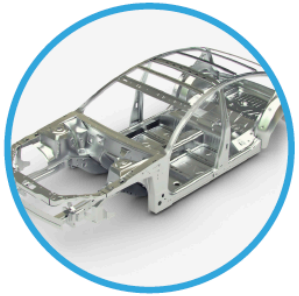
HPQ – SILICON RESOURCES

Innovation In Silicon Materials Starts With Our *PUREVAP™* TECHNOLOGY

Si



DISCLAIMERS

This presentation includes certain

"FORWARD-LOOKING STATEMENTS"

All statements, other than statements of historical fact, included herein, including, without limitation, statements regarding future plans and objectives of the company, are forward-looking statements that involve various risks, assumptions, estimates and uncertainties, and any or all of these future plans and objectives may not be achieved.

The terms Silicon, Silicon Metal and Si are used interchangeably. Metallurgical Grade Silicon or Mg Si refers to silicon of a purity between 98.0% Si and 99.5% Si. The terms Solar Grade Silicon, SoG Si and Polysilicon are used interchangeably and refer to high purity silicon used to produce solar cells for solar panels. Depending on the production process pathway, chemical or metallurgical, the purity of the SoG Si ranges between 5N+ (99.999%) for material produce metallurgically to between 6N (99.9999%) and 9N (99.9999999%) for material produce via the chemical route.

These statements reflect the current expectations or beliefs of HPQ-Silicon Resources Inc. ("the Company") and are based on information currently available to the Company. There can be no assurance that such statements will prove to be accurate, and actual results and future events could differ materially from those anticipated in such statements. All of the forward looking statements contained in this presentation are qualified by these cautionary statements and the risk factors described above. Furthermore, all such statements are made as of the date this presentation is given.

The Corporation's is focus on developing the *PUREVAP™ Quartz Reduction Reactor (QRR)* process therefore any monetary values given to end product produce by the equipment, projected capital or operating cost and savings associated with the development of process should not be construed as being related to the establishing of 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.

An investment in the Company is speculative due to the nature of the its business. The ability of the Company to carry out its plans as described in this confidential presentation is depending on obtaining the required capital. There is no assurance that the Company will be able to successfully raise the capital required or to complete each of the growth initiatives described. Investors must rely upon the ability, expertise, judgment, discretion, integrity and good faith of the management and Board of the Company.

- ✓ HPQ is developing the innovative *PUREVAP™* Quartz Reduction Reactors
- ✓ A unique carbothermic process that will allow HPQ to have a significant impact, short and long term, on the following Silicon (Si) markets:
  - ➢ Nanoscale Structure Silicon (Si) for next Gen Li-ion Batteries;
  - ➢ Porous Silicon (Si) wafers for solid state Li-ion Batteries;
  - ➢ High Purity Porous Silicon Oxide (SiO_x) Nanopowders for Li-ion Batteries;
  - ➢ Metallurgical Grade Silicon (Mg-Si) at prices that will defy competitors
  - ➢ Solar Grade Silicon using a *PUREVAP™* UMG metallurgical process
- ✓ PUREVAP™ QRR Pilot Plant about to go live
- ✓ Silicon samples ready for marketing in 2020
- ✓ Supported by two (2) World Class Technology Partners
- ✓ This is HPQ!

CORPORATE OVERVIEW (December 2019)

Project	• HPQ-Silicon, working with PyroGenesis Canada Inc (TSX-V: PYR), is developing the ***PUREVAP™ "Quartz Reduction Reactors" (QRR)***, a new innovative Carbothermic process (patent pending), which will permit the low cost manufacturing of High Purity Silicon (Si)
PUREVAP™ Pilot Plant Q1 2020 Start	• HPQ-Silicon is about to start its 50 Tonnes per Year Gen3 *PUREVAP™ QRR* pilot plant that will: ➢ Demonstrate our ability to produce high purity Silicon at cost that will defy competition ➢ Produce value added Silicon Materials, qualifying and selling products to potential customers
Unique Capability of *PUREVAP™* Process	• Reduce raw material cost by 50%, representing a direct 20% reduction in OPEX • Reduce HPQ-Silicon Manufacturing CAPEX by 90% or more versus all other new Silicon plants • Process allows HPQ to Produce any Purity Silicon (Si) up to 4N Si in one step
Advancing Silicon Innovations	• Silicon (Si) is a key material for the ongoing renewable energy revolution • HPQ-Silicon intends to maximize the *PUREVAP™ QRR* **Unique Proprietary Capability** of converting low quality inputs in to high purity Silicon (Si) to advance Silicon Materials Innovations
***PUREVAP™* Silicon (Si) addressable markets**	• Present market (2018) US$ 15B (US$ 7.5B Standard Si, Batteries Si US $400M & US$ 7.1B Solar Si) • Expected to reach US$ 24B over the coming years (US$ 12B for Standard Si by 2023; US$ 1B for batteries Si by 2022; and US$ 11.8B for Solar Si by 2028)
HPQ implementing a multi prong development approach	• Near term: Focus on generating cash flow by using the *PUREVAP™ QRR* for high value niche market silicon applications (Si for batteries (Nano and Wafers, 2NSi, 3NSi, 4NSi, …) • Medium term: Focus on High Purity silicon for advanced PV applications, developing in partnership with Apollon Solar, a new *PUREVAP™ QRR* metallurgical pathway for Solar Grade Si
Strong support from key stakeholders	• HPQ-Silicon has strong support from PyroGenesis Canada Inc, which holds on a fully diluted basis about 12.5% of the capital of the Corporation PLUS the Government of Québec which holds on a fully diluted basis about 9.9% of HPQ-Silicon. Apollon Solar is also a shareholder

