HPQ – SILICON
RESOURCES

Innovative Silicon Solutions

HPQ
LISTED
TSXV

OTCQX
THE BEST MARKET

HPQFF

DISCLAIMERS

This presentation includes certain

"FORWARD-LOOKING STATEMENTS"

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The Corporation is focused on developing the *PUREVAP™ processes. The PUREVAP™ Quartz Reduction Reactor (QRR),* (Patent Pending) a new carbothermic process to transform Quartz into Silicon, and the *PUREVAP™ Nano Silicon (Si)* Reactor (NSiR), (Provisional Patent applied) a new process to transform Silicon (Si) into Spherical Nano powders and Nano wires for Lithium-ion batteries. The terms Silicon, Silicon Metal and Si are used interchangeably. Metallurgical Grade Silicon or Mg Si refers to Silicon Metal of a purity between 98.0% Si and 99.5% Si.

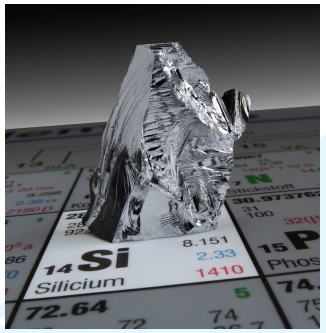
Any monetary values given to end product produced by the equipment, projected capital or operating cost and savings associated with the development of process should not be construed as being related to establishing the economic viability or technical feasibility on any of the Company's quartz properties or more specifically the Roncevaux Quartz Project, Matapedia Area, in the Gaspe Region, Province of Quebec.

WHY SILICON INNOVATION?

Silicon (Si) is the most abundant element in earth's crust after oxygen, but like all other energy metals (lithium, graphite, cobalt, nickel, etc.) it does not exist in its pure state!

- Expensive and energy intensive carbothermic process needed to extract it from Quartz (SiO_2)
- Innovation needed, depending on final application, Silicon must either be purified and or engineered

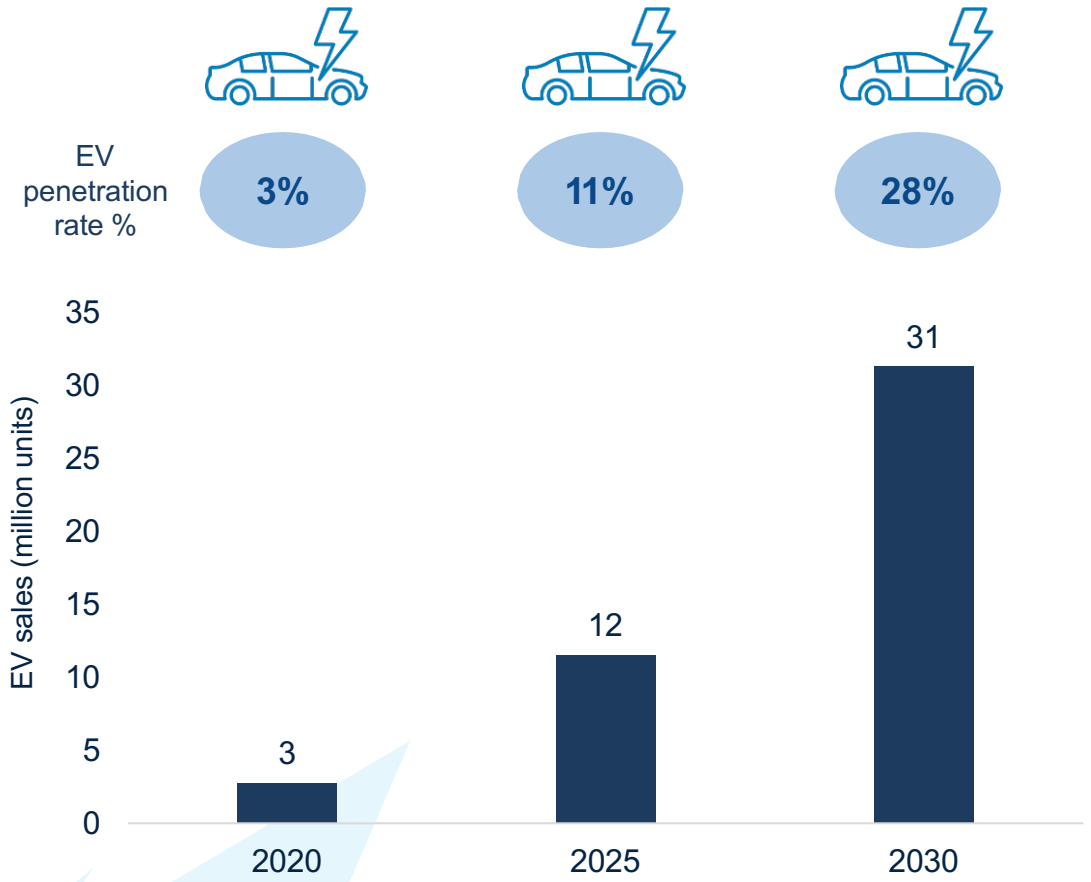
SILICON DEMAND TO REACH 3.8 M MT WORTH US$ 10 BILLION BY 2025 (Source CRU)



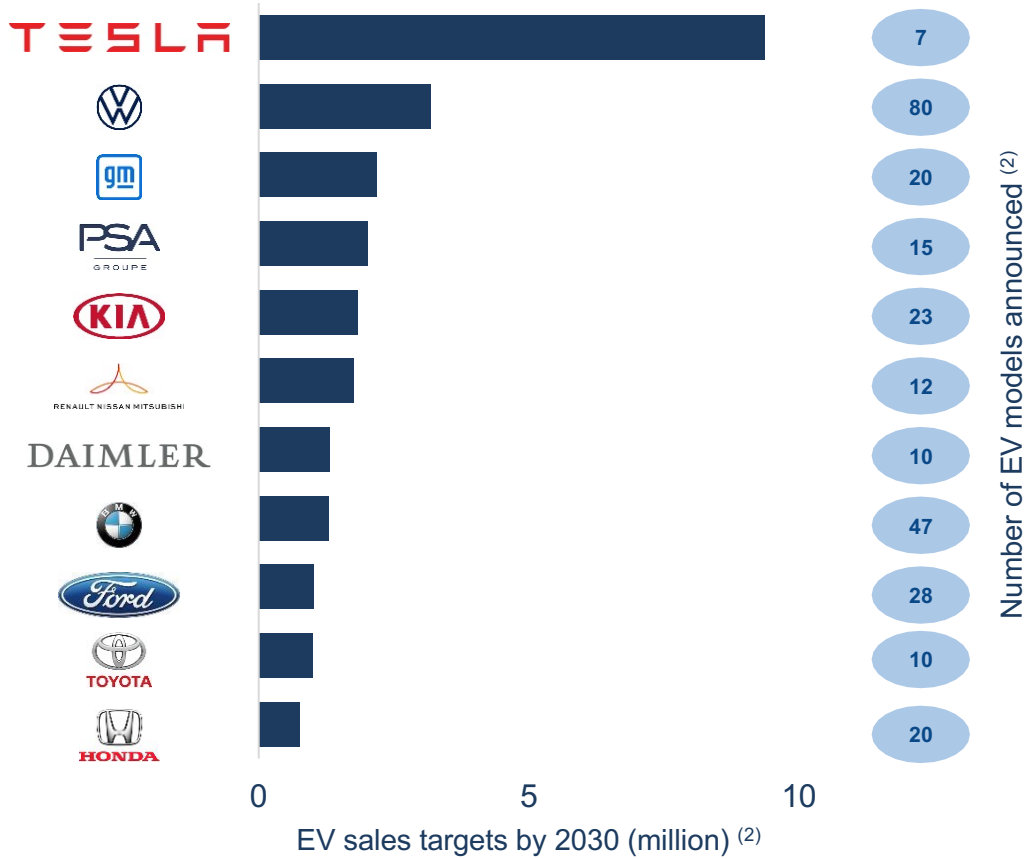
- Metallurgical Grade Si demand will be driven by the EV market, but
- Bulk of the growth will be driven by demand for chemical grade Si
- Why? Because chemical grade Si (2N+) is the feedstock:
  - To make Silicones, an end market growing at a 10.7% CAGR, expected to reach US$ 23 B by 2025 (Source marketsandmarkets.com)
  - To produce Polysilicon for solar and electronics, an end market with a 20% CAGR expected to surpass US$ 200 B By 2026 (Source Facts and Factors Research)
- Silicon demand from the energy storage and battery sectors, requiring engineered 3N to 4N Si, not included. Why?
  - New end market coming online, with demand projected to register CAGR +50%, exceeding 200K MT worth potentially US$ 2.6 B by 2030 (Sources CRU and BusinessKorea.co.kr)

