

Innovation
In Silicon
Materials
Starts With



Our PUREVAPTM TECHNOLOGY











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%) or material produce metallurgically to between 6N (99.9999%) and 9N (99.9999999%) for material produce via the chemical soute.

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 $PUREVAP^{TM}$ 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 $PUREVAP^{TM}$ Quartz Reduction Reactors
- ✓ It's a new, game changing, Carbothermic process that allow HPQ to develop the following unique Silicon (Si) products lines:
 - Metallurgical Grade Silicon (Mg-Si) at prices that will defy competitors
 - ➤ High Purity Silicon (up to 4N Si) for high value niche applications
 - Nano-Silicon powders and Porous Silicon wafers for Li-ion Batteries
 - ➤ 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 (October 2019)

Project	 HPQ-Silicon, working with PyroGenesis Canada Inc (TSX-V: PYR), is developing the PUREVAPTM "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 Q4 2019 Start	 HPQ-Silicon is about to start its 50 Tonnes per Year Gen3 PUREVAPTM 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 TM 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 PUREVAPTM QRR Unique Proprietary Capability of converting low quality inputs in to high purity Silicon (Si) to advance Silicon Materials Innovations
PUREVAP TM Silicon (Si) addressable markets	 Present market (2018) US\$ 15B (US\$ 7.5B Standard Si, US\$ 7.1B Solar Si & Batteries Si US \$400M) Expected to reach US\$ 24B over the coming years (US\$ 12B for Standard Si by 2023; US\$ 11.8B for Solar Si by 2028; and US\$ 1B for batteries Si by 2022)
HPQ implementing a multi prong development approach	 Near term: Focus on generating cash flow by using the PUREVAPTM QRR for high value niche market silicon applications (2NSi, 3NSi, 4NSi, Si for batteries,) Medium term: Focus on High Purity silicon for advanced PV applications, developing in partnership with Apollon Solar, a new PUREVAPTM 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 Q4 2019



Improving Process, Scaling, Preparing For Commercialization Seeking Silicon (SI) Customers



Using Gen2 to Produce Si Powders - end 2019
Using Gen3 Si to produce Porous Silicon wafers
- mid 2020, first test Solar Cell mid- 2021



Order of first 2,500 tonnes per year commercial plant planned in 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 by 2020



PUREVAPTM POTENTIAL AND MILESTONES



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

Gen 3 Pilot Plant Testing Operational Q4 2019

Sales of Gen3 Si Expected 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 \$0.12¹ per HPQ share and interest payments are accruable
 - ✓ IQ received 15,000,000 Warrants, (Terms one for one, exercise price \$ 0.17², 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 \$ 0.17², 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



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%)
- However Silicon does not exist naturally in its pure state
- Carbothermic process needed to extract it from Quartz (SiO₂)
- Quartz is one of the most abundant minerals in the earth crust



Metallurgical Grade Si

(98.0% - 98.9% Si)

Chemical Grade Si

(99.0% - 99.5% Si)



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 growthSilicon: 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	 Silicon: 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



ALS

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HPQ - SILICOI



PLUG- IN EV SALES (annual)

566,000

2015

20,000,000

2030E



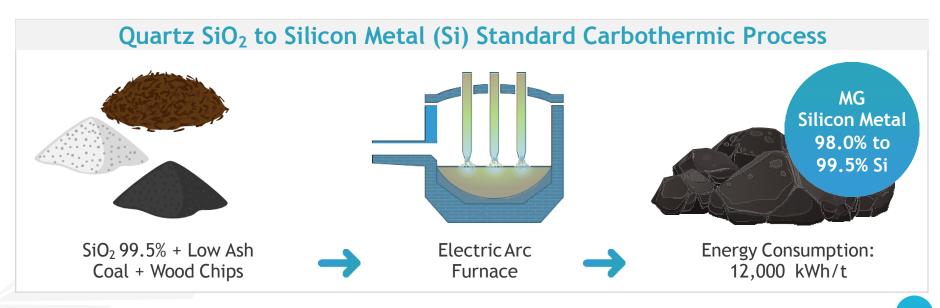
STANDARD SILICON (Si) DEMAND OUTLOOK

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

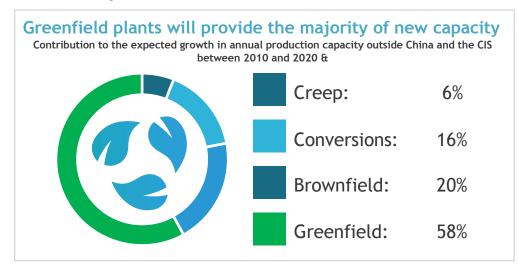
✓ Conventional process limitation caps 2N+ Si output at ~ 40% of Plant Capacity