PILOT PLANT FULLY FINANCED

ADVANCING TO PRODUCTION

Pilot Plant Commissioning and Commercial Production

- Output capacity of 50 tonnes per year; Operational Q1 2020
- Improving Process, Scaling, Preparing For Commercialization Seeking Silicon (SI) Customers
- Using Gen2 to Produce Si Powders - Q1 2020
  Using Gen3 Si to produce Porous Silicon wafers - mid 2020, first test Solar Cell end - 2021
- Order of first 2,500 tonnes per year commercial plant planned in end 2021
- Using Gen3 50 TPA pilot plant to produce and sell Porous Silicon wafers and Powders for the Silicon Anode market for Lithium Ion batteries end 2020

PUREVAP™ POTENTIAL AND MILESTONES

Successful Gen 1 & 2 Bench Test (2016-2019) Validated the process

Gen 3 Pilot Plant Testing Operational Q1 2020

Gen3 Si sales Expected End 2020 Commercial Plant Order - 2021

ATTRACTED INTEREST FROM KEY INVESTORS

August 2018 $5,250,000 Financing

- **The Quebec government agreed to finance 20% of the Gen3 project total cost**
  - ➢ Investissement Québec (IQ) funded a $1,800,000, 5 years, 5% unsecured Convertible Debenture
    - ✓ Convertible into common shares at $0.12[1] per HPQ share and interest payments are accruable
    - ✓ IQ received 15,000,000 Warrants, (Terms one for one, exercise price $ 0.17[2], duration 36 months)
- **PyroGenesis Canada Inc invested $1,950,000 to finance remaining Gen3 project total cost**
  - ➢ PyroGenesis acquired 16,250,000 Units of HPQ at $0.12 per Unit (representing a 30 % premium to market)
    - ✓ Each Unit comprised one share and one warrant, (warrant exercise price $ 0.17[2], duration 36 months)
- **PyroGenesis also granted HPQ a $1,500,000 Equity Line Credit to cover un-expected cost overruns that could potentially occur during the Gen3 project**

As per Beauce Gold Field plan of arrangement: 1) the Conversion price of the debenture was reduced to $0.11 and 2) the exercise price of warrants was reduced to $0.155

SILICON (Si)

- One of today's key strategic minerals (EU Commission - US DOJ)
- Needed for **Renewable Energy Transition** with applications in:

SILICON (Si)

Primary End Markets

- Aluminum (40-45%)
- Silicones (35-40%)
- Solar cells (20-25%)

Metallurgical Grade Si
(98.0% - 98.9% Si)

Chemical Grade Si
(99.0% - 99.5% Si)

- However Silicon does not exist naturally in its pure state
- Carbothermic process needed to extract it from Quartz (SiO_2)
- Quartz is one of the most abundant minerals in the earth crust

GLOBAL MEGATRENDS DRIVING SILICON DEMAND

Megatrends	Implications	End Customer Product
Population Growth	Growing middle class China and India: consumption economy	• Silicones: healthcare, cosmetics, packaging
Urbanization	India, Brazil and other emerging markets: infrastructure build	• Silicon: aluminum for cars, housing growth • Silicon: Silicone sealants for construction
Energy Efficiency	Reduce weight of vehicles and Electric vehicles	• Silicon as alloying agent for aluminum to replace steel in vehicles • Prospects for silicon alloys in batteries
Alternative Energy & Sustainability	Growing demand for solar and other sources of renewable energy	• Silicone sealants for wind turbine and solar • Higher consumption of silicon for polysilicon used to make solar cells • Prospects for silicon Base Energy Storage

