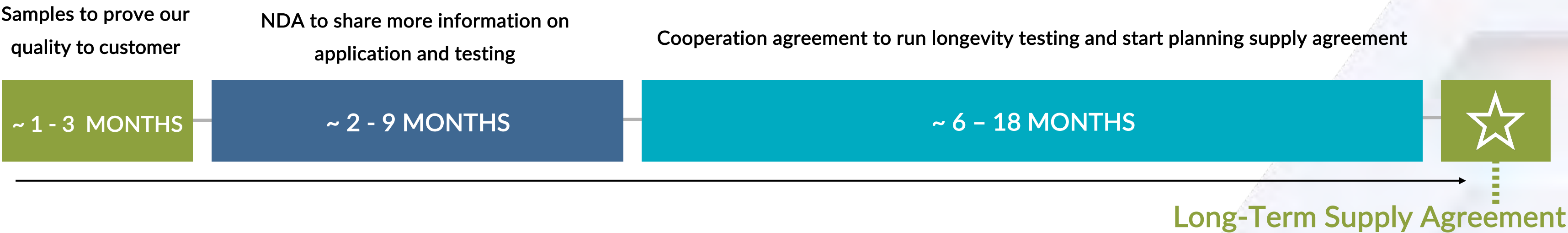
**\$0.5 Billion Graphene
Addressable Market**

Customer Value Proposition

- 47% increase charge acceptance rate in lead acid batteries, resulting in faster charge cycles
- Extends battery life by reducing sulfation
- Outperforms leading cathode catalyst in lithium air batteries
- Increases battery capacity
- Advances in EV technology expected to continue to drive demand for faster charging cycles and battery capacity

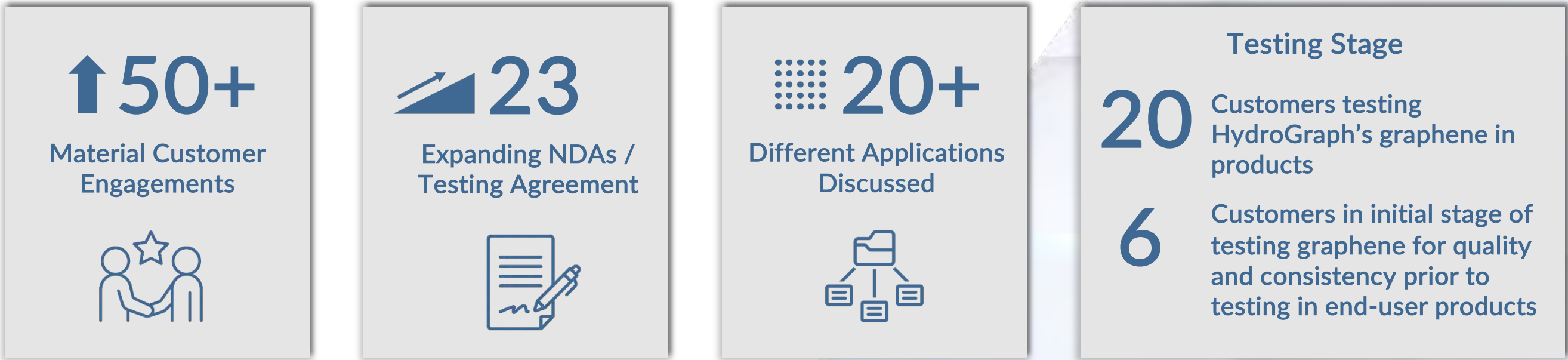
Customer Acquisition Process and Current Status

33 customers with NDA and/or testing graphene



Customer Acquisition Status

as of October 2023



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Example Of Potential Customers Requiring Graphene*



* NDA language prohibits HydroGraph of disclosing detailed of individual companies testing status