CHALLENGES TO MEET ANTICIPATED DEMAND

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



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 PUREVAPTM

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





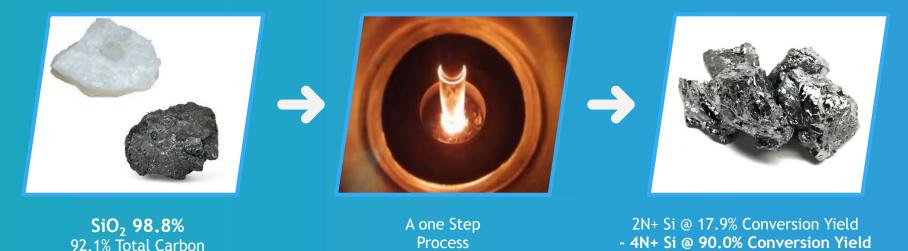
HPQ PROPRIETARY SOLUTION!

PUREVAPTM A SCALABLE - VERSATILE - ADAPTABLE PROCESS TO MEET NEW SILICON DEMAND

• Scalable by increments of 2,500 MTY - The maximum size of one PUREVAPTM Reactor

Quartz SiO₂ to MG Si (2N+)

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



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

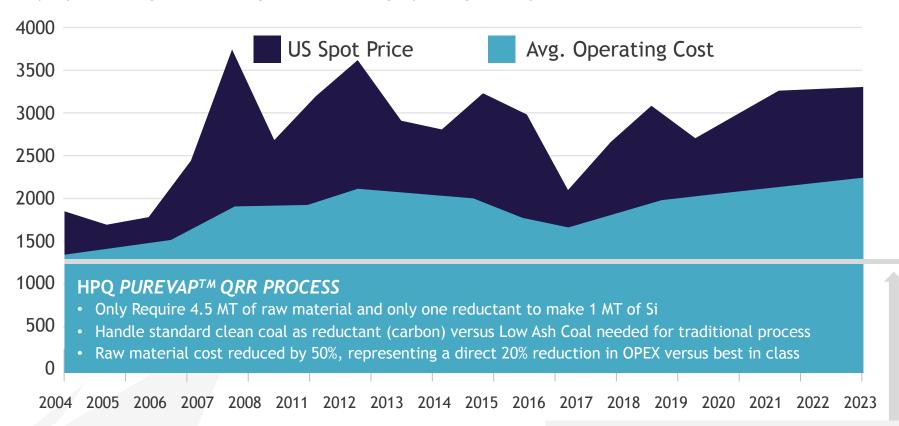
- Matches the scale costs of Tier 1 producers for a fraction of the investment (85% 90% less)
 - ➤ US\$ 8.89 Capex per Kg of annual capacity with (1) 2,500 MTY PUREVAP™ Reactor
 - ➤ US\$ 6.22 Capex per Kg of annual capacity with (2) 2,500 MTY PUREVAPTM Reactor Plant



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



PUREVAPTM 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



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



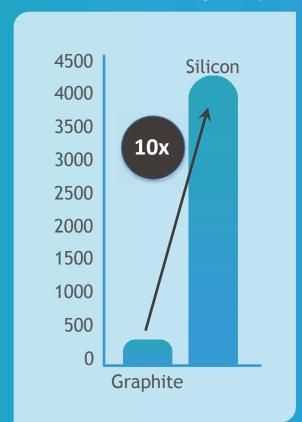
Energy storage potential for renewable energy could reshape the global economy



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
 - ➤ Nano or Porous Silicon materials available very expensive (US\$ 2,500 US\$ 44,000 per KG¹)
- ✓ Unprecedented billions of dollars pouring into battery R & D
 - > Batteries research is what semiconductor research was a generation ago