SILICON (Si) PART OF EV TRANSITION

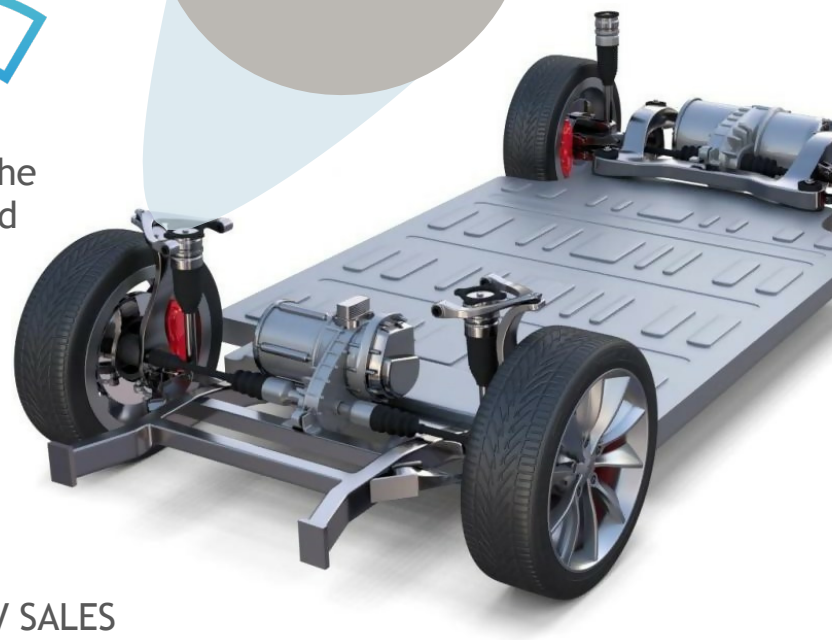
ALREADY BEING DEPLOYED

The aluminum alloy chassis of Tesla car is 10% Silicon!

Aluminum silicon alloy makes the aluminum lighter and stronger

Silicon used in Tesla batteries to replace Cobalt

Silicon in the windshield



PLUG- IN EV SALES (annual)

STANDARD SILICON (Si) DEMAND OUTLOOK

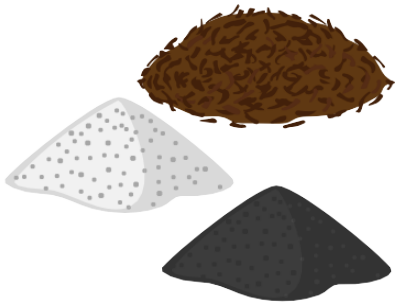
Standard Silicon (98.5 to 99.5% Si) (Source CRU – Silicon Market Outlook – November 14 2018)

- ✓ **Driven by Chemical Sector (2N+ Si), Demand Projected to Increase by 1 Million MT by 2023**
  - ➢ Going from ~ 2.8 Million MT Demand of Si worth US$ 7.5 Billion in 2018
  - ➢ To ~ 3.8 Million MT Demand of Si worth US$ 12 Billion in 2023

CHALLENGES TO MEET ANTICIPATED DEMAND

- ✓ **Conventional process limitation caps 2N+ Si output at ~ 40% of Plant Capacity**

Quartz SiO_2 to Silicon Metal (Si) Standard Carbothermic Process



SiO_2 99.5% + Low Ash Coal + Wood Chips

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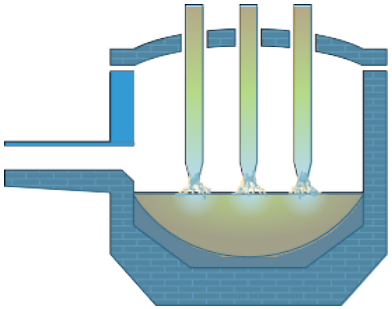

Electric Arc Furnace

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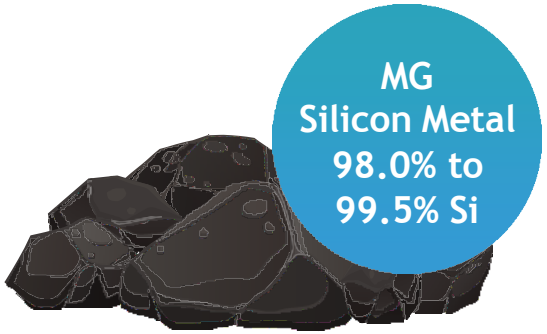


Energy Consumption: 12,000 kWh/t

CHALLENGES TO MEET ANTICIPATED DEMAND

✓ **New plants will be needed** (Source CRU – Silicon Market Outlook – November 14 2018)

Greenfield plants will provide the majority of new capacity

Contribution to the expected growth in annual production capacity outside China and the CIS between 2010 and 2020 &

Creep:	6%
Conversions:	16%
Brownfield:	20%
Greenfield:	58%

NEW CONVENTIONAL PLANTS HAVE:

- Minimum Size Requirement > 30,000 MTY

REQUIRE SIGNIFICANT INVESTMENTS:

(Capex from most recent new plants)

- PCC BakkiSilicon hf 2018 turnkey plant in Húsavík (Iceland) cost US$ 300M
  - US$ 9.38 Capex per Kg of annual capacity
- Mississippi Silicon (Rima Subsidiary) 2015 plant in Burnsville Mississippi (USA) cost US$ 220M
  - US$ 6.11 Capex per Kg of annual capacity

✓ **Conventional process: mature technology with relatively flat Opex curve**
- 90% of conventional process cost range bound between US$ 1,450/MT to US$ 2,000/MT