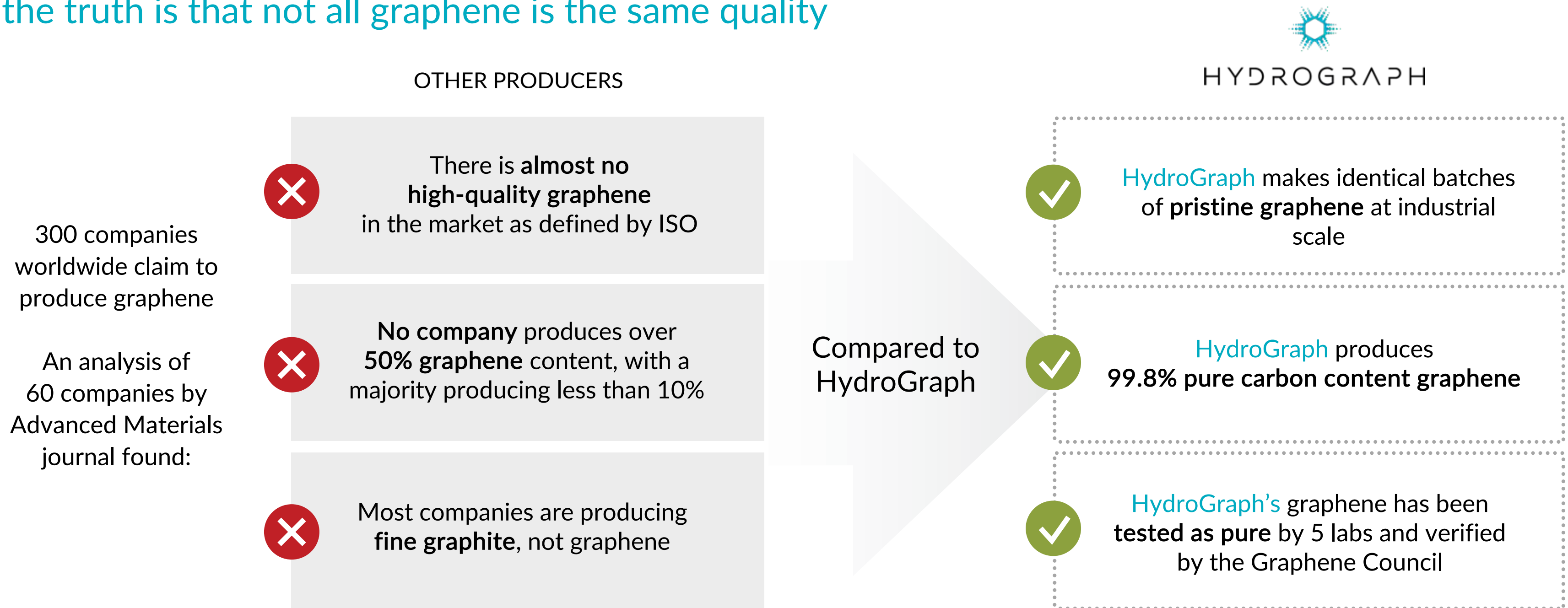


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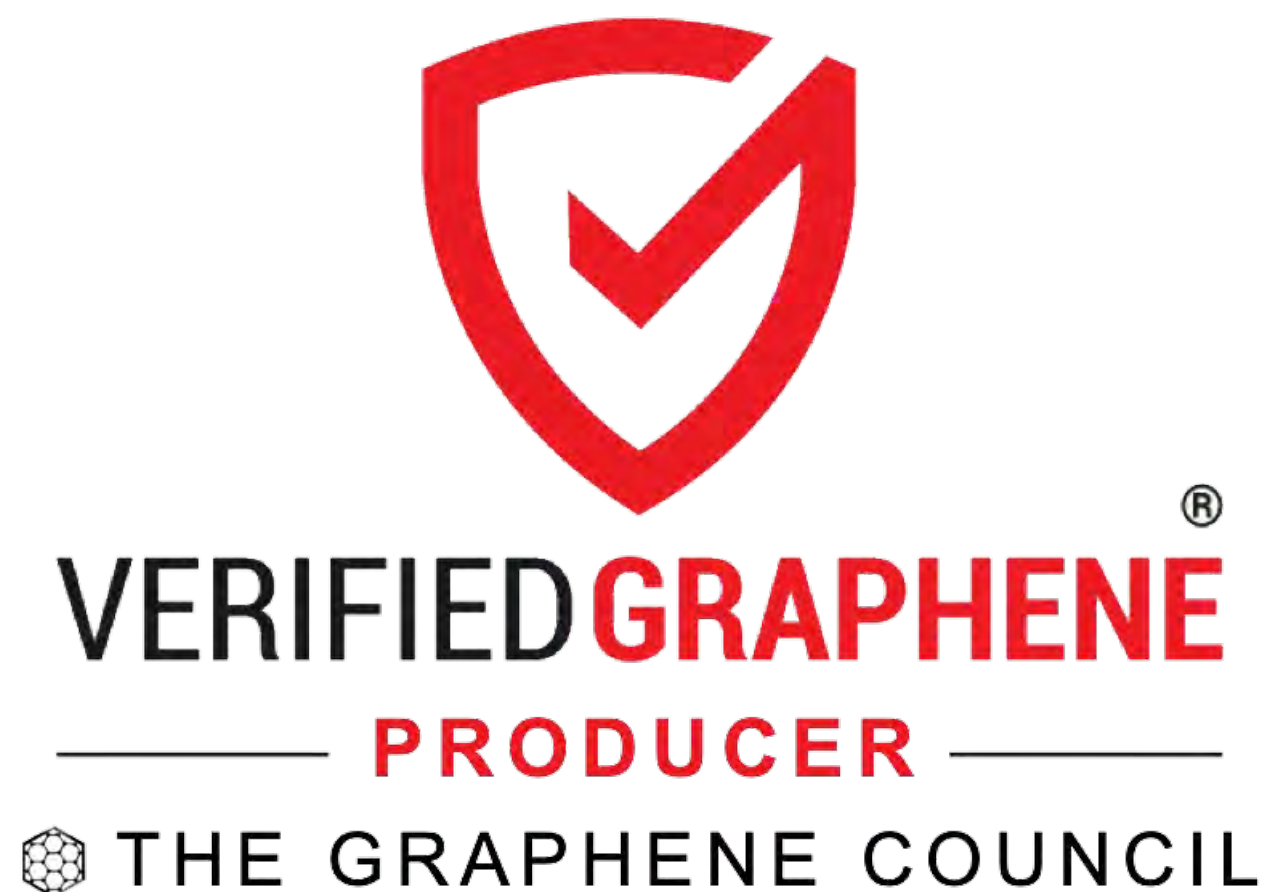
Global Quality Problem: Not All Graphene Is The Same

While many companies are developing graphene production methods, the truth is that not all graphene is the same quality



<https://www.thegraphenecouncil.org/page/Registry>

First In Americas for Certification



The Verified Graphene Producer ® Certification

- The highest standard in the industry!
- The only credential with independent, third party, in-person inspections of graphene production facilities
- Verification of production methods and volumes, and quality control processes
- Based on the Graphene Classification Framework (GCF).

HydroGraph is currently one of only five companies to be certified globally and the first company in the Americas to be certified.



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The HydroGraph Graphene Solution

Solving graphene's industrial problems

Market Challenges

Large Quality Irregularities
Current processes produce graphene that is primarily graphite, not pure graphene

Energy Inefficient
Many methods require a high level of energy to produce graphene

High Cost of Production
Prohibitively expensive to produce with mined graphite for scale

Not environmentally friendly
Many conventional methods use graphite mining, which is not environmentally sound

HydroGraph Solutions

High Quality
The purest (99.8%) graphene at commercial scale

Energy Efficient
High-yield graphene produced with minimal energy, no solvents, no emissions

Cost Effective
Our proprietary technology uses readily available gases to produce high-quality graphene with lowest CapEx requirement in the industry

Environmentally Friendly
The Hyperion System uses very little energy, no solvents, and produces no greenhouse gas emissions














