THE LONG-TERM EV MEGATREND IS ONLY STARTING

EV adoption and vehicle sales (1)



Leading EV manufacturer plans – over $300 billion committed



The World is going "all-in" on electric vehicles

(1) Source: Benchmark Mineral Intelligence, Rho Motion
(2) Broker research, Bloomberg New Energy Finance, NOU websites and presentation

ENERGY STORAGE DEMAND ABOUT TO EXPLODE

BUT THERE IS A "BATTERY BOTTLENECK"

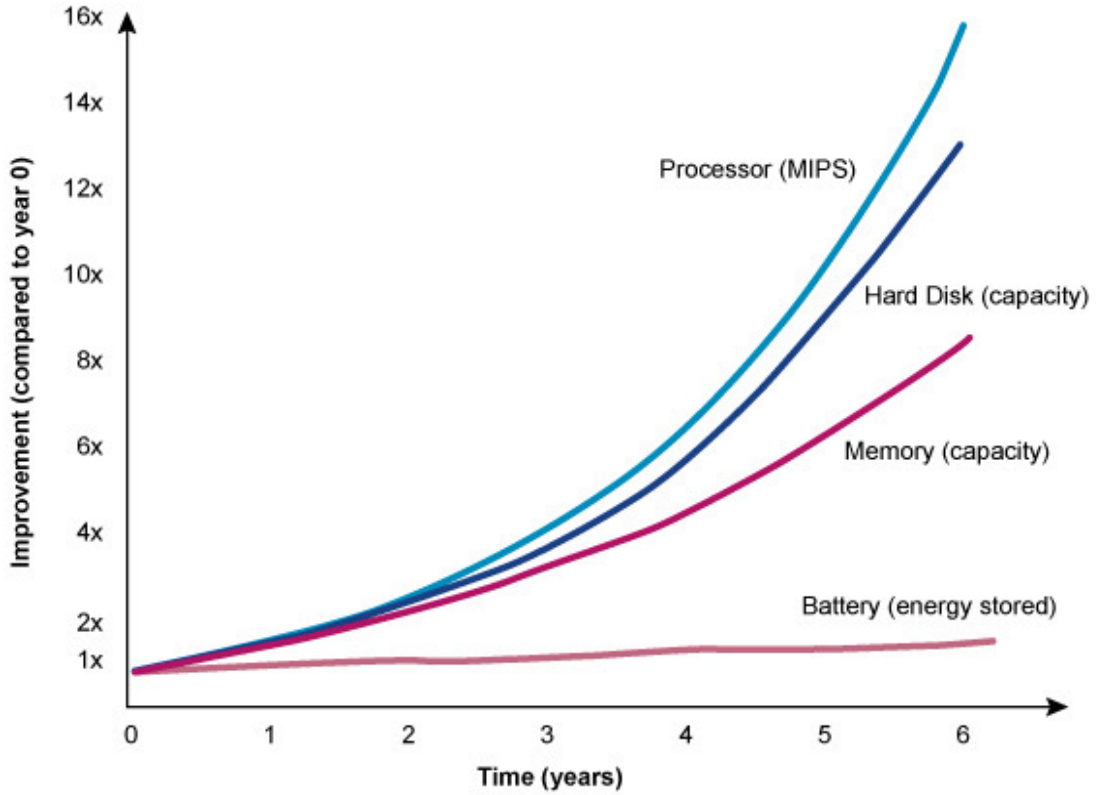
BATTERY PERFORMANCE HAS EVOLVED MUCH MORE SLOWLY THAN ELECTRONICS AND COMPUTERS

Improvements have been made in battery technology, but they have not kept pace

WHY IS BATTERY TECHNOLOGY EVOLVING SO SLOWLY?

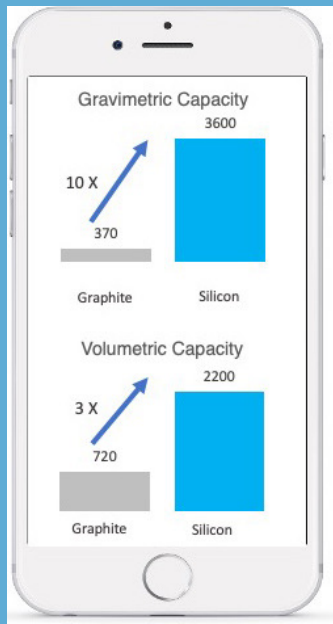
Batteries have evolved differently than electronics:

- **Electronics improve by shrinking physical circuits** enabling manufacturing technology to evolve rapidly.
- **Batteries improve by advances in <u>CHEMISTRY</u> & <u>MATERIALS SCIENCE</u>.**
- Many of the chemical processes used in modern batteries have reached their limits
- Improvements in materials science are required



BREAKTHROUGHS NEEDED IN BATTERY MATERIAL SCIENCE

AUTO MANUFACTURERS ARE PIVOTING TO SILICON



LITHIUM-ION BATTERIES CAPACITIES ARE LIMITED BY GRAPHITE

- In conventional batteries, the negative electrode or anode is made of carbon in the form of graphite.
- **Graphite** is batteries limiting factor.
- Silicon allows for faster charging and higher storage capacity than graphite.

THIS IS WHY SILICON (Si) IS NEEDED TO BREAK LI-ION BATTERIES' LIMITATIONS

*"**Silicon anodes** are generally viewed as the next development in lithium-ion battery technology … **Silicon**'s ability to absorb more charge translates to longer battery life and smaller batteries."*

(Yury Gogotsi, Director, A.J. Drexel Nanomaterials Institute, Drexel University)

TESLA

*Tesla's latest battery day presentation confirmed that the future of battery anodes will include Silicon. Tesla "…**plans on removing graphite from the anode**."*
(NBCFM September 23, 2020 Research Flash)

PORSCHE

Porsche is researching high-performance batteries with silicon instead of graphite anodes in order to achieve an even higher energy density and better fast-charging capability.