✓ **Conventional process operations are Capital Intensive**
- Requires 6+ MT of raw material to make 1 MT of Standard Si

✓ **Conventional process: Limited Cost Control Options**
- Raw Materials, Electricity and Depreciation(Capex) make up bulk of cost (~ 80%)

✓ **Low Ash Coal, the largest single cost for Raw Material is also a Strategic Risk**
- ~ 50% of the world supply of low Ash Coal controlled by largest Si producer in the world

HPQ *PUREVAP™*

THE SOLUTION TO THE SILICON INDUSTRY'S "CATCH 22"

> Technological innovation is needed to lower per unit costs, but the High Capex & Low Margins increase the degree of difficulty of executing an innovation-oriented business plan

Source: The capital intensity of photovoltaics manufacturing: barrier to scale and opportunity for innovation† (Energy Environ. Sci., 2015, 8, 3395)

HPQ PROPRIETARY SOLUTION!

PUREVAP™ A SCALABLE – VERSATILE – ADAPTABLE PROCESS TO MEET NEW SILICON DEMAND

- Scalable by increments of 2,500 MTY – The maximum size of one PUREVAP™ Reactor

Quartz SiO_2 to MG Si (2N+)

The PUREVAP™ QRR, a proprietary (patent pending) 2.0 carbothermic process:

SiO_2 98.8%
92.1% Total Carbon

A one Step Process

2N+ Si @ 17.9% Conversion Yield
- 4N+ Si @ 90.0% Conversion Yield

LOW CAPEX (Kg OF ANNUAL CAPACITY MATRIX) – Very Competitive Versus Traditional Process

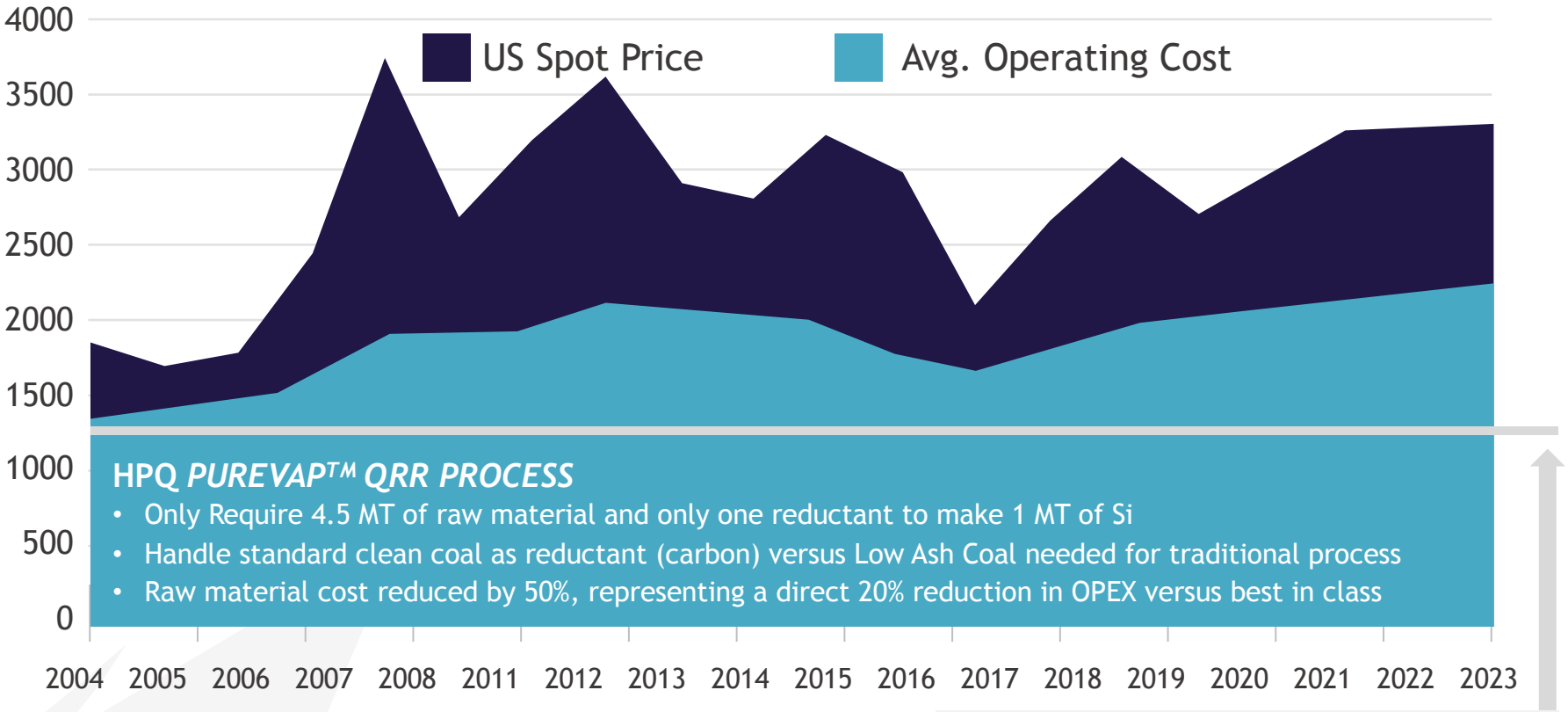
- Matches the scale costs of Tier 1 producers for a fraction of the investment (85% - 90% less)
  - US$ 8.89 Capex per Kg of annual capacity with (1) 2,500 MTY PUREVAP™ Reactor
  - US$ 6.22 Capex per Kg of annual capacity with (2) 2,500 MTY PUREVAP™ Reactor Plant