HydroGraph's Hyperion System



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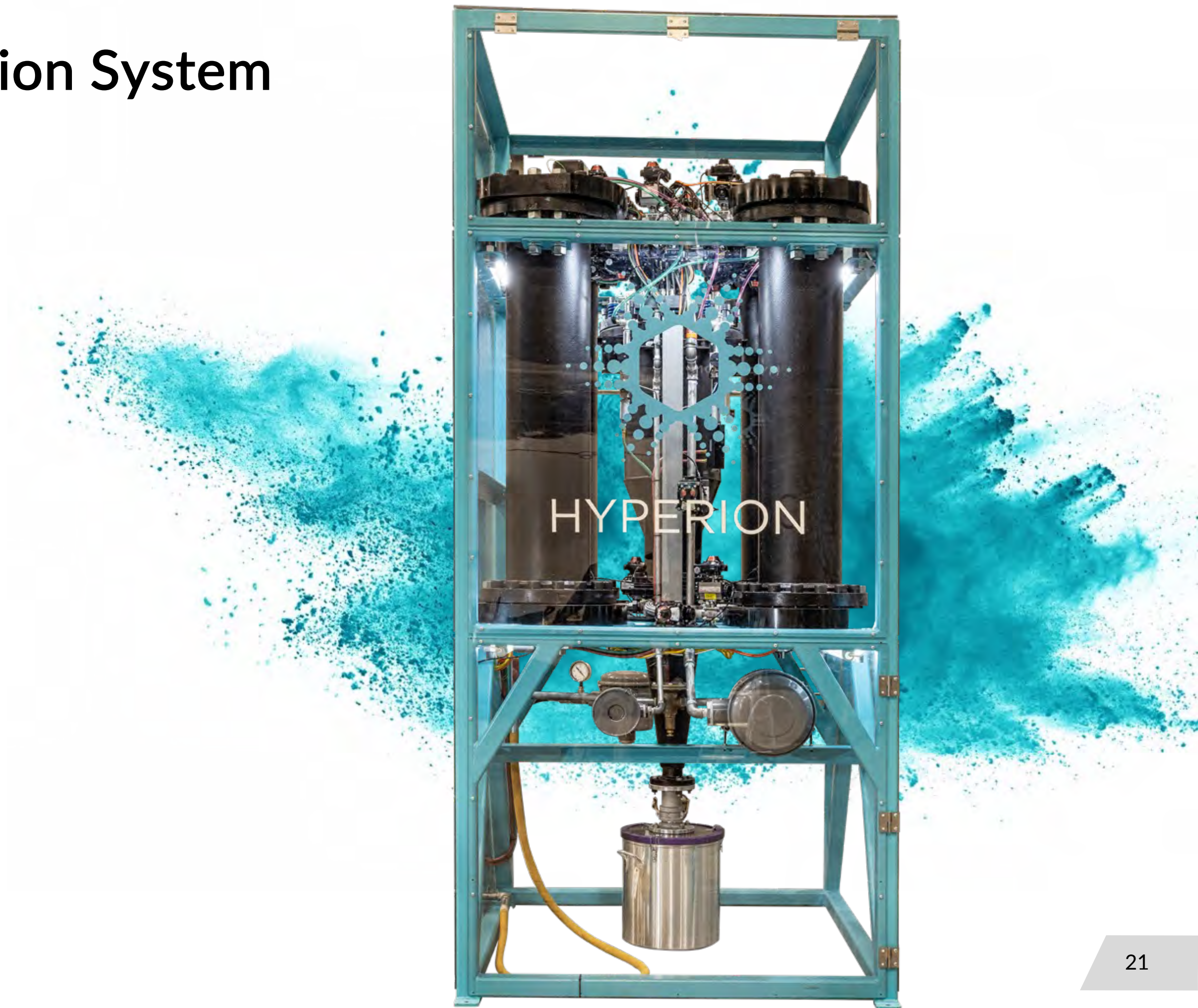
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Significant Competitor Advantage In High-Purity Segment

	Low Energy Consumption	+99% Purity	High Consistency	Low Cost	Easily Scalable & Modularity	Chemically Tailorable	Nano-Sized Particles	< 10 layers
Hydrograph								
Chemical Exfoliation								
Microwave Plasma								
Sonication								
CVD							NA	
Legend	 = Exemplary		 = Good		 = Adequate		 = Poor	