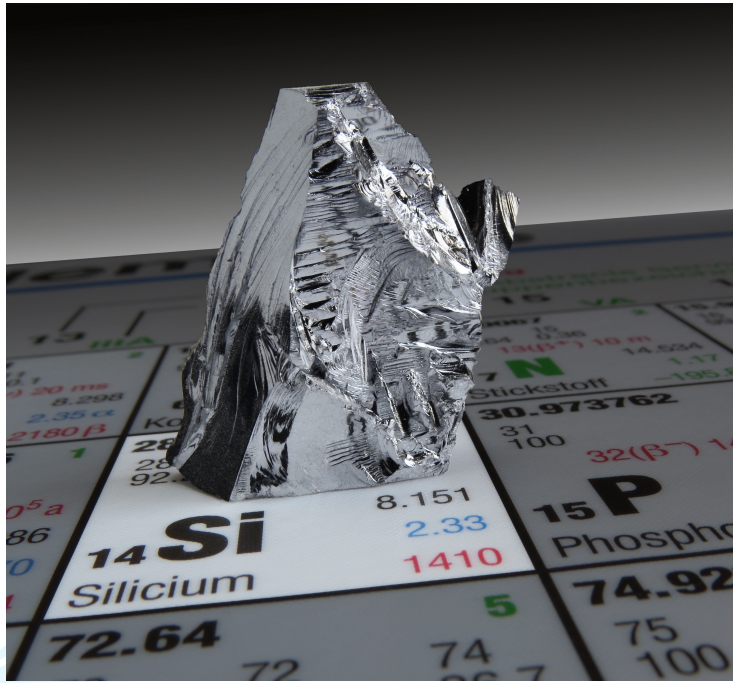
*"The battery cell is the combustion chamber of tomorrow," says Oliver Blume, Chairman of the Executive Board of Porsche AG. "Our electrified high-performance sports and racing cars place the highest demands on battery technology. To meet these demands, **Porsche needs special high-performance cells. Silicon has big potential**."*

The company made this announcement at the first Volkswagen Power Day, held on March 15 2021

gm

*General Motors Co, President Mark Reuss said at an investor conference held Wednesday April 7 2021, that GM is experimenting with **silicon-rich** and lithium metal anodes, solid state and high voltage electrolytes, and dry processing of electrodes for its next generation of Ultium batteries, due around 2025. (Reuters April 08, 2021)*

DEPLOYING SILICON IN BATTERIES REQUIRES INNOVATIVE SOLUTIONS!



SINCE 2015 HPQ HAS IMPLEMENTED AN INNOVATION DRIVEN TECHNOLOGY DEVELOPMENT STRATEGY

WITH PYROGENESIS:

PROVIDING SILICON MATERIALS FOR BATTERIES & MORE

- Currently advancing development of numerous silicon products to resolve Material Science issues
- Breakthrough imminent with Nano Silicon materials for battery anodes
- Cost effective silicon solution for Industry, EV and battery manufacturing
- HPQ: The only publicly traded vertically integrated advanced Si solution provider in Canada

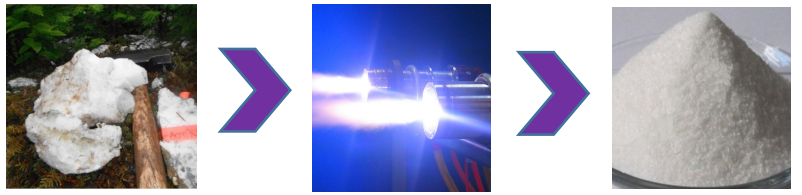
DEVELOPING GREEN FUMED SILICA MANUFACTURING

- Advancing development of a new one step process to make fumed Silica

WITH EBH_2 LOOKING AT GREEN HYDROGEN EXTRACTION VENTURE

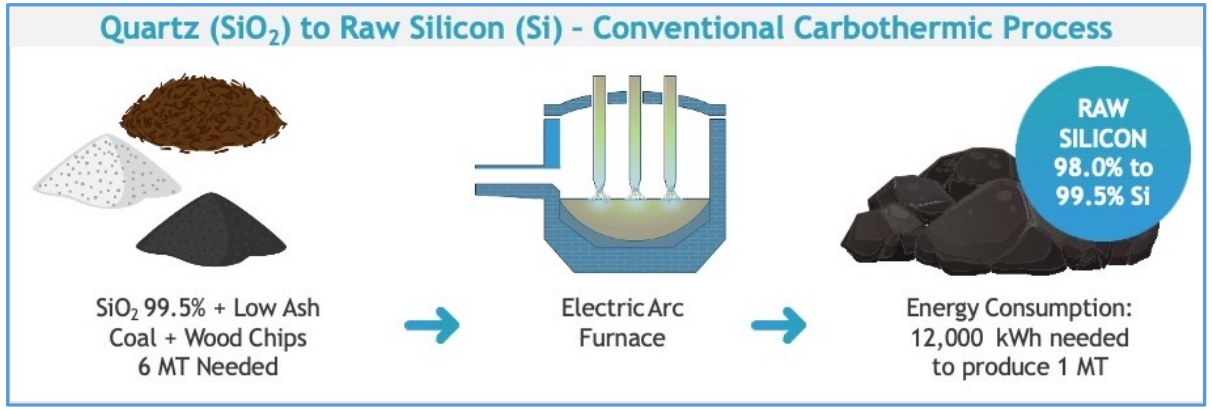
- Working to reduce the cost and environmental footprint of making Silicon

ONGOING SILICON - SILICA INOVATIONS

PROJECTS	DEVELOPING A MULTITUDE OF GAME CHANGING TECHNOLOGIES	
PUREVAP™ QRR ***50 MTY Pilot Plant about to start in Q4 2021***	*From Quartz to High Purity Silicon in one step*	
PUREVAP™ NSiR ***Ongoing testing with small scale equipment***	*From Silicon to Nano Materials in one step for Li battery anodes*	
FUMED SILICA ***50 MTY Pilot Plant starting in Q4 2022***	*From Quartz to fumed silica in one step*	
OTHERS	*Using Nano Silicon for others high value applications*	

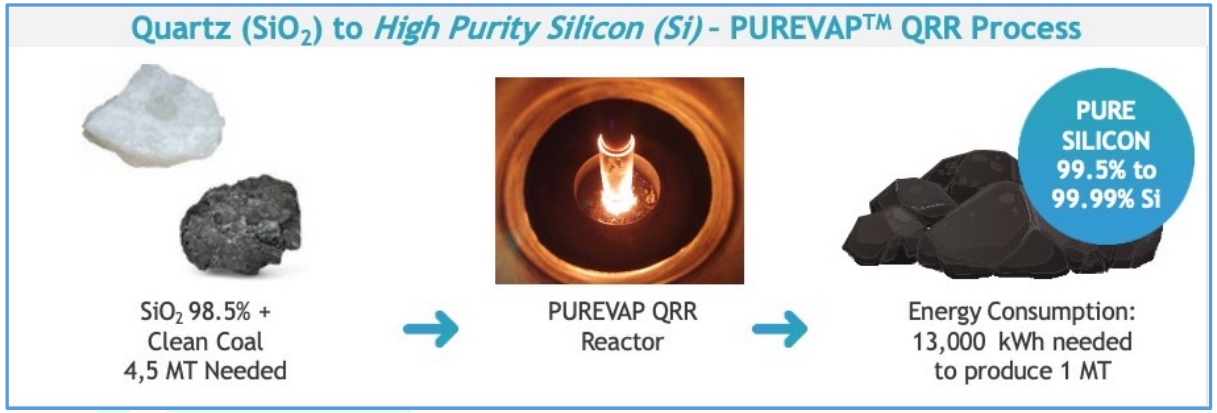
PUREVAP™ QRR – HPQ DISRUPTIVE TECHNOLOGY

THE PUREVAP™ QRR: GAME CHANGING VERSATILITY VERSUS CONVENTIONAL PROCESS



Conventional plants:

- Scalable by minimum increments of 30,000 MTY
  - Minimum investment > US$ 200 M
- 2N+ Si production limited at 40% of plant output
- Requires additional purification steps for Battery use
- Need 6 MT of Feedstock to produce 1 MT



***PUREVAP™* process:**

- Scalable by minimum increments of 2,500 MTY
  - Minimum investment 85% - 90% less than conventional plant
- 4N+ Si production in one step
  - Perfect for Battery application for less than raw silicon
- Need 4,5 MT of Feedstock to produce 1 MT

➢ ***PUREVAP™ QRR:* THE BEST OPTION FOR NEW PLANTS NEEDED TO MEET SILICON DEMAND**

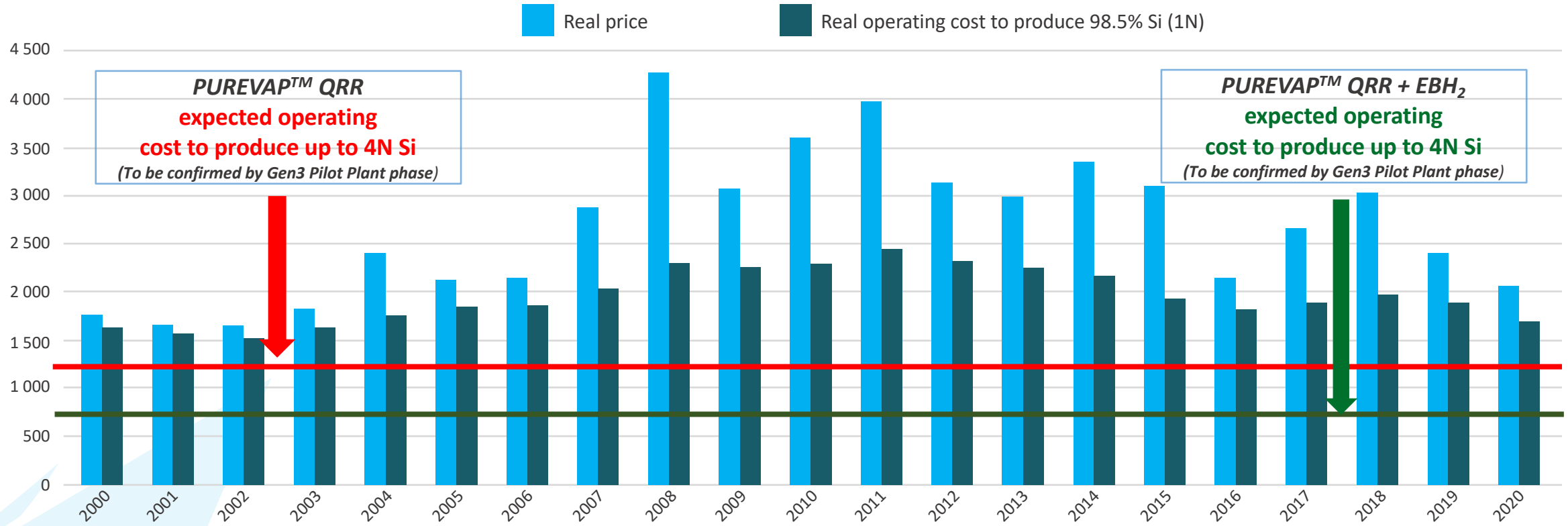
PUREVAP™ QRR – LOW COST, LOW EMISSIONS

PUREVAP™ QRR OPEX VERSUS CONVENTIONAL Si PRODUCERS

Silicon in the 2020s

Inflation-adjusted prices are higher than they were in the early 2000s

US spot price of 5.5.3 grade silicon vs. avg. operating cost at plants outside China and the CIS in real terms, $/t



Data: CRU

BREAKTHROUGHS NEEDED: DEPLOYING Si IN BATTERIES HAS CHALLENGES

HPQ – SILICON RESOURCES

ECONOMICALLY VIABLE SOLUTION DOES NOT EXIST NOW!

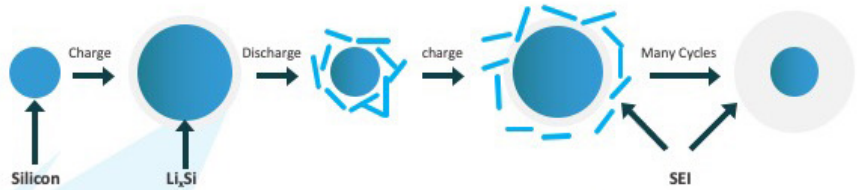
DEPLOYMENT OF SILICON (Si) IN BATTERIES FACES CHALLENGES

THE BIG ONE

- The volumetric fluctuations (>300 %) of Silicon (Si) during charge/discharge cycles leads to irreversible energy storage capacity loss.

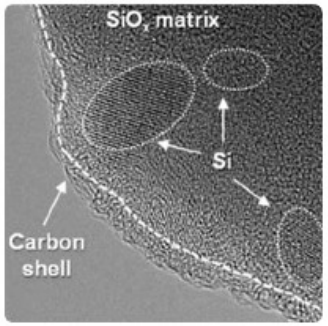
WHY

- Repeated exposure of the fresh silicon surface to battery electrolyte leads to a continual reformation of the Solid electrolyte interphase (SEI);
- Basically, the SEI grows thicker with each charge/discharge cycle.

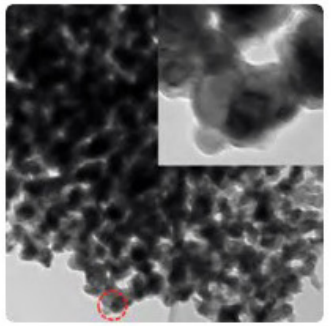


RESULTING IN POOR BATTERY LIFE CYCLE

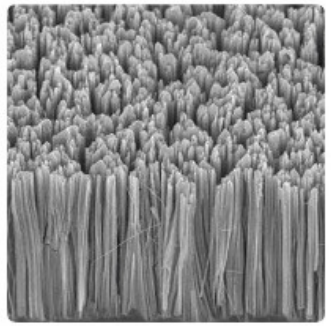
CURRENT APPROACHES TO SILICON USE HIGHLY ENGINEERED AND EXPENSIVE MATERIALS



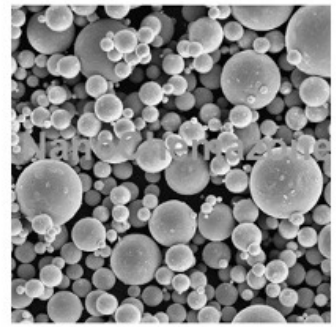
SILICON STRUCTURED IN SIO GLASS
> 2,000 US$ / Kg



SILICON STRUCTURED IN GRAPHITE
> 3,000 US$ / Kg



SILICON NANOWIRES
> 30,000 US$ / Kg



SILICON NANOPOWDERS
> 20,000 US$ / Kg

SILICON NANOPOWDERS OR NANOWIRES COULD REPLACE GRAPHITE NOW

- New manufacturing process must be developed to allow Si Nano material to reach cost parity with graphite…
- Graphite for anode cost between US$10 to US$20 per Kg

WITH A POTENTIAL DEMAND > 200K MT BY 2030, WHO WILL BE IN POSITION TO PRODUCE, AT A PRICE THAT BATTERY MANUFACTURERS WILL BE WILLING TO PAY, THE SILICON MATERIAL NEEDED?