HPQ ADVANTAGE VERSUS CONVENTIONAL PRODUCERS

Silicon Market Outlook (Source CRU – Silicon Market Outlook – November 14 2018)

Silicon prices support new investment after 2019

US spot price 5.5.3 grade (Metallurgical) silicon vs avg. operating cost at plants outside China and CIS, $/t



HPQ *PUREVAP™ QRR PROCESS*

- Only Require 4.5 MT of raw material and only one reductant to make 1 MT of Si
- Handle standard clean coal as reductant (carbon) versus Low Ash Coal needed for traditional process
- Raw material cost reduced by 50%, representing a direct 20% reduction in OPEX versus best in class

PUREVAP™ estimated operating cost to produce 2N Si
(To be firm up during Gen3 Pilot Plant)

HPQ GLOBALLY RENOWNED TECHNICAL PARTNERS

PYROGENESIS Plasma Expertise: One of the largest in the World

+25 years of experience & > 70 employees

>60 Patents worldwide (issued or pending)

40,900 ft² Manufacturing facility

The inventors of Plasma Atomization (Gold Standard)

World Leader In Advanced Plasma Processes

Technology Sold To US Navy For Use On Aircraft Carriers

Technology Tested and Validated By DARPA

Leaders in High Purity Spherical Metal Powders for Industrial 3D printing

Developer of PUREVAP One-Step Process To Produce High Purity Low Boron Silicon Metal

Developer of DROSRITE™: a Green Aluminum Recovery from Dross process

Agreements With Global Manufacturers and Trading Houses

Contract backlog worth $29.5MM at the end of Q3 2019

SILICON: THE KEY TO BETTER BATTERIES

Replacing Graphite with Silicon as anode in lithium-ion batteries

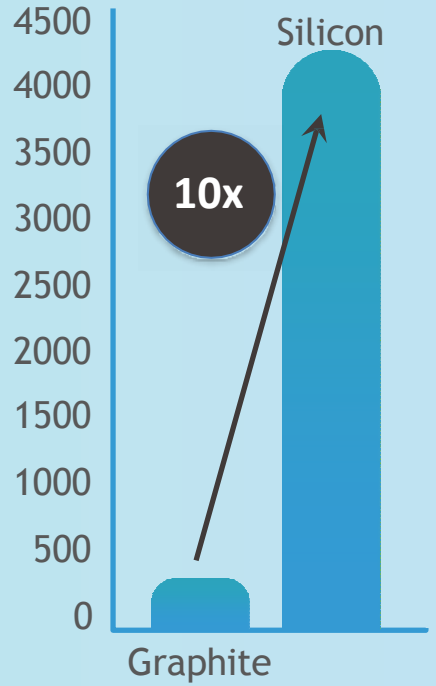
Allows greater energy storage capabilities

Allows for smaller size batteries for electronic devises and electric cars

Energy storage potential for renewable energy could reshape the global economy

can increase battery charge 10X

Anode Chemistry Option Theoretical Capacity



THE RACE IS ON TO BUILD BETTER BATTERIES

- ✓ **Energy Storage: viewed as an existential threat for traditional energy players**
  - ➢ Dominance of energy storage in the 21st century is akin to control of coal in the 19th century and oil in the 20th
- ✓ **Presently Li-ion anodes are made using low cost graphite (US$ 10/Kg)**
- ✓ **Gram per Gram, Silicon can theoretically hold 10 times more energy**
  - ➢ Going from theoretical capacity to commercial is one big challenge
  - ➢ Micro and Nanoscale Silicon powders very expensive (US$ 2,000 - US$ 30,000 per KG[1])
- ✓ **Unprecedented billions of dollars pouring into battery R & D**
  - ➢ Batteries research is what semiconductor research was a generation ago

HPQ *PUREVAP™* : THE KEY TO LOW COST Si FOR BATTERIES

HPQ deploying a two prongs approach to Li-ion batteries Si development

- ✓ ***High Purity PUREVAP™* Nanoscale Structure Silicon powders**
  - ➢ Combining HPQ PUREVAP™ 2N+ Si and PyroGenesis Powders expertise to produce Nanoscale Structure Silicon -powders for Batteries sector, goal: becoming the lowest cost producer
- ✓ ***High Purity PUREVAP™* Si Porous Silicon Wafers**
  - ➢ Combining Apollon patented low cost approach to making Porous Silicon Wafers and HPQ PUREVAP™ unique capacity will allow us to start the commercialization of our porous silicon wafers earlier then any other early stage R&D competitors