The HydroGraph's Hyperion System

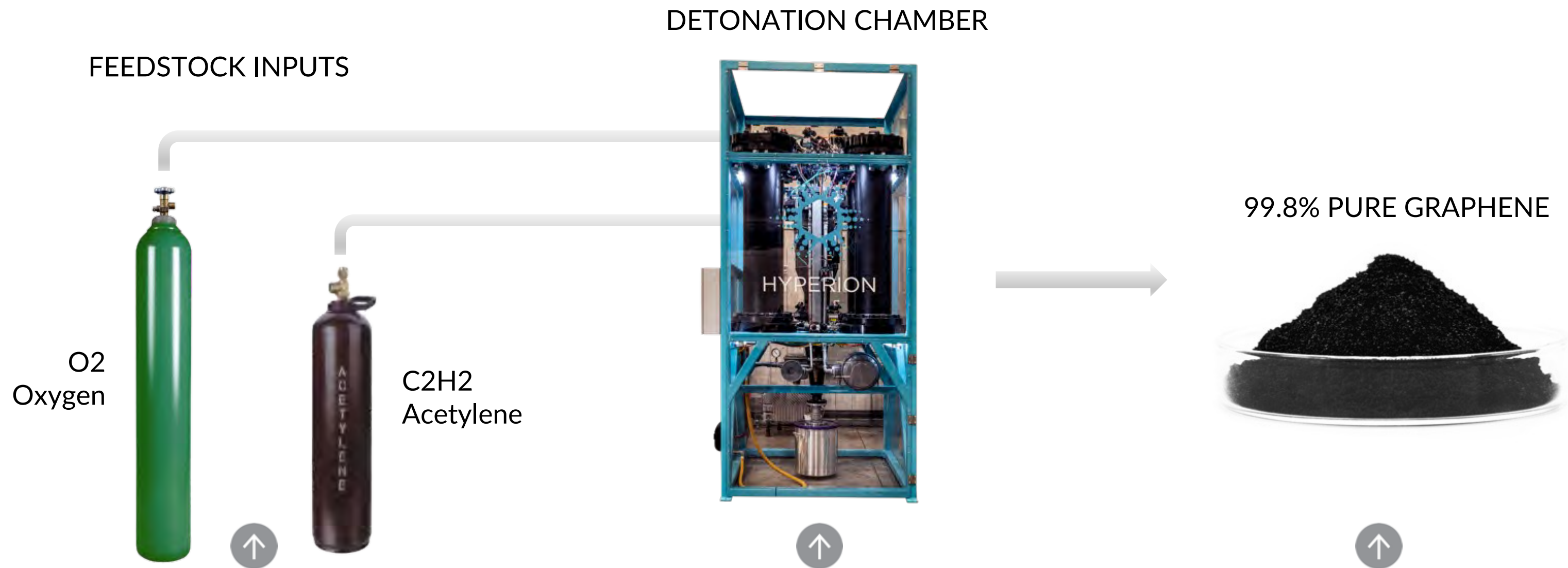
Solves industrial graphene supply problems of value, quality and scale in nano-material production



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HydroGraph's Hyperion System: Disruptive, Patented and Reliable



Readily Available Feedstock

EXTENSIVE APPLICATIONS

HydroGraph's Hyperion System will change the landscape of nanotechnology, beginning with graphene and followed by an array of other valuable materials.

Detonation Chamber

PATENTED HYPERION PROCESS

Conserves energy and prevents emissions. Ideal for commercial deployment: modular, scalable, customizable, decentralized and eco-friendly.

Graphene

HIGHEST QUALITY MATERIALS

We produce the highest-quality, purest, blackest, most easily integrated graphene on the market. The same high-quality standards will apply to all other materials produced by HydroGraph.



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Hyperion detonation is exothermic, not endothermic, meaning it pulls minute energy and doesn't burn fossil fuels to convert hydrocarbon to graphene.

FRACTAL GRAPHENE

Patent for the high-yield production of graphene via detonation

Market Problem

Graphene has been recognized as the first “super material” of the 21st century. However, commercialization of graphene was not feasible before now.

Conventional methods for producing graphene were:

- Producing inferior and inconsistent graphene, sometimes graphite
- Very expensive
- Not scalable
- Inconvenient
- Involving toxic chemicals
- Using vast amounts of electricity
- Addressable markets include:
 - Lubricants
 - Energy storage
 - Resins
 - Specialty chemicals
 - Coatings

HydroGraph Patented Solution

Now: HydroGraph’s proprietary detonation technology – Hyperion System– produces turbostratic graphene that is:

- 99.8% pure
- 2 to 7 layers thick
- Identical from batch to batch
- High value
- Uses very little energy
- Green: using acetylene & oxygen as feedstock with net-zero emissions
- Scalable
- Modular design that can be deployed virtually anywhere

“The Hyperion method to create graphene is an example of an elegant synthesis. Fill a chamber with acetylene and oxygen, ignite the mixture with a small spark, and voila, high-purity graphene is formed.”