HPQ NANO - DEVELOPING LOW-COST SOLUTIONS

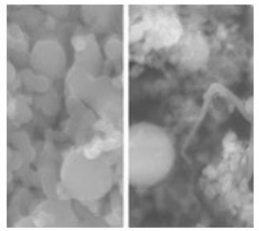
STARTING COMMERCIAL VALIDATION OF A NEW LOW-COST PROCESS

MAKING SILICON MATERIALS FOR BATTERIES

SILICON (Si) to NANOPOWDERS AND NANOWIRES - PUREVAP™ NSiR Process

BATTERY GRADE SILICON →

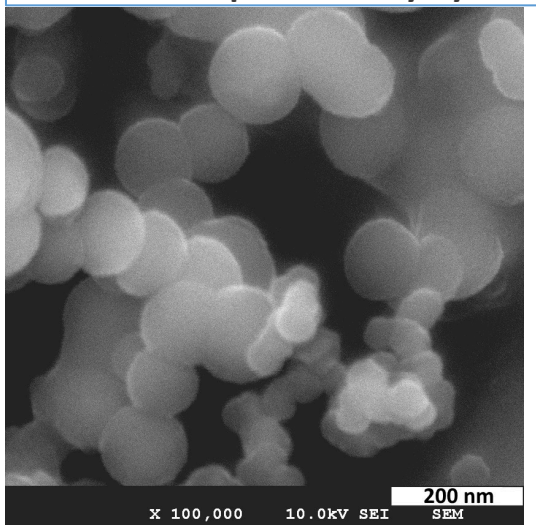
PUREVAP™ NANO Si REACTOR →



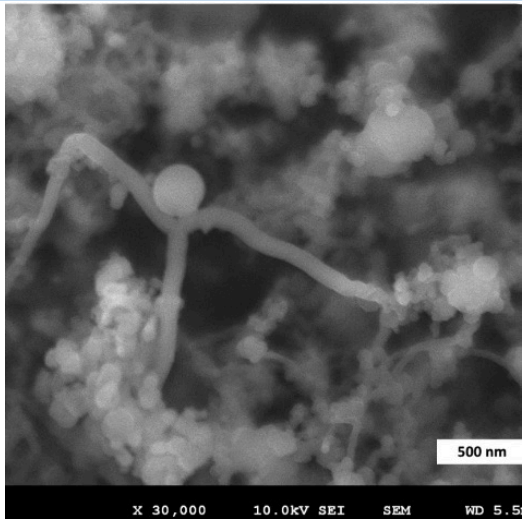
SPHERICAL SILICON NANOPOWDERS & NANOWIRES

A new scalable, versatile, low-cost plasma process with a capability to produce tailor made spherical Si materials from < 0.10 µm up to 5 µm

Material produced by PyroGenesis during proof of concept test



SILICON NANOPOWDERS



SILICON NANOWIRES

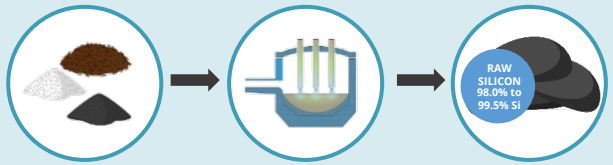
HPQ TO BE IN A POSTION TO PRODUCE HIGH VOLUME OF Si NANO & MICRO MATERIAL NEEDED

- *PUREVAP™ NSiR is* a game-changing low-cost plasma base process:
  - ➢ It can transform HPQ *PUREVAP™ QRR* battery grade Si into the nano & micro size Si materials Batteries and EV manufacturers are looking for to improve their Anodes
  - ➢ It will be able to offer advance Si material for battery anodes at price parity with graphite

HPQ LOW-COST SOLUTIONS VS COMPETITION

CONVENTIONAL CARBOTHERMIC PROCESS

QUARTZ TO SILICON



99.5% SiO_2 + Low Ash Coal + Wood Chips 6 MT Needed

Electric Arc Furnace

Energy Consumption: 12,000 kWh needed to produce 1 MT

SILICON TO SILANE GAS PROCESS

REC SILICON

2N Si

Dissolved in

Forms

SiCl4

Silicon tetrachloride

add

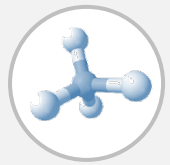
To Get

HSiCl3

Trichlorosilane

Refined 3 time

SiH4



Silane Gas

PUREVAP™ QRR PROCESS

QUARTZ TO SILICON

98.5% SiO_2 + Clean Coal 4,5 MT Needed

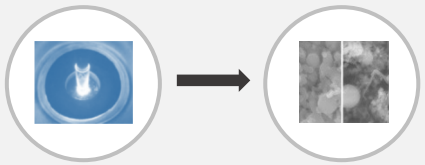
PUREVAP QRR Reactor

Energy Consumption: 13,000 kWh needed to produce 1 MT

PUREVAP™ NSIR PROCESS

SI TO NANO SI

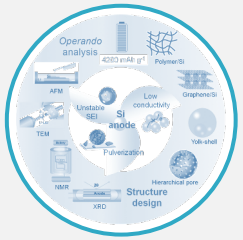
Battery Grade Si



PUREVAP NANO Si Reactor

Si NANOPOWDERS & NANOWIRES

Si Anode Materials



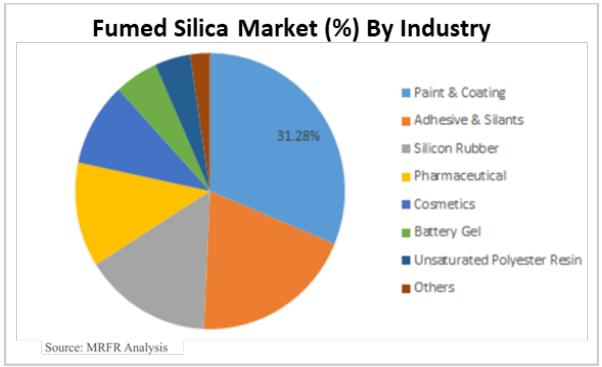
Cell / Battery manufacturing

Next Generation Silicon Anode Manufacturing (Group14 Technologies)

HPQ SILICA POLVERE - FUMED SILICA PROJECT

- Fumed silica (Pyrogenic Silica) is a versatile value-added white microscopic powder with high surface area & low bulk density
- Due to its unique properties commercial applications encompass various industries including personal care, pharmaceuticals, agriculture (food & feed), adhesives, sealants, construction, batteries and automotive to name a few

	REAL		Projection	
	2016		2022	
Fumed Silica Market	Quantity MTY	Value (USD)	Quantity MTY	Value (USD)
Global	300,000	1,500 Million	425,000	2,263 Million
North American	59,100	416 Million	76,000	575 Million
Canadian	19,300	136 Million	24,400	185 Million

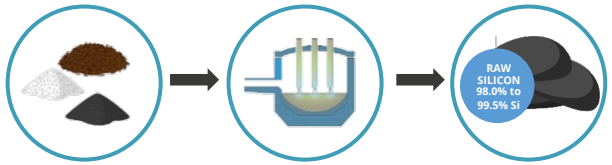


- HPQ signed a development agreement with PyroGenesis covering a FUMED SILICA REACTOR development program and the future commercialisation of fumed silica materials
- The new plasma-based process allows a direct Quartz to Fumed silica transformation, removing the usage of hazardous chemical in the making of Fumed silica and eliminating the Hydrogen Chloride Gas (HCI) releases associated with its manufacturing
- The process requires 15,000 kWh to produce a MT of Fumed Silica, a staggering 86% reduction in the energy footprint
- Quartz being the feedstock, its capital requirements will be a small fraction of a traditional Fumed Silica plant

TRADITONAL PROCESS VS NEW PROCESS

QUARTZ (SiO_2) TO SILICON (Si)