1 (Source PV-Magazine AUSTRALIA Oct 2019)

SILICON INNOVATION: HIGH VALUE MARKET - BATTERIES

HPQ – SILICON RESOURCES

An unexpected positive for HPQ PUREVAP™ : Si application in the Battery Space

✓ The Key to the next generation of Li-ion Batteries

Replacing graphite with Silicon Metal (2N+)
↑ Anode battery charge 10X

US $400 Billion

GP

SI

Silicon Anode market for Lithium ion batteries ↑ 43.6% CAGR between 2016 to 2022

43.6%

LITHIUM ION

2016
2022

Silicon Anode market for Lithium ion batteries to exceed the US $ 1 billion mark by 2022

US $1Billion

2022

HPQ GLOBALLY RENOWNED TECHNICAL PARTNERS

APOLLON SOLAR
UN MONDE D'ENERGIES INFINIES - A WORLD OF INFINITE ENERGIES

A French Company fully dedicated to the field of energy transition

Created in 2001 by a team of engineers and scientists with longstanding expertise in Silicon Purification and Crystallization - Solar Silicon - Photovoltaic Cells - Photovoltaic Modules

Part of YRIEL Group, active in Fine Chemistry, Aromatic and Renewable Energies

23 Patents to their name

Obtained, an independently confirmed, world record conversion efficiency of 22.6% with ANU University of Australia, using monocrystalline ingots, for a solar cell made with 100% “SoG Si UMG”

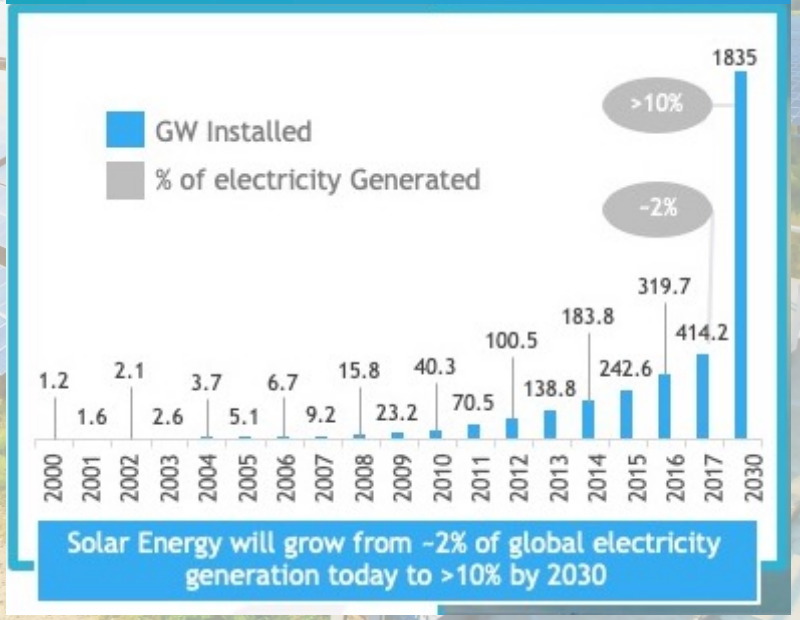
SILICON INNOVATION: HIGH VALUE MARKET - SOLAR

Solar Grade Silicon, A Large and Growing Market

Renewable Solar Energies:

Solar Grade Si market:
US$ 7.1 B in 2018

DEMAND READY TO EXPLODE!



(Source: Deutsche Bank, Future Market Insights report titled, "Polysilicon Market: Global Industry Analysis 2013-2017 and Opportunity Assessment 2018-2028".)

HPQ TECHNOLOGICAL SOLUTION

FROM QUARTZ TO SOLAR WAFERS

How HPQ will implement its technological solution
By Combined Expertise In Three Critical Steps:

The PUREVAP™ technology of PyroGenesis transforms Quartz (SiO_2) to High Purity Silicon (4N+ Si < 1 ppm B) in one step – "PUREVAP™ Si"