HPQ PUREVAPTM: THE KEY TO LOW COST SI FOR BATTERIES

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

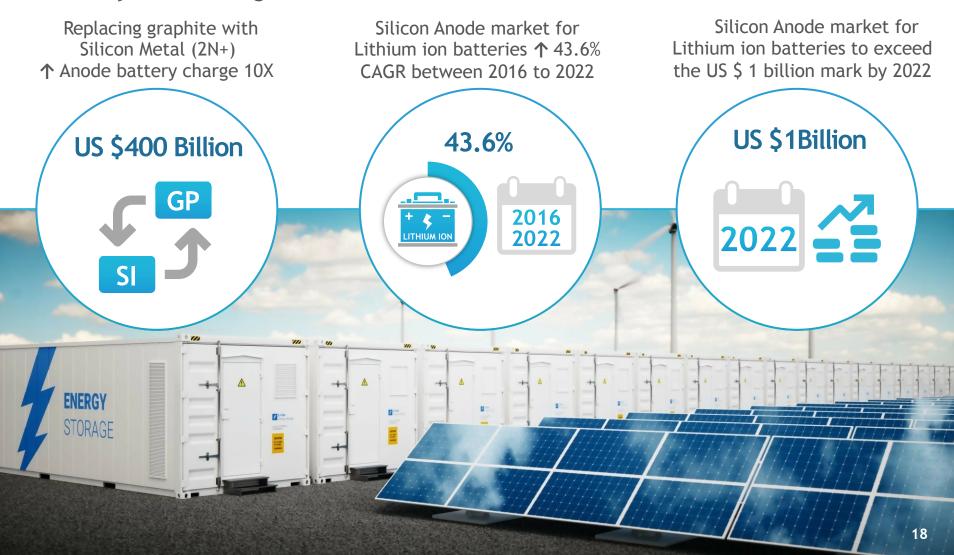
- ✓ High Purity PUREVAP™ Si Nano powders
 - ➤ Combining HPQ PUREVAPTM 2N+ Si and PyroGenesis Powders expertise to produce Si Nanopowders for Batteries sector, goal: becoming the lowest cost producer
- ✓ High Purity PUREVAP™ Si Porous Silicon Wafers
 - ➤ Combining Apollon patented low cost approach to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



SILICON INNOVATION: HIGH VALUE MARKET - BATTERIES

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

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





HPQ GLOBALLY RENOWNED TECHNICAL PARTNERS



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:

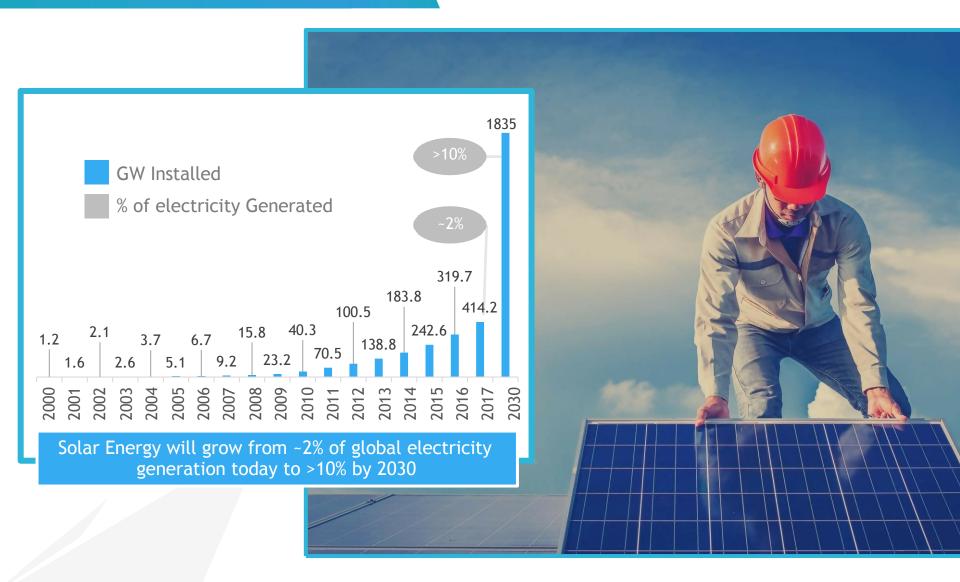
Solar Grade Si market: US\$ 7.1 B in 2018



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

DEMAND READY TO EXPLODE!



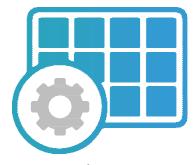


(Source: Canadian Solar)

AT THE CUSP... BUT...