CONVENTIONAL PROCESS TO MAKE SILICON



99.5% SiO_2 + Low Ash Coal + Wood Chips 6 MT Needed

Electric Arc Furnace

Energy Consumption: 12,000 kWh needed to produce 1 MT

2N Si

SILICON (Si) TO FUMED SILICA (SiO_2)

CONVENTIONAL PROCESS TO MAKE FUMED SILCIA

Dissolved in

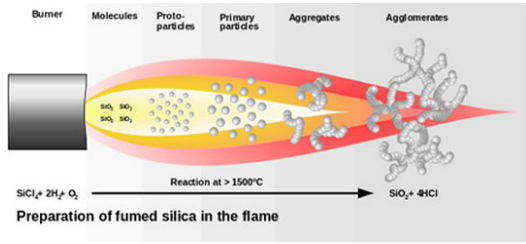
Forms

SiCl4

Silicon tetrachloride

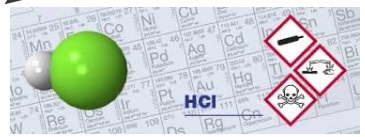
add

H_2
O_2



Energy Consumption: 98,000 kWh needed to produce 1 MT of Fumed Silica

Fumed Silica



Hydrogen Chloride Gas

QUARTZ (SiO_2) TO FUMED SILICA

FUMED SILICA REACTOR

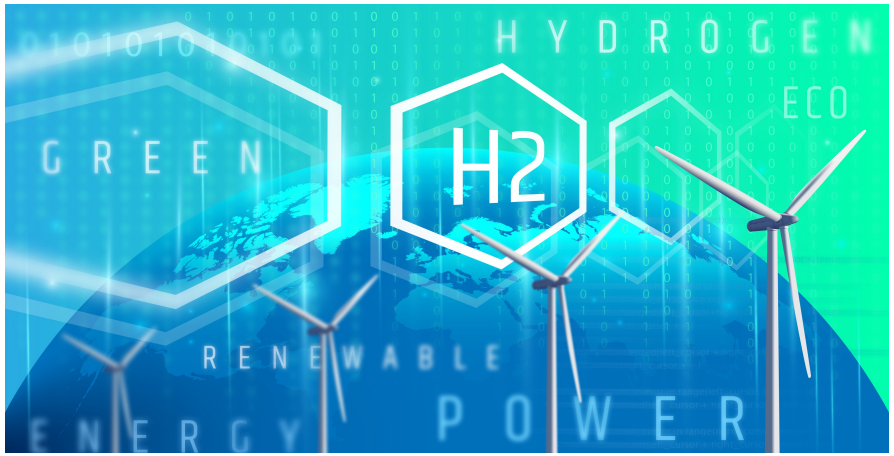
Quartz SiO_2

Fumed Silica Reactor

Fumed Silica

Energy Consumption: 15,000 kWh needed to produce 1 MT

HPQ LAUNCHES REVOLUTIONARY AND BREAKTHROUGH GREEN HYDROGEN EXTRACTION TECHNOLOGY VENTURE



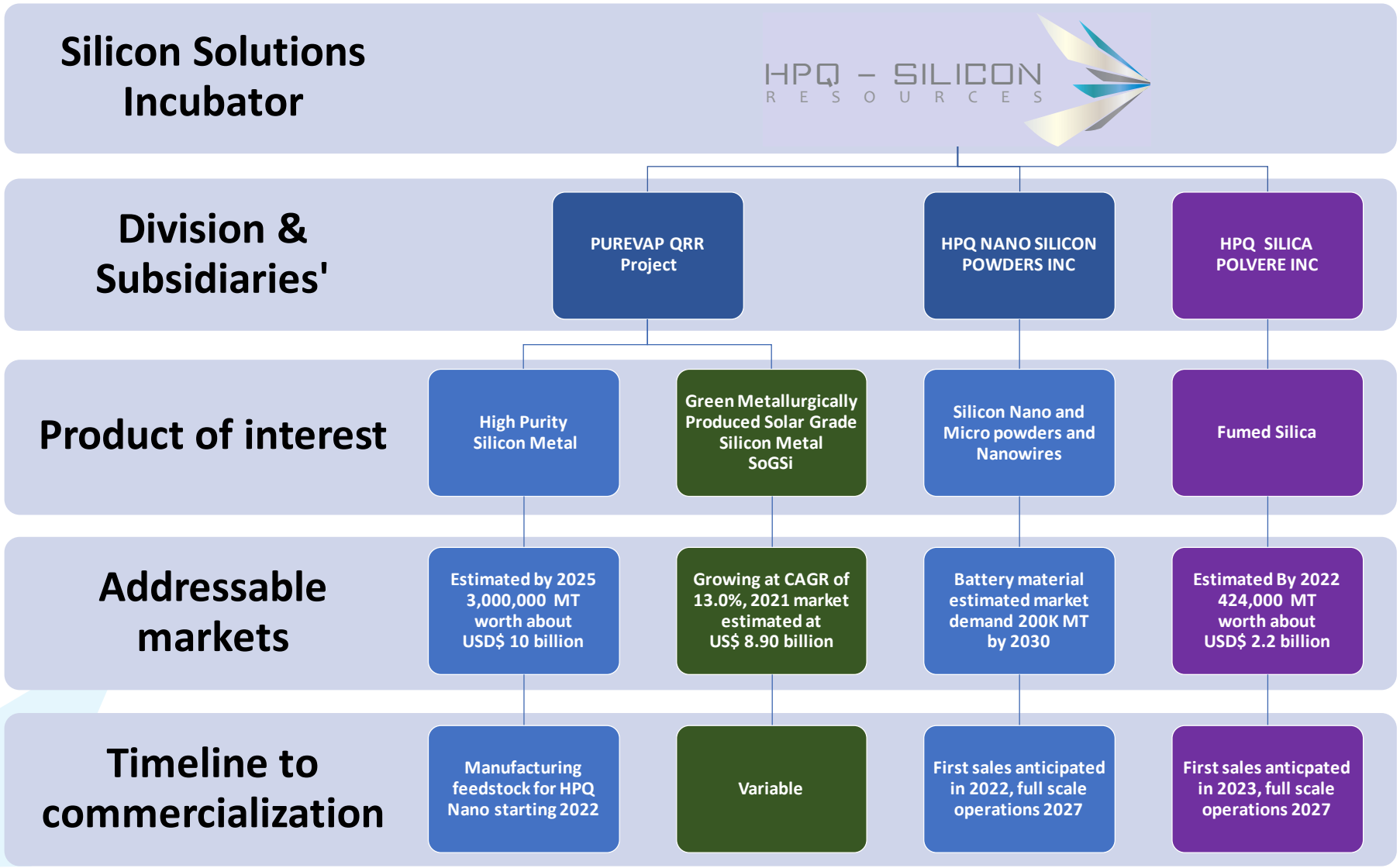
- August 24, 2021, HPQ announces the signature of an agreement with EBH_2 Systems SA, ("EBH_2") a Swiss company that possesses a proprietary electrolysis technology that can efficiently extract, from virtually any water source including salt water, a Clean Hydrogen also called Green Hydrogen that can be used to create low-cost electricity with no environmental impact.
- **WORKING TOGETHER TO DEVELOP AN INDUSTRIAL SCALE EBH2 SYSTEM TO PRODUCE GREEN SILICON**
- **COMBINING FORCES TO ESTABLISH A NORTH AMERICAN EBH2 GENERATOR SALES CAPABILITY**