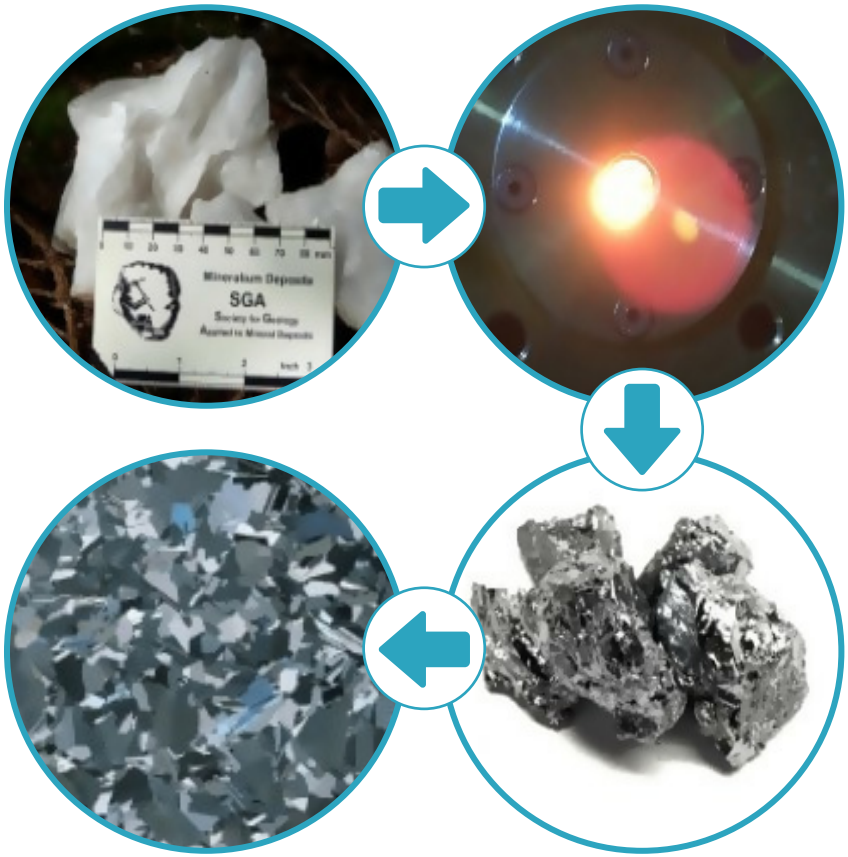
PUREVAP™ SI

PyroGenesis and Apollon Solar experts are developing a streamlined metallurgical pathway (UMG) for upgrading the "PUREVAP™ Si" to HPQ Solar Grade Silicon (SoG Si)

Apollon Solar has the expertise to transform HPQ SoG Si into high performance multi-crystalline and monocrystalline solar cells: "wafers"

HPQ QUARTZ

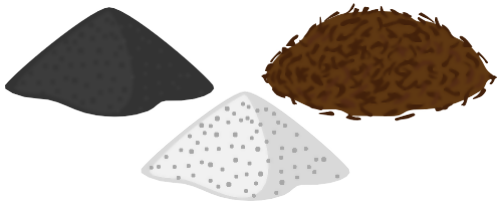
PYROGENESIS' PUREVAP™ PROCESS



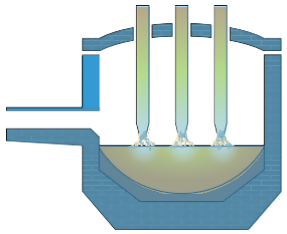
SoG Si TO WAFER WITH APOLLON

LEGACY PROCESS

Present Carbothermic process
Quartz to silicon metal (Si)



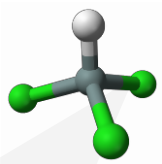
SiO_2 99.5% + Low Ash
Coal + Wood Chips



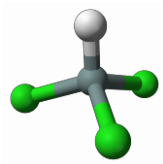
Electric Arc
Furnace

Energy Consumption:
12,000 kWh/t

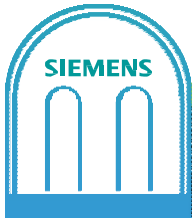
Present Chemical process
MG-Si to SoG-Si



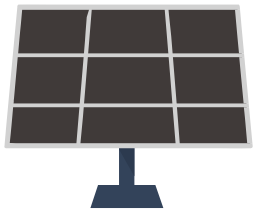
MG Silicon Metal Is Dissolved In Hydrochloric Acid To Form Trichlorosilane (HSiCl3)



Trichlorosilane (HSiCl3) is Further Refined



SIEMENS
Reactor



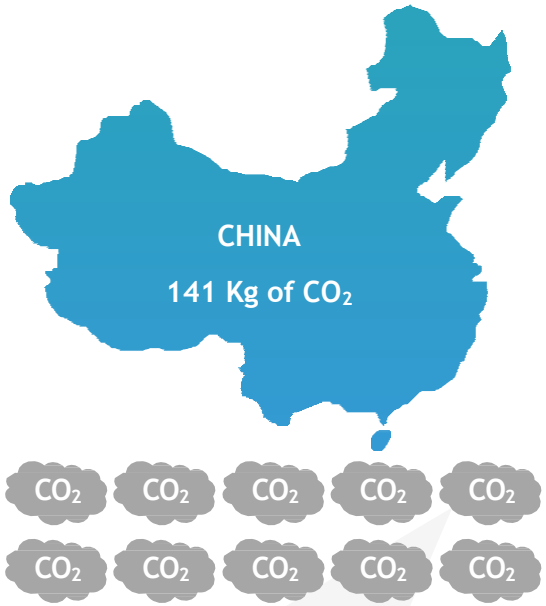
Solar Grade Silicon Metal
Polysilicon 99.9999+% Si