Solar power is at the cusp of fulfilling its renewable energy potential



But process improvements to produce Solar Grade Silicon (SoG Si) have plateaued, creating another "Catch 22"





HPQ TECHNOLOGICAL SOLUTION

FROM QUARTZ TO SOLAR WAFERS

How HPQ will implement its technological solution By Combined Expertise In Three Critical Steps: HPQ QUARTZ PYROGENESIS'
PUREVAP™ PROCESS



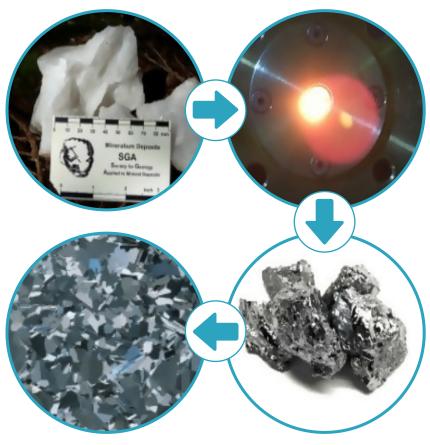
The PUREVAP™ technology of PyroGenesis transforms Quartz (SiO₂) to High Purity Silicon (4N+ Si < 1 ppm B) in one step -"PUREVAP™ Si"



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"

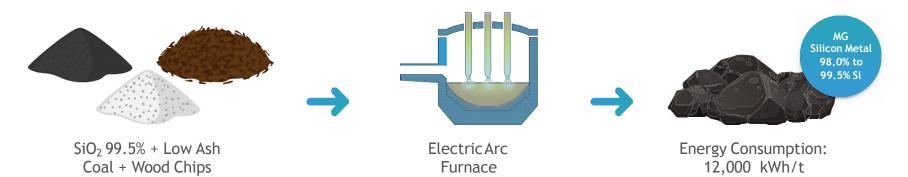


SoG Si TO WAFER WITH APOLLON

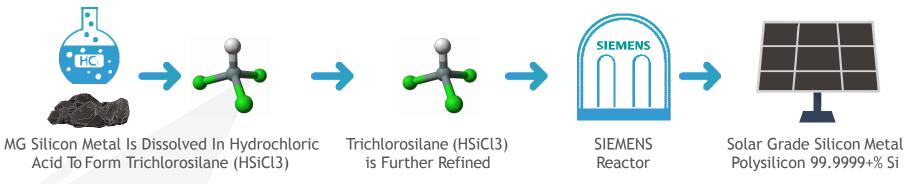
LEGACY PROCESS



Present Carbothermic process Quartz to silicon metal (Si)



Present Chemical process MG-Si to SoG-Si



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



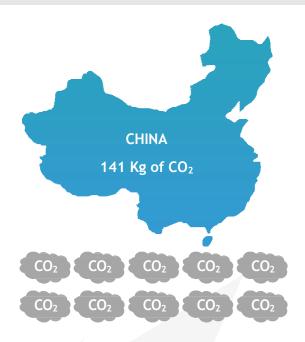




70% of the GHG generated by any solar project comes from the production of SoG Si

(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 CO₂ per Kg of SoG Si



SoG Si in **GERMANY** using the same process, generates 87 Kg of CO₂ per Kg of SoG Si



SoG Si in **QUEBEC** with the PUREVAPTM expected to produce 5.4 Kg of CO₂ 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
- ✓ WE ARE READY TO START COMMERCIALIZING OUR PUREVAP™ TECHNOLOGY
- ✓ WE ARE ABOUT TO COMPLETELY REVOLUTIONIZE THE ECONOMICS OF THE \$15B SILICON INDUSTRY WITH:
 - > Metallurgical Grade Silicon (Mg-Si) at prices that will defy competitors
 - High Purity Silicon (up to 4N Si) for high value niche applications
 - Nano-Silicon powders and Porous Silicon wafers for Li-ion Batteries
 - > Solar Grade Silicon using a PUREVAPTM UMG metallurgical process
- ✓ SILICON SAMPLES READY FOR MARKETING IN 2020
- ✓ SUPPORTED BY TWO (2) WORLD CLASS TECHNOLOGY PARTNERS



MANAGEMENT, BOARD AND CAPITAL SUMMARY



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



Major Investors

Management & Board $\cong 9.7\%$ $\cong 10.5\%$ (FD)PyroGenesis $\cong 9.7\%$ $\cong 12.5\%$ (FD)Investissement Quebec $\cong 9.9\%$ (FD)Strategic Investors $\cong 2.8\%$ $\cong 6.2\%$ (FD)Key Investors $\cong 18.8\%$ $\cong 21.2\%$ (FD)



Shares Outstanding	226,864,746
Warrants	67,278,000
Options	11,400,000
Debenture	_16,653,361
Fully Diluted	322,196,107



Independent Director

Richard Mimeau, B.Sc. Director

Peter Smith, PhD, P. Eng. Director

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

Daryl Hodges H. BSc, M.Sc. Director



Consultants/ Technical Advisors

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



Computershare



Raymond Chabot Grant Thornton

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