HPQ CAPITAL STRUCTURE

Share Price (Sept 3, 2021)	$0.760	Cash and Cash equivalent in hand				$ 9,217,632
		Dedicated Cash for PUREVAP™ QRR Pilot Plant				$ 1,950,000
52 Week Low	$0.305	In the money warrants and options				$ 5,997,932
52 Week High	$1.680	TOTAL CASH POSITION				$ 17,165,564
		Warrants Breakdown				
Shares Outstanding:	331,752,267	Expiration Date	Warrant Outstanding	Exercise Price	Potential Cash to HPQ	In the money Cash value
Warrants:	24,441,012	Jan-22	4,152,000	0.155	$ 643,560	$ 643,560
Options:	5,650,000	Jul-22	1,779,412	0.150	$ 266,912	$ 266,912
		Aug-22	200,000	0.150	$ 30,000	$ 30,000
Fully Diluted:	361,843,279	Dec-22	1,375,000	0.100	$ 137,500	$ 137,500
		Apr-23	8,540,000	0.100	$ 854,000	$ 854,000
Market Capitalization:	$252,131,723	Jun-23	4,394,600	0.100	$ 439,460	$ 439,460
		Sep-23	4,000,000	0.610	$ 2,440,000	$ 2,440,000
Market Capitalization (FD):	$275,000,892	TOTAL	24,441,012	0.197	$ 4,811,432	$ 4,811,432

HPQ TRADING (last 12 months)

VALUE PROPOSITION: COMMERCIALIZE AND MONETIZE



WHY INVEST IN HPQ SILICON?

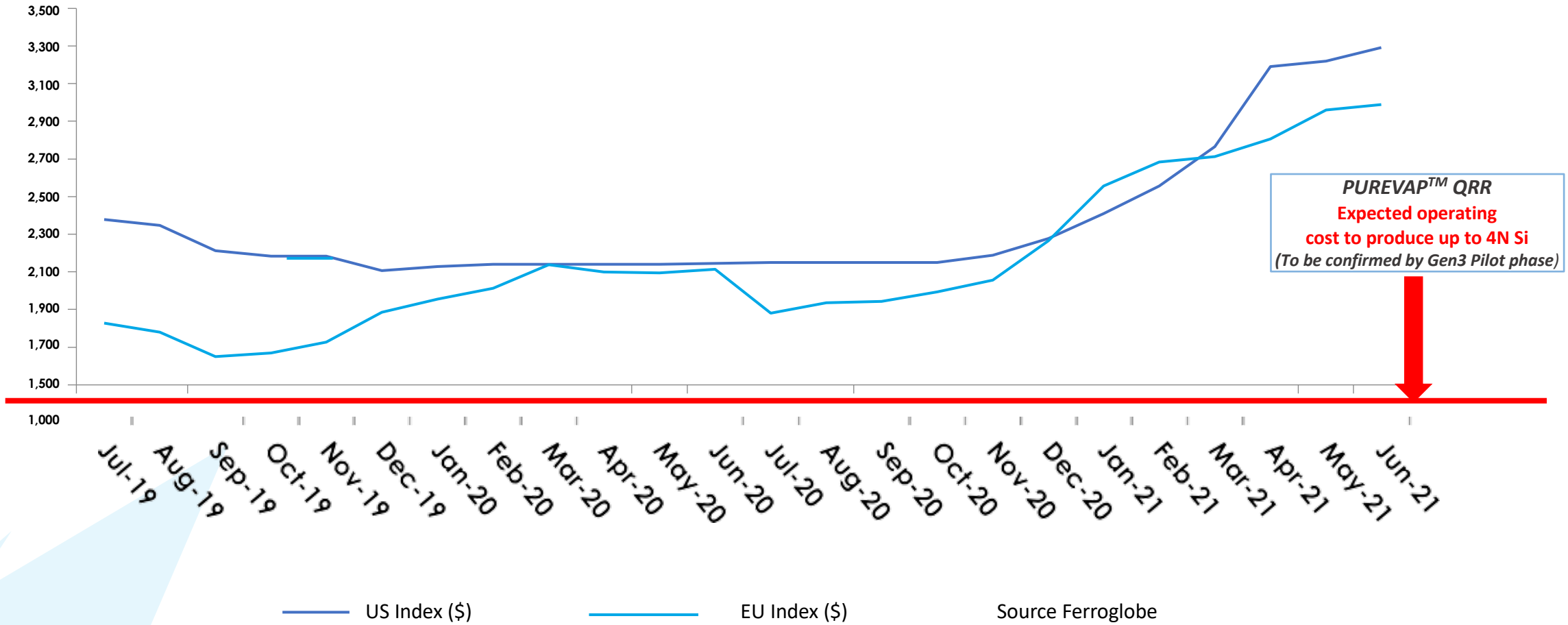
UBS estimates that over the next ten years, the energy storage market in the United States alone could grow to as much as $426 billion, and there are many ways to buy into the surge! (CNBC Dec 30, 2019)

HPQ – SILICON: AN INVESTMENT OPPORTUNITY TO PARTICIPATE IN THE SURGE!

- **Ready to become the lowest cost producer of the nanomaterials needed for the renewable energy revolution:**
  - Spherical Silicon Nano & Micron powders for Li-ion Batteries
    - ✓ ***Material potential already generated NDA with battery manufacturers and advance material companies***
    - ✓ ***Received a firm order for Si Nanopowders from major car manufacturer***
  - Silicon Nanowires for Li-ion Batteries
  - Pure Silicon (99.5% Si up to 99.99% Si) for specialty applications
- **Partnership to use and commercialize a low-cost (<$1 per Kg), game changing process of manufacturing Green Hydrogen (H2)**
- **Supported by world class technology partners**

Silicon pricing trending in HPQ favor

Pricing trends ($/mt)



PUREVAP™ QRR GEN3 STARTING IN Q4 2021

June 2021 pictures of Mr. P. Peter Pascali, President and CEO of PyroGenesis & Bernard Tourillon, President and CEO of HPQ Silicon next to the Gen3 *PUREVAP™ QRR* Pilot Plant (middle image blurred for confidentiality)

"We have always believed that our PUREVAP™ QRR process would completely revolutionize the transformation of quartz (SiO_2) into silicon, and yet we continue to be amazed by the truly unique capabilities of the system, especially as it pertains to producing a low-cost battery-grade silicon feedstock that can be used to make the nano silicon materials needed for Lithium-ion batteries."
Bernard Tourillon President and CEO HPQ Silicon Resources Inc

MANAGEMENT, BOARD & KEY INVESTORS

Management

Bernard J Tourillon, BAA, MBA
Chairman, President, CEO and Director

Patrick Levasseur
Vice-President, COO and Director

Noelle Drapeau, LLL, MBA, PMP
Corporate Secretary and Director

Francois Rivard
CFO

Independent Directors

Richard Mimeau, B.Sc.
Director

Peter Smith, PhD, P. Eng.
Director

Robert Robitaille, M.B.A., L. Ph.
Director

Daryl Hodges H. BSc, M.Sc.
Director

Major Investors

Management & Board	≅ 6.7%	≅ 7.7% (FD)
PyroGenesis	≅ 8.3%	≅ 10.3% (FD)
Investissement Québec	≅ 9.5%	≅ 8.0% (FD)
Strategic Investors	≅ 4.3%	≅ 3.4% (FD)
Key Investors	≅ 6.6%	≅ 8.1% (FD)

CONSULTANTS, TRANSFER AGENT AND AUDITORS

Consultants/ Technical Advisors

Marcel Drapeau, BA, BSC. Comm, LLL

PyroGenesis Canada Inc

Apollon Solar Sa

Transfer Agent

Computershare

Auditors

KPMG S.E.C.N.R.L.