Energy Consumption: between 72,000 to 120,000 kWh/t

PUREVAP™ UMG GREEN DISRUPTIVE POTENTIAL

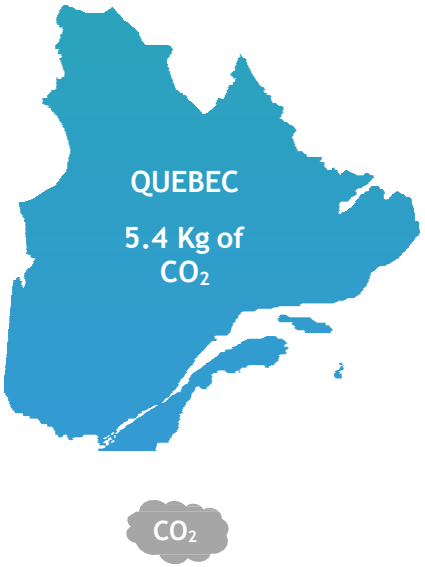
70% of the GHG generated by any solar project comes from the production of SoG Si
(source: Energy Policy, February 2014, Pages 229-244)

HPQ's SoG Si is poised to produce the lowest carbon footprint



SoG Si in **CHINA**, world's largest producer, generates 141 Kg of CO_2 per Kg of SoG Si

SoG Si in **GERMANY** using the same process, generates 87 Kg of CO_2 per Kg of SoG Si



SoG Si in **QUEBEC** with the PUREVAPTM expected to produce 5.4 Kg of CO_2 per Kg of SoG Si

* Estimates will be firm up after Pilot plant phase

WHY INVEST IN HPQ?

- ✓ *DEVELOPING THE INNOVATIVE PUREVAP™ QUARTZ REDUCTION REACTORS*
- ✓ *PILOT PLANT ABOUT TO GO ONLINE*
- ✓ *READY TO REVOLUTIONIZE THE ECONOMICS OF THE US$ 15B SILICON INDUSTRY AND THE ENERGY STORAGE MARKET WITH ITS PLANNED US$ 71 BILLION IN INVESTMENTS OVER THE NEXT FEW YEARS*
- ✓ *READY TO START COMMERCIALIZING OUR PUREVAP™ PRODUCTS:*
  - Nanoscale Structure Silicon (Si) for next Gen Li-ion Batteries;
  - Porous Silicon (Si) wafers for solid state Li-ion Batteries;
  - High Purity Porous Silicon Oxide (SiO_x) Nanopowders for Li-ion Batteries;
  - Metallurgical Grade Silicon (Mg-Si) at prices that will defy competitors
  - Solar Grade Silicon using a *PUREVAP™* UMG metallurgical process
- ✓ *SILICON SAMPLES READY FOR MARKETING IN 2020*
- ✓ *SUPPORTED BY TWO (2) WORLD CLASS TECHNOLOGY PARTNERS*

MANAGEMENT, BOARD AND CAPITAL SUMMARY

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 Director

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	≅ 9.7%	≅ 10.5% (FD)
PyroGenesis	≅ 9.7%	≅ 12.5% (FD)
Investissement Quebec		≅ 9.9% (FD)
Strategic Investors	≅ 2.8%	≅ 6.2% (FD)
Key Investors	≅ 18.8%	≅ 21.2% (FD)

Consultants/ Technical Advisors

Marcel Drapeau, BA, BSC. Comm, LLL
PyroGenesis Canada Inc
Apollon Solar Sa

Capital

Shares Outstanding	226,864,746
Warrants	67,278,000
Options	11,400,000
Debenture	16,653,361
Fully Diluted	322,196,107

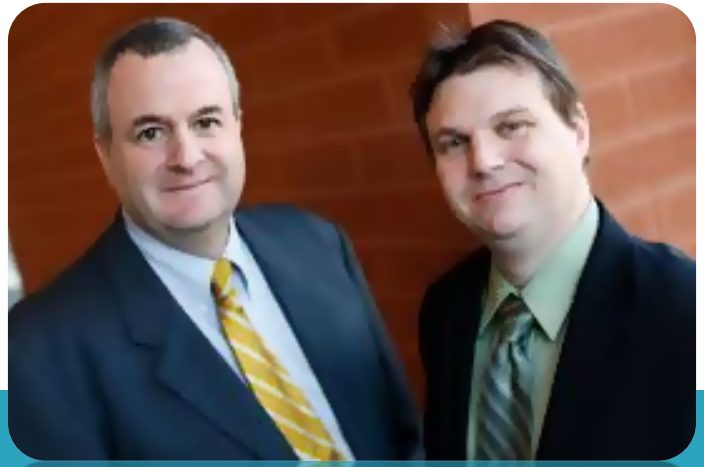
Transfer Agent

Computershare

Auditors

Raymond Chabot Grant Thornton

CONTACT



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