– Dr. Chris Sorensen,
the creator of the
Hyperion process



REACTIVE GRAPHENE

Graphene/Graphene Oxide Core/Shell Particulates and Methods of Making and Using the Same

Market Problem

Certain high-valued applications require additional functionalization to:

- Enhance bonding and integrating graphene with other materials
- Bring attractive properties, such as tensile strength, elasticity and conductivity, to more complex materials
- Address applications in a vast number of areas, including:
 - Medicine and biology
 - Resins and composites
 - Dispersions
 - Functional coatings
 - Plastics

HydroGraph Patented Solution

HydroGraph has responded by producing Reactive Graphene, which can bond more easily to other materials thanks to its reactive shell that is functionalized with carboxylic acid groups.

- HydroGraph leaves the graphene inner core intact, a huge advantage compared to standard graphene oxide which is only 70% carbon content vs. HydroGraph's 96%.
- HydroGraph's reactive graphene is a "pristine functionalized graphene"
- Due to the success of the material, HydroGraph has extended the product line to include a host of other functionalizations

"We can tailor this graphene to virtually any application; just name it. We can perform the entire palette of organic chemistry reactions on the graphene's surface and keep it intact. The future is extremely bright with regards to us integrating graphene into just about any material you can imagine"

– Dr. Stefan Bossman,
HydroGraph's lead chemist



Patented Technology

Fractal Graphene Patented No: 9,440, 857 B2

The 2016 patent for the high-yield production of fractal graphene via detonation is the founding technology for HydroGraph. The detonation closed system produces the highest quality products, while conserving energy, preventing emissions and is modular and scalable for clients. Additionally, the HydroGraph portfolio now contains patents relating to the production of nanomaterials, applications involving nanomaterials and clean energy.



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REACTIVE GRAPHENE

Disc. No.: 2019-064; Attorney Docket No.: 52468

Title: "Graphene/Graphene Oxide Core/Shell Particulates and Methods of Making and Using the Same"

PCT Application No.: PCT/US2020/038055

Filing Date: June 17, 2020

GRAPHENE INK

RE: Disc. No. 2019-066

Title: "Nano-inks of Carbon Nanomaterials for Printing and Coating"

PCT Patent Application No.: PCT/US2020/039547

Filing Date: June 25, 2020

GRAPHENE ENHANCED CARBON FIBER

Disc. No.: 2017-008; Docket No.: 49240-US

Title: "Additive Manufacturing of Continuous Fiber Thermoplastic Composites"

U.S. Application No.: 16/487,622 (PCT/US2018/018800)

HYDROGEN PRODUCTION

Disc. No.: 2021-027; Attorney Docket No.: 54713-PCT

Title: "Process for Synthesis of Syngas Component"

U.S. Provisional Patent Application No.: 63/161,625

Filing Date: March 16, 2021

Why Invest?

1 | TECHNOLOGY ADVANTAGE

Hyperion detonation technology is a patented, simple, scalable platform for the production of graphene products

2 | PRODUCT ADVANTAGE

Highest purity, cost-effective graphene (99.8%), nano-engineered for the client. Enables integration of graphene into existing products

3 | COMMERCIAL ADVANTAGE

Hyperion system is compact and modular; the small footprint allows for deployment virtually anywhere

4 | ENVIRONMENTAL ADVANTAGE

High-yield, industrial graphene produced with minimal energy, no solvents, with virtually no emissions. Unique in the industry

5 | GLOBAL MARKET ADVANTAGE

Positive market reaction to quality, consistency and purity with multiple applications, including lubricants, resins, composites, polymers, coatings, batteries, concrete, aerospace, automotive, biomedical

6 | ADDITIONAL BREAKTHROUGH PRODUCTS

Proven ability to use patented detonation technology to potentially:

- Produce hydrogen, a clean green fuel
- Convert methane, a harmful greenhouse gas, into high-value graphene

Key Catalysts

- Fully operational new application and technology center in Q1 2024
- Close first major multiyear contract in 2024 and reaching \$25M worth of annual customer contracts in 2025

Capital Structure

Basic shares outstanding	196M
Options outstanding	16M
Warrants outstanding	41M
Fully diluted	253M
Market cap. (03/08/2024)	CA\$19.6M



THANK YOU

We appreciate your interest in HydroGraph and thank you for taking the time to review our presentation.

If you have questions, please feel free to reach out to us. You can access the contact page on our website at hydrograph.com or through the QR code to the right. Contact information for our top executives is also provided through QR codes for your convenience.

Website



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