CONTACT

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RESOURCES

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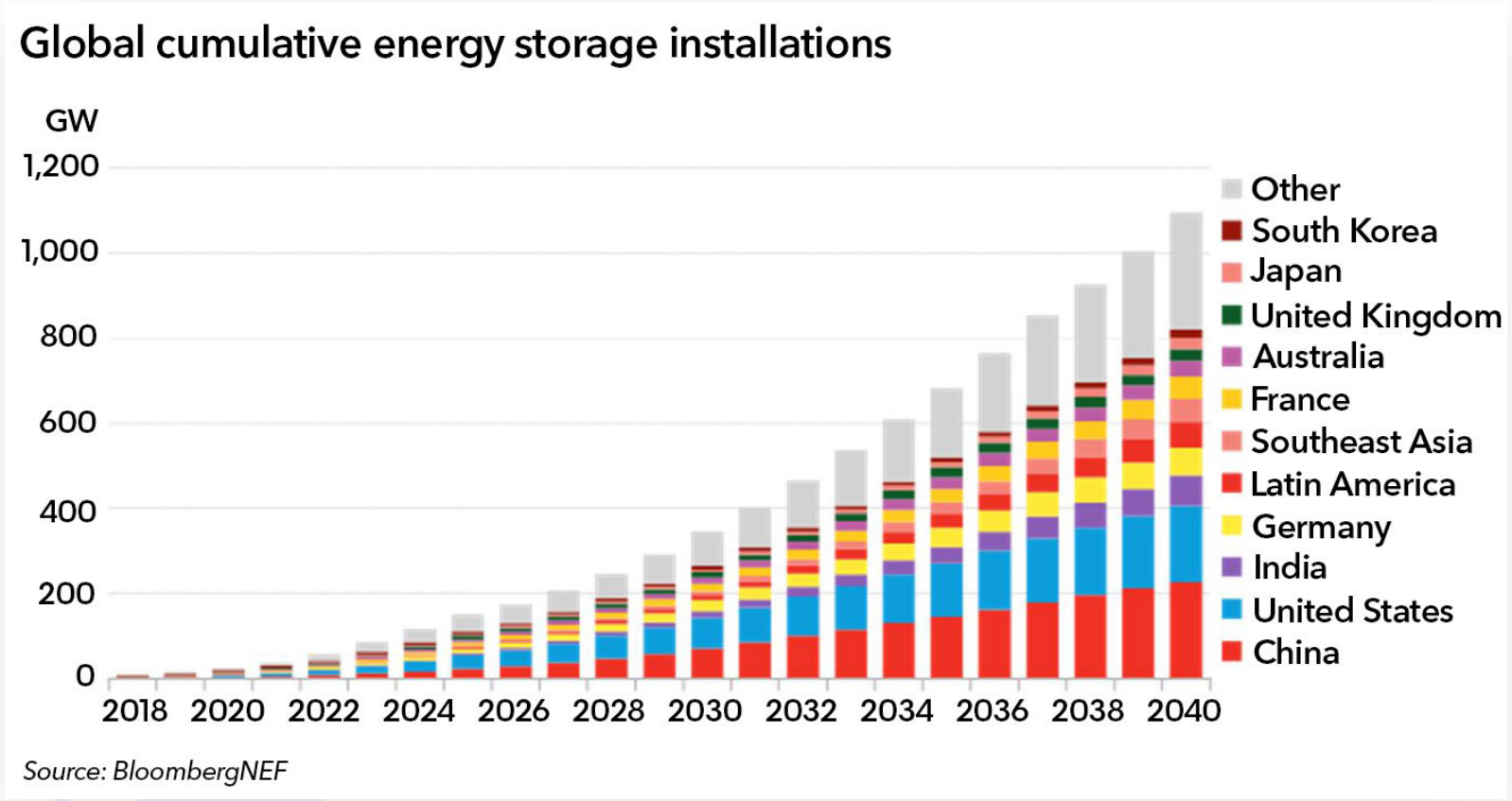
SILICON POWDERS INC

APPENDICES

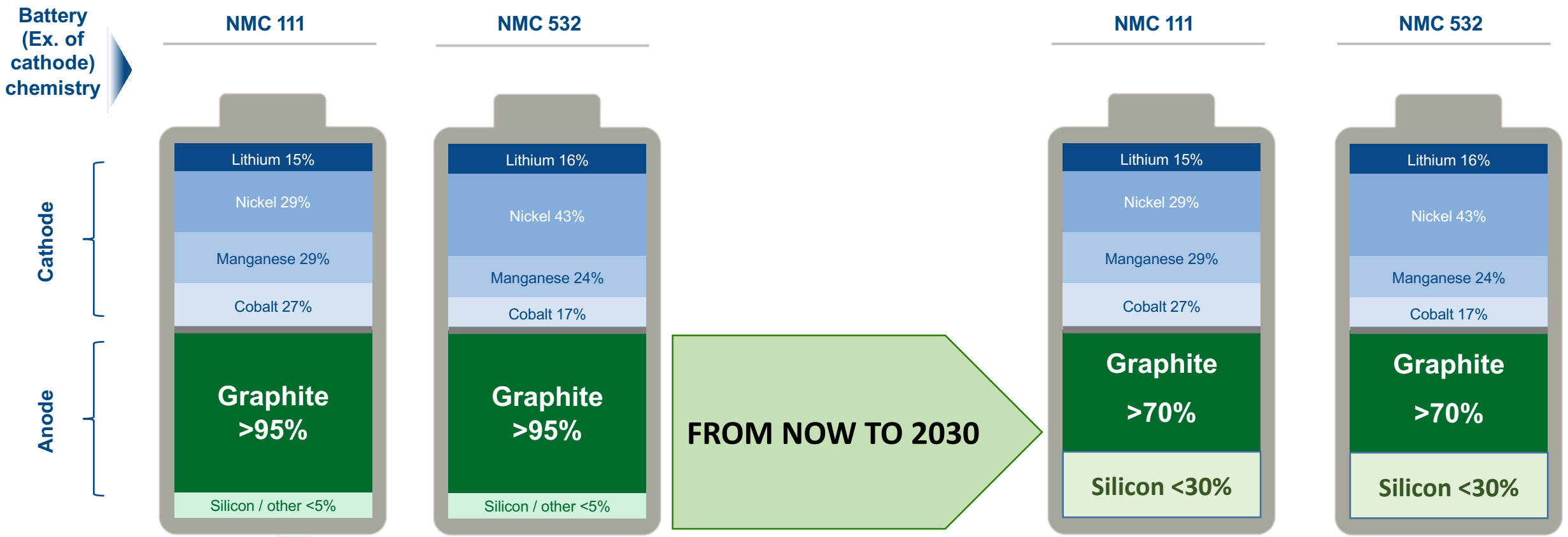
ENERGY STORAGE DEMAND ABOUT TO EXPLODE

ENERGY STORAGE CAPACITY MUST INCREASE TO OFFSET THE VARIABILITY OF RENEWABLE ENERGY



"Investment dedicated to energy storage will exceed $40 billion by 2040 "
Yayoi Sekine, energy storage analyst for BNEF

TODAY: GRAPHITE IS FUNDAMENTAL TO RECHARGEABLE BATTERY ANODES



BY 2030, BATTERY ANODES MAY CONTAIN UP TO 30% SILICON[1]

THIS WILL CREATE MASSIVE DEMAND FOR BATTERY GRADE SILICON

Source: Pallinghurst-Traxys battery analysis. %s represent the proportions of cathode and anode in each battery respectively, NOU websites and presentation. 1) ROSKILL